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INTEGRATION OF TRANSFORMATIONAL
THEORIES ON ENGLISH SYNTAX

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October 1968

COMMAND SYSTEMS DIVISION
ELECTRONIC SYSTEMS DIVISION
AIR FORCE SYSTEMS COMMAND
UNITED STATES AIR FORCE
L. G. Hanscom Field, Bedford, Massachusetts

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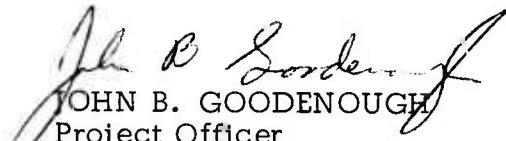
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FOREWORD

This work was conducted in support of Project 2801, Task 280115 by the University of California, Los Angeles, California under Contract AF19(628)-6007. The program was monitored for the U. S. Air Force by John B. Goodenough and Lt. J. B. Fraser, and was principally performed during the period 1 April 1966 to 31 August 1968, and the draft report was submitted 1 October 1968.

This Technical Report has been reviewed and approved.


JOHN B. GOODENOUGH
Project Officer


WILLIAM F. HEISLER, Colonel, USAF
Chief, Command Systems Division
Directorate of Planning and Technology

"But the English.... having such varieties of
incertitudes, changes and Idioms, it cannot be
in the compas of human brain to compile an exact
regular Syntaxis thereof."

James Howell. A New English Grammar,
Prescribing as certain Rules as the
Language will bear, for Forreiners to
learn English. London, 1662.

PREFACE

In the proposal to the sponsor which resulted in our undertaking this research, our aims were stated as below:

A great deal of work has been done recently on English syntax within the framework of transformational grammar. The results of this work, much of it published in relatively inaccessible sources, consist largely of partial descriptions of certain syntactic phenomena and cannot be treated as parts of a single unified grammar as they stand. The discrepancy among these descriptions is partly notational, partly material. It appears both feasible and desirable to bring all the work done to date together into a single presentation, conforming essentially to the theoretical framework presented in Noam Chomsky's Aspects of the Theory of Syntax. The result of the proposed work would be a fully integrated set of rules, annotation of the sources, and modification of them with justification of the modifications and appropriate commentary. Such results would be valuable both to linguists and to groups working on automatic syntactic analysis and other areas of natural-language processing by computer.

Though the task as formulated was thought to be "feasible", it was not as clear three years ago as it is now that the transformational analysis of English had become a many-tentacled monster, with no one being quite sure which tentacle intertwines with which, and the assumption that the task was feasible must be said to have weakened to a modest hope that a certain amount of sorting out and integrating would produce a monster somewhat better defined in structure and scope.

We believe the present work has considerable value in that it gathers together and annotates various transformational analyses of critical areas in English syntax. The rules do not, as they stand, all mesh perfectly, but they share a number of assumptions arising from our aim to make all sections compatible and maximally useful to each other, assumptions about what the grammar as a whole ought to look like, and the rules therefore probably mesh together more satisfactorily than most: and in general there are no contradictions in principle between the rules developed for one part of the grammar and those developed for another.

But the productivity of other scholars virtually cut away any hope that had originally existed for clean results. A glance at the bibliography will show that nearly one-third of the total output which we surveyed in our study was actually produced and

distributed after the project was initiated: that is, the last three years have seen almost as much new material become available as existed from the work of the previous ten or twelve years. This productive curve appears to be rising exponentially.

The feasibility of the original proposal was weakened not only by the mass of new information and new alternatives that turned up after we started, but also by the fact that there are crucial areas of English syntax which no one has bothered to probe, at least within this tradition. In some of them we made progress, but most of them would require independent investigation as extensive and time-consuming as what we had allotted for the integrative task. The uninvestigated areas continually blocked progress in the attempt to bring together cohesive results within the more familiar areas. The present publication is in every sense interim: we expect to continue in one way or another to try both to integrate what is known of English syntax from this point of view, and to try to explore the areas that are not so richly studied yet. It is interim even with respect to the discussions which occupied so much of our time: though we have tried to incorporate the range and variety of ideas that appear in our (now quite voluminous) notes, there are certainly many gaps in the selection that appears in these papers even from our own notes and discussions.

The three principal investigators have been aided by a highly competent group of graduate students. As one would expect, the group has been somewhat fluid in its makeup, and it is not easy to assign credit exactly where it is due in every instance. Most of the papers here have gone through at least two versions--one for the conference of September, 1967, before we had come to accept Fillmore's Case Grammar as our basic frame of reference, and one developed on that model subsequently--with different people involved with the different versions. The lists below are intended to give credit to these people by listing the areas in which they worked most actively; and where they worked across the board without actually being directly involved in the final or pre-final version of a particular paper, they are listed at the end.

- DETERMINERS: Professor Partee, with the assistance of Timothy Shopen and Patricia Wolfe.
 PRONOMINALIZATION: Professor Partee, with the assistance of Patricia Wolfe.
 NEGATION: Professor Partee, with the assistance of Rae Lee Siporin, Harry Whitaker and Patricia Wolfe.
 CONJUNCTION: Professor Schachter, with the assistance of Terence Moore, Timothy Shopen, Timothy Diller and Frank Heny.

RELATIVIZATION: Professor Stockwell, with the assistance of Terence Moore, Andrew Rogers and Timothy Shopen.
COMPLEMENTATION (now subsumed under NOMINALIZATION): Professors Stockwell and Schachter, with the assistance of Peter Menzel, Robert Terry and Friedrich Braun.
NOMINALIZATION: Professor Stockwell, with the assistance of Robert Terry, Peter Menzel and Friedrich Braun.
INTERROGATIVE: Professor Schachter, with the assistance of Peter Menzel and Thomas Peterson.
IMPERATIVE: Professor Schachter, with the assistance of Frank Heny, Friedrich Braun and Soemarmo.
GENITIVE: Frank Heny.
CLEFTING: Timothy Diller.
PASSIVE: Andrew Rogers.
RULE ORDERING: Peter Menzel.
LEXICON: Ronald Macaulay, with the assistance of Robert Terry.
BIBLIOGRAPHY: Thomas Peterson, Patricia Wolfe, and Andrew Rogers.
CASE PLACEMENT: Professor Stockwell, with the assistance of Frank Heny.

The presentation of the BASE RULES has been a principal responsibility of Timothy Diller, as well as the presentation of our FORMAL ORIENTATION. Argumentation in respect to our THEORETICAL ORIENTATION owes much particularly to Frank Heny and Robert Terry.

Virtually every point throughout all the papers has received extended discussion by the entire group, and it is difficult to say just who is responsible for any specific contribution that one might wish to single out. References subsequently made to this study should be made, in general, to "UCLA English Syntax Project" (UESP).

Among the graduate students who have not been singled out in connection with the papers included but who have made valuable contributions in a number of areas include Talmy Givon, Jacqueline De Meire Schachter, William Rutherford and John McKay.

It would be pleasant to be able to say that all the members of this research group came through our discussions to share all fundamental assumptions and to be convinced of the correctness of all details in the analyses proposed, or at least convinced of the correctness of the general outlines in all instances. Inevitably, such is not the case, though agreement throughout is of a considerably higher order of magnitude than we originally anticipated would be possible. We have tried in these papers to indicate those points at which our analyses differ from those of scholars outside this group and occasionally those where there is disagreement among us.

We are grateful for and somewhat apologetic to our two sources of computer support, which would have enabled us to test our grammar for internal consistency if more of the rules had been written in an explicit form at an earlier stage. David Londe and William Schoene at System Development Corp. developed an on-line transformational grammar tester which was potentially very helpful but which we never actually utilized. Joyce Friedman and a group of her graduate assistants at Stanford developed an extremely powerful, efficient and convenient transformational grammar tester with on-line grammar editing and off-line testing (cf. Friedman 1968a, Friedman and Doran 1968 and Friedman and Bredt 1968) which we were able to use with two small test grammars (included in Friedman 1968b). In addition to its practical value in de-bugging grammars, the system contains an explicit characterization of a possible form of transformational grammar, a number of whose novel features we have incorporated into our model. We regret not having been able to formulate a number of crucial parts of the grammar until quite late in the project (e.g. the early transformations required by the adoption of the case grammar framework) and would hope to have an opportunity to further utilize Friedman's system in the future, since on the one hand the system is a pleasure to work with and on the other it or something very much like it is essential if a grammar this large and complex is ever to be made to actually generate the sentences it claims to account for.

Finally we wish to express our appreciation to the following group of scholars who have visited us as consultants on various occasions and have provided valuable suggestions and criticisms of our work at one stage or another (in general during the earlier stages: none of these consultants had a chance to read and criticize the contents in their present form): Charles Fillmore (Ohio State), Hugh Matthews (M.I.T.), Jeffrey Gruber (System Development Corp.), John Ross (M.I.T.), Paul Postal (I.B.M.), Sanford Schane (U.C.S.D.), Stanley Peters (Texas), Emmon Bach (Texas), Lila Gleitman (Eastern Pennsylvania Psychiatric Institute), Bruce Fraser (Boston), Arnold Zwicky (Illinois) and Edward Klima (U.C.S.D.).

The group that at the end tried to tie the work together consisted of Professors Stockwell and Partee, and Frank Heny, Peter Menzel, Patricia Wolfe, Andy Rogers, and Ronald Macaulay. This was the entire research group for most of the last nine months, having been reduced to this size by a variety of circumstances and prior commitments to other tasks on the part of several members of the earlier larger group, after we went well beyond all projected

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deadlines. The principal investigators are deeply appreciative of the dedication and willingness to work on and on without compensation that made it possible for the small group above finally to bring the work to its present form. We wish also especially to thank the non-academic staff who have handled all the routine of typing, reading copy for press, fiscal matters, and the like: Anna Meyer, Theodora Graham, Julie Schopf, Loys Wood, and Virginia Rogers.

Finally, we wish to express our appreciation to Bruce Fraser, who as Lieutenant in the Office of the Air Force Systems Command encouraged us to undertake this work and persuaded his office to provide financial support; and to the Command Systems Division and Electronics Systems Division of the Air Force Systems Command at Hanscom Field, Bedford, Massachusetts, who waited patiently for us to finish something, even as partial and tentative as this.

Robert P. Stockwell
Paul Schachter
Barbara Hall Partee

UCLA, August, 1969

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GENERAL INTRODUCTION

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I. Theoretical Orientation

This grammar attempts to integrate two recent hypotheses on the nature of deep structure: (1) the lexicalist hypothesis described by Chomsky (1968) and (2) the deep case hypothesis of Fillmore (1968). The substance of the arguments of both men, together with the additional arguments of the UCLA English Syntax Project, are presented below. Historically, the Syntax Project accepted the arguments for the lexicalist hypothesis first (and indeed anticipated a number of these arguments in a working paper of September, 1967), and subsequently adopted a grammatical format containing deep case relations as the simplest means of recapturing generalizations that had been lost by adoption of the lexicalist hypothesis.

A. The Lexicalist Hypothesis

Lees (1960) proposed rules to derive from underlying sentential structures all kinds of nominals that were related to verbs and adjectives. The present grammar views all nominals except infinitivals, gerundives, and that-clauses as lexical units, shown to be related to their verbal and adjectival counterparts by lexical properties but not transformationally derived from them.

The arguments against the transformational derivation of nominals like proposal, insistence, easiness, amusement, eagerness, certainty, ... are of two general types: (1) those which depend on semantic properties of the nominals in comparison with the verbal/adjectival cognates; and (2) those which depend on unpredictable syntactic properties of the nominals. The examples below are from Chomsky (1968):

GEN INTRO - 2

- | | | | |
|-----|-----|---|-----------|
| (1) | (a) | John is easy to please. | [(6.i)] |
| | (b) | John is certain to win. | [(6.ii)] |
| | (c) | John amused the children with his stories. | [(6.iii)] |
| | (d) | John is eager to please. | [(2.i)] |
| (2) | (a) | *John's easiness to please... | [(8.i)] |
| | (b) | *John's certainty to win... | [(8.ii)] |
| | (c) | *John's amusement of the children with his stories... | [(8.iii)] |
| (3) | (a) | John's certainty that Bill will win the prize... | [(9.ii)] |
| | (b) | John's amusement at the children's antics... | [(9.iii)] |
| | (c) | John's eagerness to please... | [(9.i)] |

Chomsky pointed out that the productivity of nominalizations of these types is quite restricted, a fact difficult to explain under the assumption of a transformation derivation, since the nominals of the gerundive, infinitival, and clausal types which everyone agrees are transformationally derived are totally productive:

- | | | | |
|-----|-----|--|-----------|
| (4) | (a) | John's being easy to please... | [(7.i)] |
| | (b) | John's being certain to win... | [(7.ii)] |
| | (c) | John's amusing the children with his stories... | [(7.iii)] |
| | (d) | John's being eager to please... | [(10.i)] |
| | (e) | They expected John to be easy to please. | |
| | (f) | They expected John to be certain to win. | |
| | (g) | They expected John to amuse the children with his stories. | |
| | (h) | They expected John to be eager to please. | |
| | (i) | They knew that John was easy to please. | |
| | (j) | They knew that John was certain to win. | |
| | (k) | They knew that John would amuse the children with his stories. | |
| | (l) | They knew that John was eager to please. | |

That is, the nominalizations of (4), unlike those of (2) or (3), can be derived as Chomsky says, "without elaboration or qualification" (1968, p.7).

But more important than productivity is the apparent semantic idiosyncrasy of the derived nominals in relation to any putative underlying proposition. As Chomsky remarked, "the semantic relations between the associated proposition and the derived nominal are quite varied and idiosyncratic" (1968, p.7), and "the range of variation and its rather accidental character are typical of lexical structure" (1968, p.10). He points out that one could account for these differences by means of assignment of meanings to the underlying forms and limiting nominalization to just the right cases of feature cooccurrence, but such a device "reduces the hypothesis that transformations do not have semantic content to near vacuity" (1968, p.10). Consider now some examples of this kind of semantic variation:

- (5) (a) The president proposed to end the war in Viet Nam.
- (b) The president's proposal to end the war in Viet Nam...
- (c) The tradition continued.
- (d) The continuation of the tradition...
- (e) The continuity of the tradition...
- (f) He referred me to the dictionary.
- (g) His referral of me to the dictionary...
- (h) He referred to the dictionary.
- (i) His reference to the dictionary...

(5.a) appears to involve equi-NP-deletion--that is, it asserts that the president's proposal was that he would bring an end to the war. (5.b) is ambiguous between equi-NP-deletion and indefinite-NP-deletion--that is, it asserts either that his proposal was that he would end it, or that someone would end it. (5.c,d,e) pose a different kind of problem for the transformational derivation: it is clear that (5.d) and (5.e) are semantically different, and both should not derive from the same proposition. (5.f,g,h,i) pose a similar problem, but perhaps more difficult in view of the fact that there is a syntactic distinction as well as a semantic one, namely that there is a potential dative in the case-frame of referral but not in the case-frame of reference. All these facts are easily statable within a lexical derivation, without losing the equally important generalization that the nominals and their verbal/adjectival cognates share a set of semantic and syntactic features. It may well be possible to state them in a transformational derivation also, but it is not obvious how this might be done without losing the generalization that transformations are meaning-preserving.

The other kind of argument, namely the syntactic properties of derived nominals that are not predictable from knowledge of some underlying proposition containing a cognate verb or adjective, may be illustrated with the examples:

- (6) (a) Much of the construction of the bridge that they undertook last year turned out to be futile.
 (b) *Many of the constructions of the bridge...
 (c) I don't have much expectation of success.
 (d) I don't have many expectations of success.
 (e) His enthusiasm is annoying.
 (f) *His enthusiasms are annoying.
 (g) His criticism is annoying.
 (h) His criticisms are annoying.
 (i) His inference was correct.
 (j) His inferences were correct.
 (k) His insistence was emphatic.
 (l) *His insistences were emphatic.

From even a minute survey of examples, one must conclude (1) that such purely noun-like features as [+/-COUNT] are not predicable either from a knowledge of the underlying proposition or a knowledge of properties of the particular affix; it is true that there is some regularity--e.g. the affixes -al and -ure are generally [+COUNT], and the affixes -ledge and -ity are generally [-COUNT], but the affixes -tion, -m, -ment, -nce go either way; (2) derived nominals freely take relative clauses, a property of nouns in general, but gerundive, infinitival and clausal nominalizations totally exclude relative clauses; this fact must be considered to have perhaps more weight than all the others put together, since the exclusion of relativization is a completely natural consequence in an analysis where relative clauses are dominated either by DET or by NOM (see REL) and nominalizations are dominated only by NP--but it requires entirely ad hoc constraints in an analysis which either has relative clauses directly dominated by NP, or which derives all nominals from propositions, both those which accept relative clauses and those which do not. In general, then, derived nominals behave like nouns in all respects--full range of determiners, relativization, noun features like [+/-COUNT] governing pluralization and determiner selection.

The two kinds of arguments illustrated above--semantic and syntactic idiosyncrasies of derived nominals, in relation to their cognate verbs or adjectives; and the purely noun-like characteristics of such nominals--are strongly reinforced by the observation that there is a class of nouns which have the same characteristics that led scholars to argue that deverbal nouns were transformationally derived, namely that they take the range of complement structures normally posited for verbs. These nouns, however, do not have cognate verbs or adjectives to serve as sources of transformational derivations: idea, opinion, fact, notion, news,...The similarity of structures like (7) led Lakoff (1965) to posit underlying verbs of the type asterisked below:

- (7) (a) The proposal that she should leave...
 (b) The opinion that she should leave...
 (c) *Someone opinioned that she should leave.
 (d) His conclusion that the analysis was wrong...
 (e) His idea that the analysis was wrong.
 (f) *He ideaed that the analysis was wrong.

But if there is reason to believe that "The proposal that she should leave..." is not transformationally derived from "Someone proposed that she should leave" but only lexically related to it, and similarly through the full range of such instances, then the alternative to positing fictions like (7.c,f) is to posit an internal structure for NP's which corresponds to the internal structure of VP's in respect to possible complementation. To accomplish this, Chomsky proposed the X-Bar Convention (discussed in detail below under Section II of this General Introduction), which provides a general account of the internal similarity of NP's and VP's.

In the form which it took in the original paper (Chomsky, 1968) this proposal contains a number of difficulties. The essential, and at least partially correct, claim appears to be that certain words act alike in regard to selection, behavior under transformations, and semantic relationships, not because one of the items is derived from another but because, in the lexicon, they possess common elements. In other words, there are common factors to which category differences such as differentiate nouns and verbs from one another are irrelevant. Thus, the lexicalist hypothesis as opposed to the transformationalist hypothesis (which claims that propose and proposal are related because the latter is derived from the former) maintains that parallel but distinct structures containing these forms are generated at the outset. The arguments for this have been set out above. Given, then, that the lexicalist position is well motivated, it is important to illustrate, in some detail, the essentially parallel structures incorporating nouns and verbs (and adjectives) and show that these, too, are well motivated in the grammar. It is not clear that Chomsky's original proposal could do this.

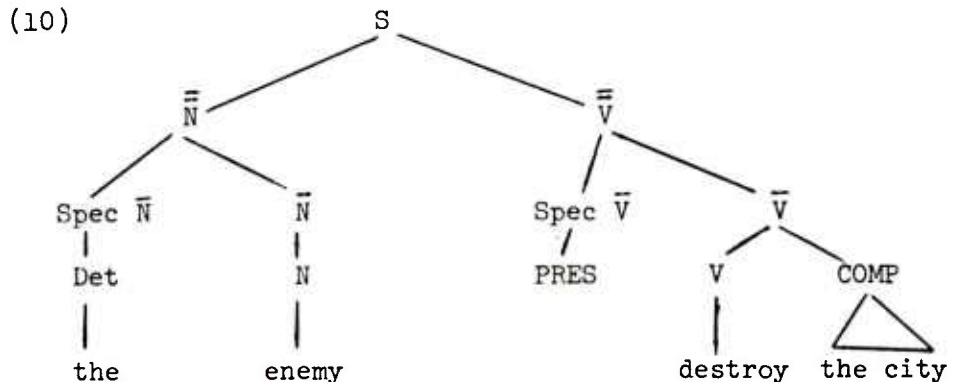
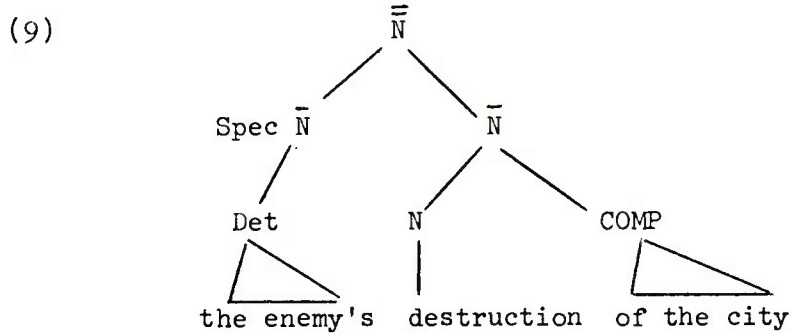
He relied upon the notions head, complement and specifier. For any lexical category X, the highest relevant level of structure, represented by convention as $\bar{\bar{X}}$, incorporated the immediate constituents specifier-of- $\bar{\bar{X}}$ and $\bar{\bar{X}}$, the latter breaking down into the head, X, and its complement. Chomsky's argument depended, at least in part, on his claim that, whether the head of a construction was V or N, the dependent structures (\bar{V} , $\bar{\bar{V}}$; \bar{N} , $\bar{\bar{N}}$, etc.) exhibited significant parallels. Unfortunately, the parallelism breaks down at a number of crucial points as long as one assumes a deep structure subject-predicate analysis of the sentence. We shall cite only a few of the more important cases of breakdown. Take the following two forms:

- (8) (a) The enemy destroyed the city.
 (b) the enemy's destruction of the city

Any descriptively adequate account of these must in some way deal with the fact that enemy and destroy/destruction are in essentially the same grammatical relationship to one another and to the remainder of each respective form, in the two examples. Yet the original proposal incorporated a rule:

$$S \rightarrow \bar{\bar{N}} \bar{\bar{V}}$$

placing the enemy in (8.a) outside $\bar{\bar{V}}$; while in (8.b), the enemy's is generated not outside of $\bar{\bar{N}}$, but within the specifier-of- $\bar{\bar{N}}$, i.e. within the Determiner. Roughly the two structures correspond to:



Superficially these seem to be quite reasonable structures. Each reflects the main characteristics of most generative analyses of NP and S respectively but using new labels. Even the fact that the enemy is contained in \bar{N} but excluded from \bar{V} seems semantically reasonable if it represents a way of capturing the fact that in (8.a) there is a (logical) predication on the enemy, while this is not so in (8.b). However, it is not clear that this is the right way to represent the difference, or that the difference should be exhibited in the base at all. In any case, it is quite clear that insofar as there is indeed a difference in deep structures, this amounts to a breakdown in the parallelism on which the lexicalist hypothesis depends.

The lack of parallelism between \bar{N} and \bar{V} introduced by Chomsky's base structure manifests itself in other ways. In (8.a,b) the enemy is in the same relationship to destroy and destruction respectively, from the point of view of sub-categorization, selection and semantic interpretation. The lexicalist hypothesis demands that this be attributed, so far as possible, to similarities in the respective deep structures of these forms, which can be reflected in economies in the lexical entry. However, in fact, the enemy is, in (9), an \bar{N} dominated by Spec \bar{N} , but in (10) an \bar{N} which, with the corresponding \bar{V} , is in IC of S.

Thus, it is impossible to represent in a uniform manner the fact that the subject of destroy and the genitive phrase with destruction must both be [+concrete].

Notice, further, that whereas all sentences (in English) have subjects, it is obviously not true of noun phrases (\bar{N}) that they all have genitives. For example, the following are perfectly satisfactory paraphrases:

- (11) (a) Constable's painting of Salisbury cathedral
 (b) the painting of Salisbury cathedral by Constable

There is no genitive in (11.b). Compare the corresponding sentential forms:

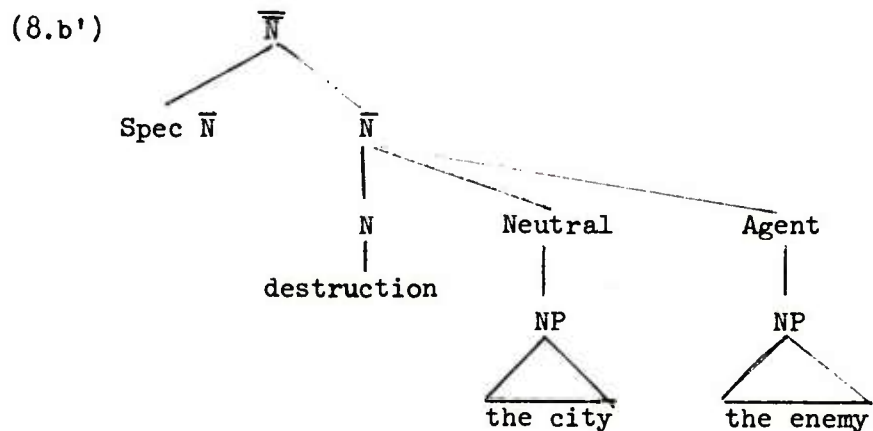
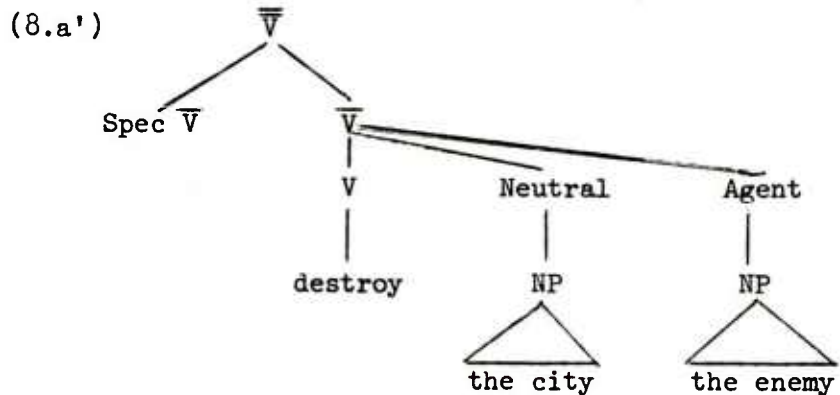
- (12) (a) Constable painted Salisbury cathedral.
 (b) *(was) painted Salisbury cathedral by Constable

If subject and genitive are generated in the base, it is necessary to have quite different base rules for \bar{N} and \bar{V} (or sentence), to account for (11.b) and (12.b). When N is the head of the construction, the genitive (equivalent to subject) is

optional. But when V is the head, the subject is obligatory. On the other hand, within a case grammar the same base rules will apply to both structures but lexical entries and subject-placement transformations will differ (though only trivially) for N and V.

Thus there are at least two distinct arguments for the incompatibility of the X convention with a subject-predicate analysis of the sentence. Our adoption of a deep structure containing cases has been largely the result of our (logically and historically) prior commitment to an account of lexical relatedness which depends on parallel deep structures. Obviously, insofar as a model emphasizes those aspects of grammatical relationship which are independent of predication and assertion it is well-adapted to such a purpose. Since the deep structure based on cases recognizes no special significance in the subject of a sentence, or, of course, in a genitive, it is to that extent well-adapted to the lexicalist hypothesis. The basic case relationships are, it appears, precisely those which persistently appear both in noun phrases and sentences.

For example, (8.a) and (8.b) would be represented thus in the deep structure, omitting irrelevant details:



It is, moreover, possible to argue independently for the adoption of case structure in the base. We shall deal with these arguments very briefly in the next section.

B. The Deep Case Hypothesis

Fillmore in four papers (1966a, 1966b, 1967a, 1967b) has argued that the functional relations of constituents of a sentence are simply defined by a set of functional primitives that dominate NP's. These cases define such functions as dative, instrumental, locative, agentive. Fillmore claims that the subject of a sentence is a derived relation, not a relation of the deep structure. It turns out that this is true of the object, too. The separation of "subject" and "object" from deep structure functional relations yields, as we have pointed out above, a significantly more appropriate structure for the basis of Chomsky's \bar{X} convention. The deep cases are posited to have consistent interpretive values:

- (13) (a) John broke the window with the hammer.
 AGT NEUT INS
 (b) The hammer broke the window. [No Agent]
 (c) The window broke. [No Agent or Instrument]
- (d) They filled the pool with water.
 AGT LOC NEUT
 (e) The pool filled with water. [No Agent]
 (f) Water filled the pool. [No Agent]
- (g) He heard the music.
 DAT NEUT
 (h) He listened to the music.
 AGT NEUT
- (i) The enemy destroyed the city with bombs.
 AGT NEUT INS
 (j) The enemy's destruction of the city with bombs...
 (k) The bombs' destruction of the city... [No Agent]
 (l) The bombs destroyed the city. [No Agent]
 (m) The city was destroyed by the enemy with bombs.
 [Passive of (i)]
 (n) The city's destruction by the enemy with bombs...
 [Passive of (j)]

The present grammar posits only the cases NEUTRAL (the case associated most closely with the verb itself, and least interpretable independently of the verb), DATIVE, LOCATIVE, INSTRUMENTAL, AGENTIVE, and a case restricted to copulatives (ESSIVE). Fillmore has suggested that there are a number of additional cases any of which might be present or absent in any given language, but all of which would be described and defined in a general theory of language. The fact that we have constrained this grammar to the small set of cases listed above has led to a number of difficulties:

e.g. the lack of a temporal case makes it impossible to state the constraints on a verb like elapse; the lack of a means/manner case causes us to put under instrumental some NP's where the interpretation "instrument" is severely strained, as in our claim that the subject of "The fact that he had blood on his hands proved that he was guilty" is an instrumental; we have numerous difficulties in distinguishing between instances of adverbial kinds of structures that are within the case frame, and those that are somehow outside it, largely because, in common with the entire field of transformational scholarship, we provide no serious analysis of adverbials in general.

Among the independent arguments for postulating a case structure in the base, the following have impressed us.

(a) The Simplification of Lexical Entries

Consider the following sentences:

- (14) (a) The window broke.
 (b) The hammer broke the window.
 (c) John broke the window.
 (d) John broke the window with a hammer.

In the Aspects model it remains an unexplained fact that window can occur as subject of break only when there is neither object nor instrumental with-NP, while the hammer can be subject just in case there is an object but no animate NP and no with-NP. Further, if there is an animate NP in the sentence, then it is the subject, and only then is the with-NP permitted. Complicated sub-categorization and selectional restrictions of, perhaps, several verbs break, one intransitive, are required to describe the situation, and none explains it or accounts for the meaning relationships in the sentences of (14) systematically. Hall (1965) suggested that when a verb of the break class lacked a subject in deep structure, the deep structure object was moved into (surface) subject position. However, it appears that case relationships in the base can provide a better account than one in which deep structure subjects are ever assumed. Break simply requires a neutral case; it may have an Agent or Instrumental. Which cases are realized as subject and object is determined by general rules. Fillmore (1967b) has pointed out that this account avoids several specific problems. For example (14.a') is not well-formed:

- (14) (a') *The window struck

Yet all other forms comparable to (14.b-d) occur. Hall (1965) pointed out difficulties in dealing with this difference between break and strike within a modified Aspects framework. But it is a simple matter to say, within a case framework, that strike requires either Agent or Instrumental, while the other verb does not. It is not clear how far this kind of account should be extended, to allow buy and sell, for example, to be a single lexical entry with two distinct possibilities for subjectivalization operating. Gruber (1967) has attempted to extend this notion perhaps further than anyone else.

Related to this, but less directly relevant to our grammar, is the fact that a deep structure based on cases is easily able to provide a general (semantic) account of the anomaly of (16.b), since break does not allow a Locative (cf. Fillmore (1967b)).

- (15) (a) I hit his leg.
 (b) I broke his leg.

- (16) (a) I hit him on the leg.
 (b) *I broke him on the leg.

(b) Constraints on Possible Relations in a Simplex Base

It is possible that the sort of base structure implied by Lakoff (1965), which is very simple and incorporates no cases, would adequately handle the facts dealt with in the last section. Various transformations such as the Inchoative and Causative were proposed for this purpose, and these would relate the sentences of (14) to one another. However, it is not clear how such a proposal would deal with the fact that, in terms of case grammar, there is only a single Agent or Dative (etc.) within any one simplex sentence. This the case hypothesis does automatically. To the extent that such constraints, imposed on possible deep structures by that hypothesis, match the observed characteristics of natural language, case grammar is somewhat vindicated, especially if the higher sentences postulated by Lakoff and others are otherwise unmotivated.

It is not yet clear how far the cases are semantic primitives (rather than, say, complexes of features); nor is it certain that they allow us properly to distinguish the functional and categorical aspects of deep structure (cf. Matthews (1968)). But the complex base structure which the case hypothesis entails appears to us rich in approximately the right way to account for important aspects of language structure.

(c) Second Passive and Raising Rules

In CASE and NOM, we show how various phenomena, including data accounted for by Lees (1960a) with a second passive rule, or by Rosenbaum (1967a) with It-replacement, are naturally provided for by additional, optional placement rules which move an NP from subject or object of a sentence dominated by Neutral case, to become subject or object of the higher S.

In this way we capture important syntactic and selectional facts. Thus we can state very easily the relations between believe and an embedded sentence in the following way. In (17.a) the optional raising rule has applied, but not in (b). When the passive applies to such structures as underlie (a) and (b), (c) and (d) result.

- (17) (a) John believed Bill to be sick.
 (b) John believed that Bill was sick.
 (c) Bill was believed to be sick.
 (d) It was believed that Bill was sick. (from that Bill was sick was believed)
 (e) Bill was believed by John to be sick.

Now, since there is, in the deep structure, neither subject nor object in this grammar, it would appear that Bill, subject in (17.c), is subject, in the same way (roughly speaking), that John is subject of (17.a) and that Bill is subject of (17.e). Yet we are in no way prevented from stating the fact that believe may select a Neutral case dominating a sentence. At the same time, constraints holding between the subject of verbs like try and avoid and the subject of a sentence embedded below them can apparently be stated more effectively in terms either of subjects formed by any but the Passive-subject rule, or of deep structure Agent cases. For further details see NOM.

We conclude, then, that the Lexicalist and the Deep Case hypotheses, each with a fair range of independent motivations, reinforce each other very strongly indeed, and we have gone ahead to attempt to build a grammar on this compound basis. Numerous difficulties, as well as unexplored areas, remain; but without this integration of these two hypotheses, it appears to us that the problems are even more severe.

December 1968

II. Formal Orientation

A. Introduction

This section contains a collection of the most important of the formal characteristics of the UCLA English Syntax Project grammar. An annotation of the terminology, rule types, conventions, etc., which have been employed in previous generative descriptions is not provided. The reader must judge for himself the relative merits of the present options in the light of others.

We shall consider types of rules, lexical matters, conventions, schemata and feature phenomena.

B. Types of Rules

There are three major kinds of rules we shall be interested in: phrase structure (PS) rules, transformational (T) rules and lexical (L) rules (redundancy rules). Since we employ the "dummy symbol" variant of lexical insertion (Chomsky, 1965), we do not have what Rosenbaum (1968) calls "segment structure rules", i.e., rules which convert terminal symbols into "preterminal complexes" of features. This latter approach is relevant only to the "matching convention" variant of lexical insertion, where feature complexes at the end of the PS rules are matched for non-distinctness with feature complexes in the lexicon.

1. Phrase Structure Rules

Part I of the UESP grammar employs a set of context-free rewrite rules of the following form: $A \rightarrow B$, where A is a single non-null symbol and B is a non-null string of symbols, $B \neq A$. These are phrase structure (PS) rules. They are intrinsically ordered with S the initial symbol. That is, after S is rewritten, any rule applicable may be applied until all symbols are terminal.

When the PS rules are sequentially applied starting with the initial symbol, S, a derivation results. The final line in a completed derivation consists of terminal symbols, those symbols which appear only on the right side of a PS rule. A particular derivation is convertible into both tree (P-marker) and labelled bracketing formats. An example follows:

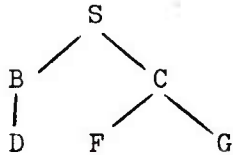
(1) PS RULES

S → B C
 B → {^D
 E
 }
 C → F (G)

(2) DERIVATION

S
 BC
 DC
 DFG

(3) TREE



(4) LABELLED BRACKETING

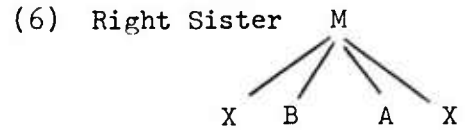
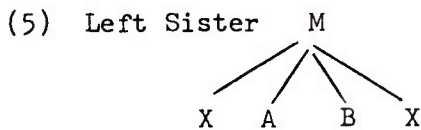
s[B[D] C[F G]]

We shall use the tree format almost exclusively for illustrative purposes but the labelled bracketing format is used in the structure indices of transformations.

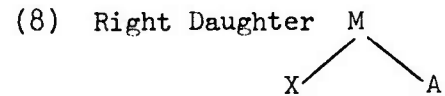
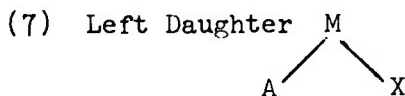
A string of symbols uniquely traceable up a tree to a single symbol X is an X. Thus in (3), F G is a C and D C is an S.

If A is in a string which is an X, then X dominates A. If there is no intermediate symbol between S and A, then X immediately (directly) dominates A.

Within structures of immediate dominance, there are four particular relations worth signalling out. A is left (right) sister of B if both A and B are immediately dominated by the same node and if A is left (right) of B, there being no node in between them. Viz.,



A is left (right) daughter of M if M immediately dominates A and there is no node dominated by M to the left (right) of A. Viz.,



A tree which is formed from the PS rules plus lexical insertion is called a deep or underlying P-marker. Transformations operate on underlying P-markers, changing them into derived P-markers. When no more T's need apply to a P-marker, it may be called a surface P-marker.

2. Transformational Rules

Transformational (T) rules change underlying P-markers into derived P-markers. That is, the rules effect restructuring of trees. Each T-rule consists of (a) a structure index (SI), (b) a structure change (SC), and sometimes, (c) a set of conditions.

(a) The SI indicates the set of P-markers to which the T can apply and hence is stated in terms of PS symbols (e.g. #, NP, ART, etc.), lexical features (e.g. [+DEF], [+AND], etc.), morphemes, and a variable X, which stands for an arbitrary string of symbols. To facilitate reference to the terms in the SI, each relevant term is numbered. We have also chosen to allow reference within a single SI to a node A and also to a node B which dominates it. Such a possibility is needed, for example, in the NP S alternative of the relative clause rule (cf. REL IX.A.2), which must mention equality of NP's but operate on D and N:

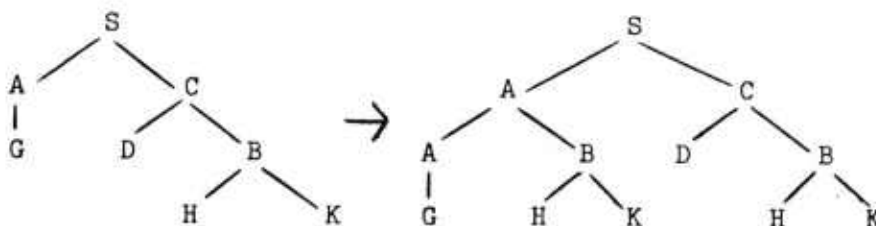
(9) SI: ... NP₂ S[... NP₅[D N] ...] ...

Conditions: 2 = 5
6 dominates [-WH]

SC: (a) Replace [-WH] in 6 by [+WH, +REL, +PRO]
(b) Delete 7

(b) The SC indicates the restructurings which the T effects. We have chosen to represent those restructurings in their component parts. These components reflect directly the elementary operations which T's employ, viz., deletion, substitution, and adjunction. Deletion is expressed in a SC by the terms "erase" and "delete". Substitution is usually stated by "substitute for ". Adjunction has several subdirectives indicating the placement of the adjoined term. The dominance relations defined above are useful in making these statements. For example, "attach Z to 3" indicates the addition of feature Z to the term labelled 3.

Similar instructions are: "Attach 4 as the right daughter of 1" and "Attach 4-7 as right sisters of 1". In addition, we have occasionally made use of what is sometimes called "Chomsky-adjunction" as a special type of adjunction, involving a copying of the node to which another node is being adjoined. For example, the instruction "Chomsky-adjoin 3 as right daughter of 1", where 3 and 1 are respectively the B and A subtrees of the following tree, has the effect indicated below:



We consider it highly unlikely that plain and Chomsky-adjunction should both be necessary in an adequate theory of grammar, but we feel that there is too little evidence available about the correct form of derived structures to be able to make a decision at this point.

As the example (9) illustrates, it is possible to add completely new items by T's. Those items may be features or complex symbols, i.e. complexes of features which will receive a phonological realization in the second lexical look-up. We have specifically rejected the addition of schemata (cf. the section on schemata following). Likewise, we have attempted to limit the utilization of T's for the insertion of symbols which would block a P-marker. We believe any such use of a rule is a reflection of a weakness in the description. At present we have at least one such "blocking transformation", namely, "Attachment Block" in DET. One final use of SC's is the modification of existing terms in the SI. Thus the specification of features may be changed by a T-rule.

The use of component structural change statements contrasts with another familiar notation in linear form, as in, e.g. 1-2-3 → 3-2+1-∅. The linear notation is less suitable for a framework which, like ours, permits the assignment of integers in the SI to nodes one of which dominates another, since the linear sequence on the left of the arrow traditionally corresponds to a partitioning of the terminal string. Thus, given,

SI: A [B C] D F

1 2 3 4 5

SC: Attach 5 as right sister of 1

Erase 3, 5

there is no reasonable corresponding linear representation 1-2-3-4-5 → ??.

In cases where no such problems arise, the linear form has sometimes been used, with "-" separating terms of the SI, "+" used for sister adjunction, and "∅" for deletion.

Note that with the componential rather than linear specification of the SC, there is in fact no need to number any terms of the SI that are not involved in either the SC or the conditions; however, a full set of numbers has been given in most cases anyway.

(c) Conditions commonly require identity or non-identity between terms in the SI. When the terms compared are nodes, identity (or non-identity) extends to every item dominated by the nodes. Other conditions state restrictions on dominance and non-dominance relations. The optionality, partial optionality or obligatoriness of the T is also stated as a condition.

Transformations may be subclassified under several parameters. The first parameter of significance separates those T's which operate cyclically (e.g. the case-placement rules) from those which operate only on the last cycle (e.g. the interrogative inversion, IMP subject deletion). The concept of cyclical application of T rules is basically that proposed in Chomsky (1965) but extended to include cycling on NP's. The operation of the T-cycle is discussed in TRANS RULES.

T's also differ as to their obligatory and optional status. Some T's must apply every time their SI is met. Others are optional in their application. A third set are partly optional, i.e., if a certain condition is met they are obligatory (optional), if not they are optional (obligatory).

In Part II we shall present many T's in two ways. The first presentation will be a gross oversimplification of the rule. It is intended to provide an easy grasp of the purpose and operation of the rule. The second presentation will be more detailed and is intended to capture the full complexity of the data as we analyze them. In Part III, the detailed forms are given, with occasional minor changes for the sake of consistency.

3. Lexical Rules

A third set of rules is present in the lexicon. They are of the type $[\leftarrow F] \rightarrow [\beta G]$ and are interpreted as adding feature [G] with value β to any complex symbol which is specified for feature [F] with value \leftarrow . Thus, (11) is changed to (12) by L rule (10):

(10) [-FACT] → [-GER]

(11)

order
+V
.
.
-FACT

(12)

order
+V
.
.
-FACT
-GER

Rules of this type permit the omission of redundant features in lexical entries. That is, those features which are predictable because of the presence of certain other features are not listed in the lexicon but added for all lexical entries through a small number of L rules. As an example, any item having the feature [+DEF] will by redundancy rule (13) be specified [-ATTACH]:

(13) [+DEF] → [-ATTACH]

A marking convention has been incorporated into the redundancy rules to a limited degree. Cf. NOM and SAMPLE LEX.

Basically the L rules are assumed to operate on lexical items before they are inserted into the P-marker. They are also assumed to be intrinsically ordered, i.e. with no explicit statements required. The consequences of these assumptions, however, have not been fully explored.

After the application of the L rules it is assumed that every lexical item will bear one of three possible relationships to every feature. First, it may be specified positively for Feature [F], i.e. [+F]. Second, it may be specified negatively for feature F, i.e., [-F]. Third, the feature may be absent from a particular lexical entry, as typically happens if the feature is irrelevant to that entry.

The L rules contain a further (not explicitly stated) universal rule schema called "obligatory specification". The schema applies to features which have, in the lexical entry, the special value "*" (occasionally written as + or +/-), and assigns arbitrarily to each such feature either of the values + or - before the lexical item is inserted into the P-marker. The crucial difference between absence of a feature in a lexical entry and its presence with the value "*" is that in the latter case a specific value will always appear when the item is inserted into a P-marker, whereas in the former case it may remain unspecified (and in fact, will unless a value is assigned by an ordinary L-rule). For example, book is unspecified for the feature MASC,

whereas neighbor is *MASC. The value * occurs only in lexical entries, never in P-markers. It may occur on inherent features, as in the case just cited, or on rule features. For example, the rule which deletes to in certain infinitival constructions (e.g. John made Bill $\cancel{\phi}$ sit down) is an obligatory rule which requires that the matrix verb have the feature +TO DEL. The verb help is marked [*TO DEL] in the lexicon in order to permit derivation of both forms of (14):

(14) John helped him (to) do the job.

C. Lexical Matters

1. Order of Insertion

It is assumed in the UESP grammar that lexical insertion operates sequentially in that categories have an order of precedence. The full ordering is discussed in TRANS RULES. We note here simply that V-insertion precedes N-insertion. This depends on a new notion of "side effects" developed by Friedman and Bretz (1968 and discussed in SAMPLE LEX).

Lexical insertion is also sequential with respect to a single category. Note for example that some verbs (e.g. persuade) in one sentence require the verb in a lower embedded sentence to be [-STATIVE]. There are also nouns which require particular features on other nouns which are in case relationship with them. Cf. the SAMPLE LEX for more discussion of these phenomena.

2. Place of Insertion

In contrast on the one hand to almost all pre-1968 TG's which had only a single place of lexical insertion (following the PS rules) and on the other hand to Rosenbaum (1968) who has lexical insertion after the PS rules and every subsequent T, the UESP grammar posits only two places of lexical insertion: viz. after the PS rules and after the T rules.

Insertion after the PS rules is referred to as the first lexical lookup. In an optimal grammar, this lookup would involve phonological, syntactic and semantic features for most entries and only the latter two types of features for a smaller number of entries. In the present grammar, no semantic features are given and only an orthographic representation is provided phonologically.

Lexical insertion at the end of the T rules is referred to as the second lexical lookup. It specifies only phonological information and only involves those items without phonological features in the surface structure, i.e. those items which had no phonological form in the first lexical lookup and those which were inserted transformationally.

D. Conventions

1. General notational conventions

(i) When examples or rules are borrowed the source will be indicated near the right margin within square brackets []. For example,

(15) Schwartz claims he is sick. [Postal, 1966 (16)]

The author and date are often omitted if they are specified in the text.

(ii) Subscript nodes indicate dominance, either immediate or indirect; e.g. [...NP...]_{ESS} means that ESS dominates NP either directly or indirectly. Superscripts indicate immediate dominance; e.g. ^S[X MOD X] requires that the given S immediately dominate the given MOD.

(iii) Three dots indicate that more nodes may occupy the space they take up; e.g. [...NP...]_{ESS} means that NP may have nodes contiguous to it on either side which are also dominated by ESS. This is equivalent to the notation [X NP X]_{ESS} and the two are used interchangeably.

(iv) The symbols = and ≡ are used rather indiscriminately for "equal" and "identical". Their negative counterparts (≠ and ≠) are also used. Context usually clarifies the type of identity meant, i.e. referential or formal.

2. Conventions Applicable to Rules

(i) Braces { } are used to collapse two or more rules with mutually exclusive alternative expansions. Thus (16) is an abbreviation for (17):

(16)	A →	{	B	}		(17)	A →	B
			C				A →	C

Whenever A must be rewritten, one must choose either B or C.

(ii) Parentheses, (), indicate optionality of the symbol(s) enclosed. Thus, the two mutually exclusive rules of (18) are abbreviated by (19):

(18) a. A → B
b. A → B C

(19) A → B (C)

(iii) If all items in a rewrite are optional, at least one must be chosen. Thus, (20) is an abbreviation of (21):

(20) A → (B) (C)

(21) A → B
A → C
A → B C

(iv) If optional items are embedded within other optional items in a PS rewrite, to choose the inner optional item one must also choose what is in the next layer of embedding out. Thus, for example, (22) has only the rewrites of (23); (24) is impossible.

(22) D → ART (POST (PART))

(23) a. D → ART
b. D → ART POST
c. D → ART POST PART

(24) *D → ART PART

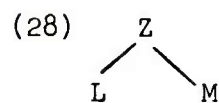
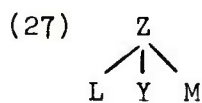
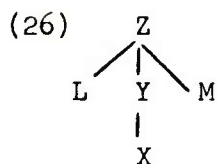
(v) As noted above, square brackets [] combined with subscript PS symbols are used in the SI's of T's to represent dominance relations. Thus in (25), A must dominate the feature [+B] for the T-rule to apply:

(25) SI: X _A[X [+B] X] X

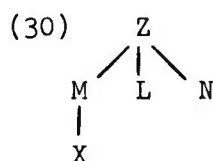
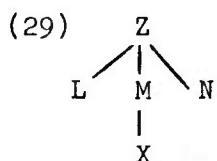
(vi) The use of square brackets to indicate features is always distinguishable from (v) since a subscript never accompanies a feature; e.g. [+DEF].

(vii) In the SI's of the T's, all variables are represented by X. If two X's are in the same SI, they need not be identical unless a condition so specifies.

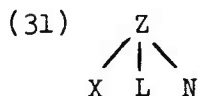
(viii) When the deletion operation takes place in a T upon the sole daughter of a node Y, the node Y is also deleted by convention. Thus, if (26) is converted to (27) by deletion, then (27) becomes (28) by convention:



(ix) If the sole daughter of a node Y is adjoined elsewhere in an SI, the fate of the node Y is presently an open question. Under one viewpoint it is also carried along in its dominant position. Thus if in (29) X is adjoined as left sister of L, then (30) is the resulting tree:

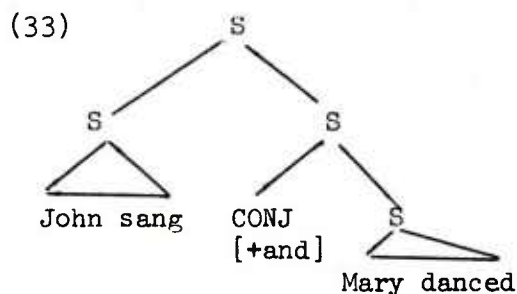
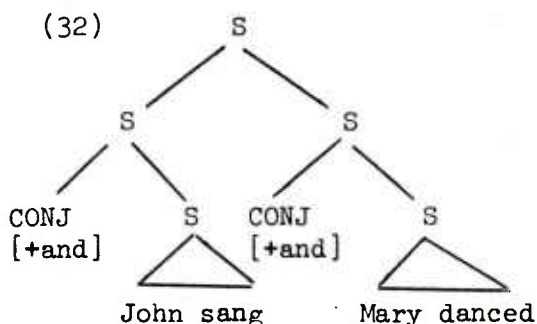


Under a second viewpoint, only the daughter is adjoined, the node Y being left behind and deleted by convention (viii). Thus (29) would become (31):



It is not readily ascertainable if this indecision has any serious consequences.

(x) An S-Pruning convention is necessary to ensure the deletion of S's which dominate only a single node in a derived structure. By this convention (32) becomes (33) after INITIAL CONJ DELETION has operated:



The one notable exception to this convention is the retention of the highest S (as in the case of IMP Subject Deletion).

3. The X-Bar Convention

Chomsky (1968) proposed an X-Bar convention to capture the relationship between NP and S. As noted above, we adopt that convention in principle and modify it with a case grammar merger. The convention looks as follows for the UESP grammar:

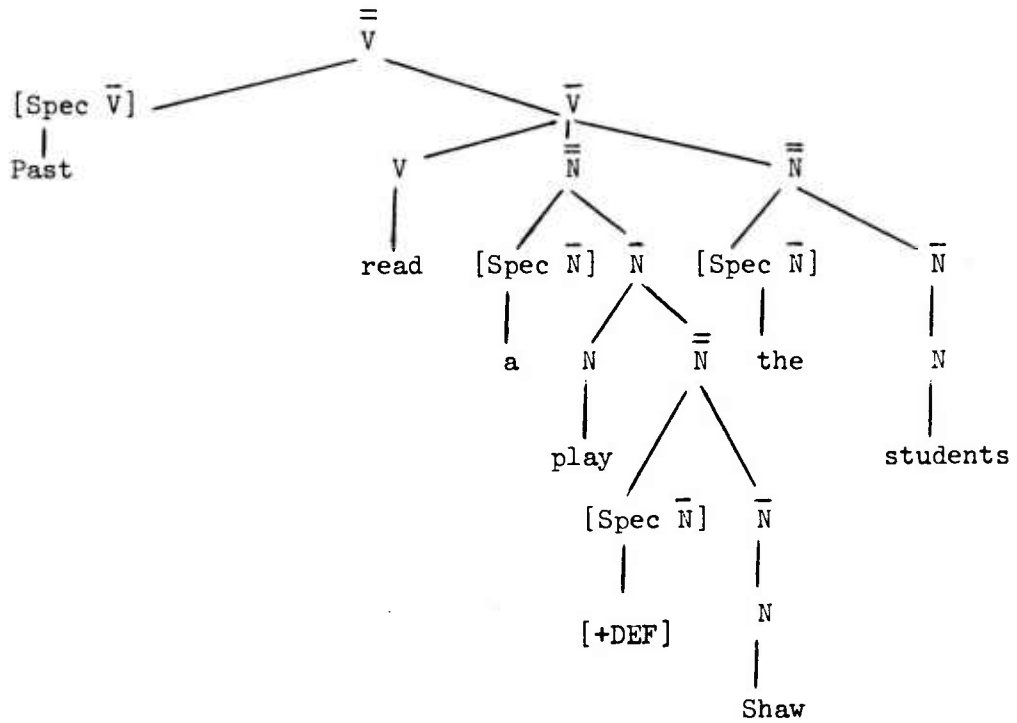
- (34) a. $\bar{\bar{X}} = [\text{Spec } \bar{X}] \bar{X}$
 b. $\bar{X} = X \bar{N} \bar{N} \dots$
- (35) a. $\bar{\bar{N}} = [\text{Spec } \bar{N}] \bar{N} \left(\begin{array}{l} \text{NP} = D \text{ NOM} \\ \text{or} \\ \text{NOM} = N \text{ NP NP } \dots \end{array} \right)$
 b. $\bar{N} = N \bar{N} \bar{N} \dots \left(\begin{array}{l} \text{or} \\ \text{PROP} = V \text{ NP NP } \dots \end{array} \right)$
- (36) a. $\bar{\bar{V}} = [\text{Spec } \bar{V}] \bar{V} \left(\begin{array}{l} \text{S} = \text{MOD PROP} \\ \text{or} \\ \text{PROP} = V \text{ NP NP } \dots \end{array} \right)$
 b. $\bar{V} = V \bar{N} \bar{N} \dots \left(\begin{array}{l} \text{or} \\ \text{PROP} = V \text{ NP NP } \dots \end{array} \right)$

To tabularize even further:

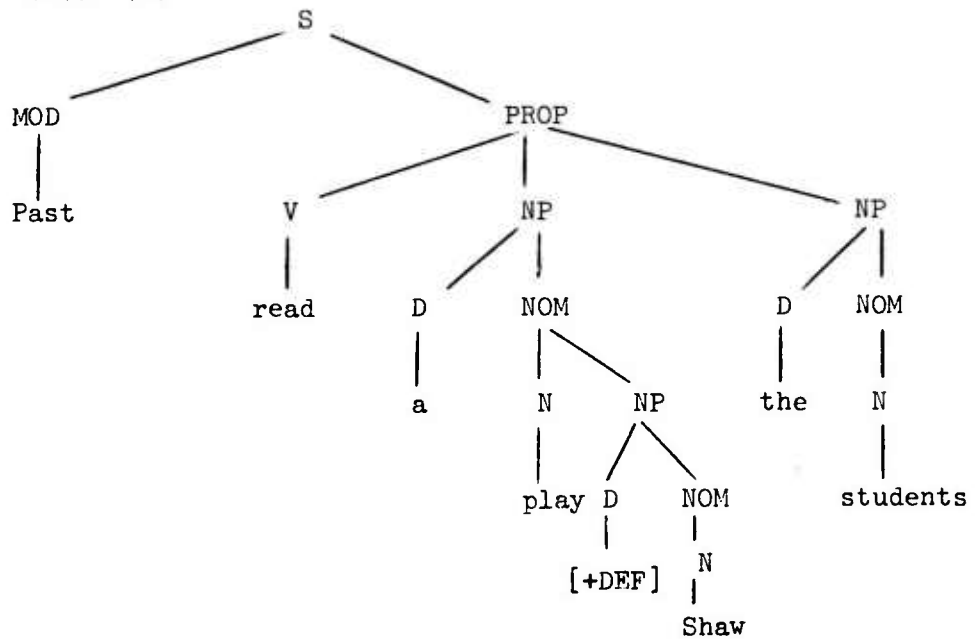
- (37) a. $\bar{\bar{X}} = S, NP$
 b. $\bar{X} = \text{PROP}, \text{NOM}$
 c. $X = V, N$
 d. $[\text{Spec } \bar{X}] = \text{MOD}, D$

The following trees illustrate these conventions. Tree (37.a) is labelled with the X-Bar notation, tree (37.b) is a translation of (37.a) into our equivalent categories, and tree (37.c) is the same filled out to conform in detail with our base rules. The sentence for which these trees provide a deep structure is "The students read a play by Shaw."

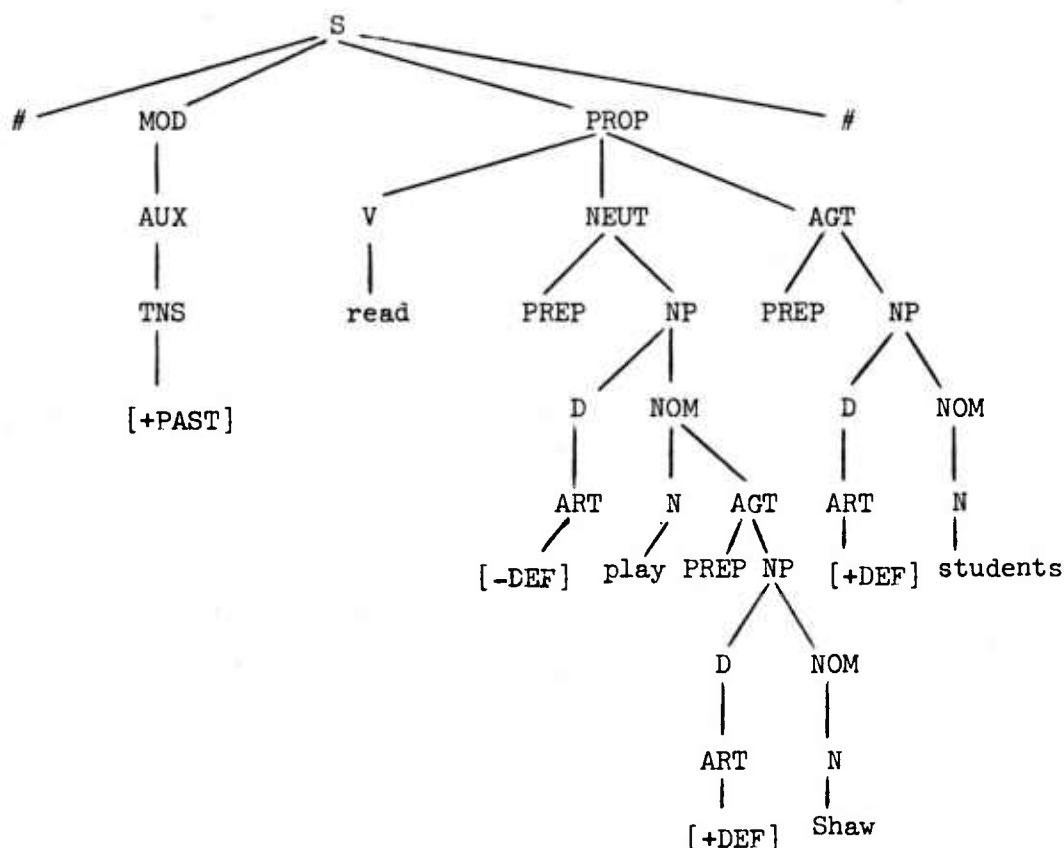
(37) (a)



(37) (b)



(37) (c)



E. Schemata

Schemata differ from T rules in various ways. First, schemata have structure building powers we have denied to T rules (except for Chomsky-adjunction). For example, the CONJ section contains several schemata which not only add new nodes but build whole new trees to replace old ones.

Second, and more fundamentally, schemata involve variables over SI's in a way that amounts to abbreviating in one statement a large (possibly infinite) number of transformational rules. Thus, for instance, the schema for Derived And-conj refers to an arbitrary string of identically labelled nodes $A_1 \dots A_n$ meeting a number of conditions. Here A_1 is a variable for any single node; A is not a symbol of the grammar. Thus $A_1 \dots A_n$ abbreviates an infinite

set which includes, among others, NP NP, NP NP NP, ..., V V, V V V, ... Further, one of the conditions (Cond. (e)) is that "the members of {B} or the members of {C} are identical with respect to their highest proper analyses"; this statement is, in effect, an abbreviation for a probably infinite number of statements of particular proper analyses.

Schane (1966) has argued for the necessity of schemata rather than ordinary T-rules for conjunction, and most treatments of conjunction starting with that in Chomsky (1957) have at least implicitly used schemata. We have made as little use as possible of schemata elsewhere.

F. Features

Selectional features (those contextual features stated in terms of other features, e.g. [+__ [+HUMAN]]) have only marginally been included in this grammar. Those which pertain to the features HUMAN, MASC., etc. have been considered part of the semantic component.

McCawley (1966) has argued effectively that selectional features must not only be semantic, but must be on NP's rather than on N's. Both conclusions follow from the observation that (38) and (39) below appear to exhibit the same kind of selectional violation:

(38) *His virile classmate is buxom. [McC. (23)]

(39) *That boy is buxom.

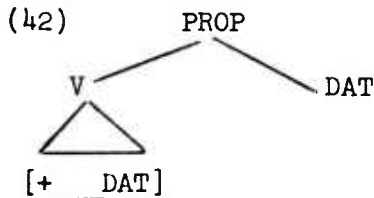
Assuming that buxom is indeed constrained against occurring with males, the problem is that classmate by itself can be either + or - male, and only by semantic amalgamation rules can the whole NP his virile classmate be determined to be +male. We are, in effect, saying that sentences like (38), (39) and (40) are grammatical but semantically deviant.

(40) John humiliated the rock.

Other features (e.g. +[[-ABSTRACT] OBJ], which equals [+__ NEUT [NP[-ABSTR]]) are formally selectional but included in our grammar. Thus, our grammar claims that sentences like (41) are ungrammatical:

(41) *John broke the sincerity.

Subcategorial features (those contextual features stated in terms of surrounding categories such as [+ DAT]) have been widely employed. The principle of strictly local subcategorization has been held to as much as possible, i.e. the symbols relevant to the item being inserted are immediately dominated by the node dominating the node under which the item is inserted. Example (42) meets this condition:



As an abbreviatory device, some subcategorial features have been abbreviated so as to look like intrinsic features. For example, [+S] is a short notation for the feature [+ NEUT [NP [S]]].

Intrinsic features are present on all lexical items. Thus, articles are characterized by the following intrinsic features among others: [+ART, +DEF, +DEMONS,...] There are also intrinsic features whose only function is to trigger or block specific T's. These are known as rule features. The feature [TO-DEL] is an example.

Features are for the most part associated with lexical items and hence with lexical categories. We have also recognized the necessity of associating features with non-lexical nodes. Thus, in CONJ, the feature [+SET] has been attached to NP's. This is a rather isolated instance, however, and we merely note the possible expansion of the feature system in this direction (particularly in the matter of selectional features).

September 1968

BASE RULES

1. Caveat for the Phrase Structure Rules

There are some structures which have not been provided for at all in the PS rules. First, some adverbials fall into this abyss. The case grammar does include some Prep Phrases as cases which have previously been called adverbials (e.g. LOC, INS). No doubt others of this sort could be added for some dialects (e.g. BEN-"I bought Mary the purse" ?"Mary was bought the purse"). However, other adverbs are not suitable to inclusion as cases. Their placement under ADV nodes is by no means clear. Decisions as to (1) how many ADV nodes would be required, (2) where these nodes would be introduced, (3) what their constituent structure would be, and (4) how various types of adverbs would be restricted to particular ADV nodes, would all rest upon very shaky evidence. We opt thus to admit only one ADV node as a palliative remedy to the problem. It is our attempt to deal with a very limited part of a problem which requires total solution for any part of it to be "correct". (Cf. Note (b) under Rule 2)

There are a number of adverbs which we make no attempt to handle. Among them are those which follow:

(1) Discourse (sentence connecting) adverbs, e.g. "adversatives"--however, still, yet, conversely, rather, nevertheless, meanwhile, etc.; "causal"--for; "illatives"--therefore, so, then, thus, consequently, hence, accordingly, etc.

(2) Multiple position adverbs such as only, even, just, also, etc. If a single source is assumed, whenever these items are introduced, an attachment T (not formulated in the UESP grammar) must provide correct placement and semantic interpretation must rest on the surface structure (Identical statements can be made about EMPH).

(3) Sentence Adverbs which could conceivably be derived from higher S's, e.g. probably, certainly, etc.

(4) Subordinating conjunctions, e.g. although, if, since, even though, etc.

(5) The adverbs which occur in nominalizations, e.g. his departure yesterday; his playing the trumpet in the orchestra. Under the lexicalist position, these adverbs would require a special node under NP.

(6) Adverbs of manner, e.g. Harry lifted the suitcase quite awkwardly/in an awkward manner; Ruth dropped off to sleep very quickly.

(7) Adverbs of degree, e.g. Ralph likes Esther very much; Sam is very much (of) a man; Bill is very tall; How much does Wilhelm know?

(8) Comparatives. It is likely that comparative structures should be considered a type of adverb of degree. We believe that Doherty and Schwartz's (1968) analysis is essentially correct and that it could be incorporated into the present grammar with further formalization of the adverb section.

(9) Superlatives also remain an untouched area.

A second item sometimes incorporated into the PS rules, the EMPH morpheme, has been omitted here since it requires a presently unformulated attachment T and surface structure semantic interpretation.

2. Base Rules and Comments

RULE 1:

$$S \rightarrow \# \left\{ \begin{array}{l} \text{CONJ S S (S)*} \\ \text{MOD PROP} \end{array} \right\} \#$$

(a) The similarities of sentence and NP structures have been captured by the X-Bar convention (Cf. GEN INTRO and Chomsky, 1968). Since that is presented separately, we give here the PS rules as normally employed.

(b) Junctures (#) are employed in stating SC's in some T's. They provide a means by which elements may be moved easily to sentence initial and final position (e.g. WH-fronting and Extra-position). They also serve as a blocking symbol for P-markers which are not well-formed, i.e., if they are not erased or replaced, the tree is thrown out.

(c) CONJ may be filled in (in the first lookup) by any of four items having the feature [+CONJ], viz., [+AND], [+BUT], [+OR], [+WH, +OR]. The latter is responsible for interrogatives and indirect questions. If [+WH OR] is dominated by only a single S, alternative interrogatives are generated. A subclass of these reduces to Y/N questions. If [+WH OR] is embedded (i.e. if more than one S dominates it), its surface representation is whether.

(d) Following Lakoff and Peters (1966) a rule of CONJ-spreading distributes the CONJ to the following S's. (Cf. CONJ)

(e) The iteration symbol (*) is employed to generate the indefinite number of conjoined S's permissible.

(f) The symbols MOD and PROP have been chosen following Fillmore (1966a).

RULE 2: MOD → (NEG) AUX (ADV)

(a) The introduction of NEG in a single position follows Klima (1964); the choice of the position is discussed in NEG. Only one NEG is allowed per simplex S; double negation has not been provided for.

(b) There are various T rules pertaining to adverbs which are tied closely to other parts of the UESP Grammar. E.g., in NEG, S-INIT. ADV. PLACEMENT, PRE-VERBAL ADV PLACEMENT, AUX-ATTRACTION. We have included those T rules although we do not have a well-motivated source of the adverbs in the PS rules. The above node ADV simply provides a source for those adverbs that the T rules mentioned, deal with.

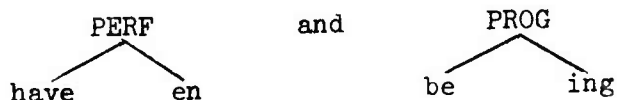
(c) In re: other items often times included under PRE: we have noted above that Q is triggered by [+WH OR] under CONJ; IMP is triggered within AUX; EMPH which is realized intonationally is not dealt with; and EMPH which is realized by clefting does not involve a trigger. (Cf. CLEFT)

RULE 3: AUX → { SJC } (PERF) (PROG)
 TNS (M)

(a) The SJC morpheme has the lexical features [+MODAL, +AFFIX]. Thus, SJC functions as a modal with respect to certain rules (e.g. AUX-attraction) and as an affix with respect to others (e.g. DO-support).

(b) In the first lexical lookup, TNS is filled in by one of two possible entries distinguished by [\bar{t} PAST].

(c) PERF and PROG are entered in the first lexicon as



respectively.

RULE 4: PROP → V (ESS) (NEUT) (DAT) (LOC) (INS) (AGT)

(a) V has two basic kinds of lexical items inserted under it: verbs [+V, -A] and adjectives [+V, +A]. In re: adjectives as verbs see CASE PLACE and Lakoff (1965).

(b) Each V has a case frame associated with it in the lexicon. I.e., each verb is subcategorized with respect to the cases which follow it.

(c) The copulative BE arises in two different ways. It is transformationally inserted when adjectives are the head of PROP. It is also lexically inserted as a member of V when ESS occurs.

(d) Verbs like feel, seem, become, etc., represent an unsolved problem with predicate adjectives (e.g. "John seems afraid") since no source is provided.

(e) Various T's operate on the cases following V, positioning them correctly and assuring the correct prepositional markers. (Cf. CASE PLACE)

(f) Although all of the cases mentioned above can indirectly dominate S's, our rules are so devised as to make this a live option only for ESS and NEUT. I.e. complements and nominalizations arise only from S's dominated by ESS and NEUT.

(g) ESS(IVE) is the case employed for predicate nominals. It is the case dominating a good teacher in "That man is a good teacher." Likewise, it dominates by Chomsky in "That book is by Chomsky" since the underlying structure proposed contains "the book is [a book by Chomsky]_{ESS}".

Although not explored to any depth, ESS might also be the source for existentials, i.e., the existential BE may take only ESS. This structure would optionally trigger the there subject placement T (not included in the UESP Grammar) if the ESS ART is [+GEN].

(h) There are some non-well-formed copulative sentences which must be ruled out though permitted by this PS rule. First, special restrictions on ESS NP's (e.g. ART's, RREL's, agreement) are considered in DET. Second, THAT-S nominalizations apparently can not occur on both sides of the copulative BE in the same sentence. Viz., "That he's gone is obvious" and "The difficulty is that John already left" but not "*That there were no clues on the scene of the crime was that the murderer had escaped without a trace." (Cf. NOM)

(i) Verb complements come entirely from NP's. (Cf. NOM)

RULE 5: (parts (a)-(g):

ESS	→	PREP	NP
		[+ESS]	[+ESS]
NEUT	→	PREP	NP
		[+NEUT]	[+NEUT]
DAT	→	PREP	NP
		[+DAT]	[+DAT]

etc. for LOC, INS, AGT, PART

(a) PART(itive) is not properly a case (see RULE 8), but it has a similar internal structure and is therefore included here. It might be preferable to introduce NP in place of PART and try to formulate a general of-insertion rule of which participatives would be a special subcase.

(b) The process of specifying PREP's under different cases is dealt with in detail in the CASE PLACE.

RULE 6:

$$NP \rightarrow \left\{ \begin{array}{cc} S & \\ D & NOM \end{array} \right\}$$

(a) Phrasal conjunction is excluded in the UESP Grammar although a hard core residue of unresolved problems is recognized. (Cf. CONJ for justification)

(b) Cycling of T rules applies to both S's and NP's. However, rather than define a "lowest NP" by some boundary symbol (as is done with S), the application of the cycle to NP's is triggered by a dominance convention. (Cf. the TRANS RULES for discussion)

(c) S is provided for complementation and nominalization. As noted above, only ESS and NEUT are the sources of such embeddings. (Cf. NOM)

RULE 7:

$$\text{NOM} \rightarrow \left\{ \begin{array}{l} \text{NOM S} \\ \text{N (NEUT) (DAT) (LOC) (INS) (AGT)} \end{array} \right\}$$

(a) $\text{NOM} \rightarrow \text{NOM S}$ is a recursive rule which if reapplied allows a series of restrictive relative clauses to stack up. If the S of NOM S is rewritten with the CONJ S S rule, a second source of a string of relative clauses is obtained. Thus, two sources, stacking and conjunction, have been allowed for multiple restrictive relative clauses.

(b) The use of NOM and the NOM S analysis is to some extent an arbitrary choice. REL presents the pro's and con's of this as well as the ART S and NP S analyses.

(c) Non-restrictive relatives (appositives) are not provided for by this rule. Although they are not discussed in this grammar, it is our general opinion that they should come from conjoined sentences. It is possible however that the ESS case might be employed after N as a source for some appositives.

(d) There is a disparity between PROP and NOM in that ESS occurs only under PROP .

(e) The parallelism of case structures in PROP and NOM provides a natural basis for an expansion of the lexicalist hypothesis (Cf. GEN INTRO). Thus, "derived nominals" like John's proposal of marriage to Mary under the present analysis come directly from NOM and accompanying cases. For example, $\text{N}[\text{proposal}]$ $\text{NEUT}[\text{of marriage}]$ $\text{DAT}[\text{to Mary}]$ $\text{AGT}[\text{by John}]$. Similarly, the ing-of constructions are not nominalizations but case structure. Note the naturalness of semantic relations with this analysis: the bleating [of the sheep]_{AGT} vs. the frightening [of the sheep]_{DAT}. (The of's in these examples do not all have the same source: see CASE PLACE.)

RULE 8: $\text{D} \rightarrow \text{ART (POST (PART))}$

(a) ART is a terminal symbol whose lexical items almost without exception are found in both the first and second lexicons. Thus, on the first lexical lookup a complex of syntactic and semantic features are inserted. On the second lexical lookup the phonological features are inserted.

(b) POST includes those items which are in many previous analyses called pre-articles.

(c) PART(itive) is the source of the partitive construction of the boys in many of the boys. That is, many of the boys comes from many boys of the boys. For justification of this particular source see DET.

RULE 9: POST → (ORD) (QUANT) (CHIEF)

(a) Since all rewrites are optional, by convention at least one must be chosen.

(b) ORD(inal) includes first, second, ... next, last, ?only and possibly some superlatives such as least.

(c) QUANT(ifier) is the source of few, some, several, many, ..., the cardinal numbers (one, two, ...), and a few words uniquely marked [+DIST], viz., all, each, either, every, and any. This disallows *the first each boy but allows the first few/two boys and each boy since [+DIST] QUANT's can not follow ORD's.

(d) CHIEF includes main, chief, principal, poor, old, upper, lower, inner, outer, ... and is in general a source for non-predicative adjectives.

September 1968

CASE PLACEMENT

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CASE PLACEMENT

I. BIBLIOGRAPHY

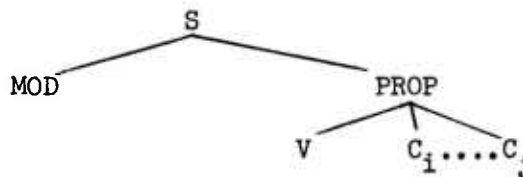
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II. INTRODUCTION

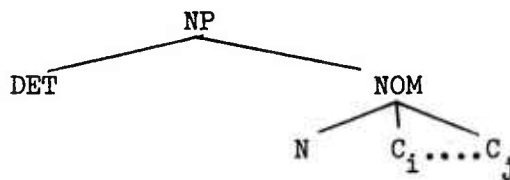
A. Aims of Case Placement Rules

Since the UESP grammar posits the deep structure of sentences as being of the form (1.a), and that of noun phrases as (1.b),

(1) (a)



(b)



where $C_1...C_j$ are CASE NODES dominating PREP NP, rules must be provided to map such P-Markers onto P-Markers containing surface subjects (with S) and optional genitives (with NP), and containing a variety of surface complement relations. It is not unlikely that these rules are somehow akin to rules that provide for such notions as TOPICALIZATION and FOCUS MARKING, but those notions in turn are related to emphasis and stress marking in complex ways that have not been adequately studied.

If the lexicalist hypothesis is well motivated, it should be true that the rules of case placement, with approximately equal ease and without an excessive number of constraints that apply only to one class or the other, derive genitive constructions with nouns and subjects with verbs, and assign appropriate prepositions to the other complements of the head item.

If the deep case hypothesis is well motivated, it should be true that the rules of case placement generate a number of ambiguous surface structures at any point where contrastive deep case markers are obliterated by these rules.

Though neither condition just stated is sufficient to validate the hypothesis, both are necessary: and both are met reasonably well, it turns out.

For our purposes, therefore, the CASE PLACE rules map semantically interpretable deep structures, in which semantic notions like AGENT and INSTRUMENT are explicitly marked, onto surface structures in which such notions are often unmarked or ambiguous, structures which closely resemble, for sentences, the deep P-Markers of Chomsky's Aspects (1965). But it seems clear that since pairs of sentences with the same deep structure, like (2),

- (2) (a) He aimed the gun at Mary.
- (b) He aimed at Mary with the gun.

- (c) He loaded the truck with hay.
- (d) He loaded hay on the truck.

do not have quite the same semantic reading, either an analysis which relates them in this way is fundamentally wrong, or else both the deep structure and some later level of structure (possibly surface) play a role in semantic interpretation; or alternatively it might be claimed that certain transformations themselves must be computed in arriving at a semantic reading. The UESP grammar has no decisive evidence to present on these alternatives; the rules are constructed as if it were true that the subtle semantic difference between (2.a) and (2.b), or (2.c) and (2.d), did not depend on deep structure, whether that is in fact true or not.

B. Prepositions as Case-Markers

A grammar which proposes that every actant is marked by some preposition in the deep structure must provide an account of the selection of the particular prepositions that characteristically appear on the surface with the various actants. In a grammar that lists a number of optional PREP-PHRASE nodes (as in Chomsky 1965), there is no basis for claiming that some prepositions are "natural" (i.e. unmarked) in the representation of a particular relation to the head, but that others have to be specially marked. In a case grammar the converse assumption is made, namely that for each possible actant there is some unmarked preposition, and that any other preposition with that actant must be lexically marked.

Put another way, a central claim of case grammar is that one can distinguish (and that there are syntactic consequences of doing so) between those prepositions that mark one of a small set of highly general relations between heads and complements — i.e. the case-markers of a small closed system of partially covert, partially overt case relationships — and those prepositions that are independent semantic primitives in one or more of the possible sets of logical, spacial, temporal, social, etc. relationships to which linguistic reference can be made. The distinction is in part "internally referring" vs. "externally referring"; that is, we can show what

the preposition after means by correlating it externally with a set of relations between events in the real world; but we cannot show what of means in phrases like his loss of the privilege except in terms of the language-internal notion "object".

The lack of external or primarily referential significance of prepositions which function to mark internal case relationships is clearest when there is a cognate phrase or sentence where the relationship is marked only by the configuration or sequencing of the words:

- (3) (a) Someone opened the door with the key.
 (a') The key opened the door.
- (b) The clown was amusing to the children.
 (b') The clown amused the children.
- (c) He loaded hay on the truck.
 (c') He loaded the truck with hay.
- (d) The door opened.
 (d') The opening of the door...

In (3.a,b,c,d) we wish to say that the prepositions mark the cases INS (with), DAT (to), LOC (on, in this instance), NEUT (of), and that the prepositions which mark cases do not bear any other (i.e. "external") semantic content.

C. General Questions about Prepositions and Case

There are at least three general questions about this proposal that can be answered at best rather diffidently, as of this time: (1) What are the motivations for claiming that some instances of prepositions mark internal case relationships rather than referentially external relationships? (2) How many such purely internal relationships must be recognized, and at what level of conviction for each? (3) Whenever the surface correlation between a small set of prepositions and deep cases breaks down, i.e. when a particular instance of a case is marked by a preposition that is in some sense atypical or unnatural, what is the price of capturing this deviation?

We have considered the first question in GEN INTRO and GENITIVE, particularly. The second question has not really been seriously considered in this grammar, since it is intimately tied to general questions of the number and structure of adverbs; and the full range of adverbial constructions has been so little investigated that we excluded it from our domain of study here. The third question is central to the case placement rules, since the prepositional marking

of a given case is subject to two kinds of variation, discussed below.

D. Variation in Prepositional Case-Marking

1. Variation that is Controlled by the Head of the Phrase

We believe that the grammatical relation between verb and NP is the same in all the examples of (4):

- (4) (a) He laughed at her behaviour.
- (b) He insisted on the answer.
- (c) He puzzled over the problem.
- (d) He referred to the solution.
- (e) He considered () the question.

The relation is that which holds between a verb and its object; the prepositions at/on/over/to and the absence of any preposition in (4.e) must be somehow equivalent. This equivalence is captured by setting up a distinction between natural or unmarked prepositions for each case, and aberrant or marked prepositions as properties of particular (exceptional) heads.

2. Variation that is Controlled by Transformational Rules

Within each group in (5) we believe the case relationships are essentially constant:

- (5) (a) Her behavior was annoying to him.
 Her behavior annoyed him.
 He was annoyed at her behavior.
- (b) He aimed at her with the gun.
 He aimed the gun at her
 His aiming of the gun at her...
- (c) They loaded hay on the truck.
 They loaded the truck with hay.

But since the prepositional marking of the constant relationships varies, depending on what item is subject or object, or whether there is nominalization or not, the rules must provide a means of holding the relationships constant while varying the prepositions (or deleting them) in regular and general ways.

E. Substance vs. Mechanics in Case Placement

It turns out to be virtually impossible at this time to motivate, satisfactorily, one way rather than another of setting up all the mechanics of the Case Placement rules. We therefore try to distinguish between those aspects of the rules which make substantive claims and those aspects that are merely devices of convenience which

cannot be particularly defended in comparison with numerous alternatives.

Some of the substantive claims embodied in these rules are the following:

(a) That some prepositions are "real" (referential, meaning-bearing, lexically inserted) while others are not; the most striking syntactic evidence of this is the behavior of the two classes with sentential objects, developed in III.A below.

(b) That certain prepositions are appropriate to certain cases, and others must be considered aberrant and therefore marked lexically as exceptions.

(c) That some classes of real prepositions, in particular the locative ones, are related to various head verbs/noun in such a way that a certain one for a given head may be deleted without semantic loss. This deletable preposition is taken to be the unmarked instantiation of the locative relation with that head.

In the development of the analysis we shall take pains to distinguish between complexity in the formulation that seems to have a substantive basis, and complexity that is attributable rather to some artifact in the general theory or in this particular implementation of it.

III. DETAILS OF THE ANALYSIS

A. Prepositions in Relation to Gerundivization

The rule of gerundivization GER is one of the earliest in the grammar (see NOM and RULE ORDER): in fact we know of no rule that must precede it. As it is formulated in NOM, it is triggered either by a rule feature, as with verbs like avoid, or by a preposition, as in a sentence like He did it without knowing why.

1. Sentential Objects of Prepositions

Consider now the kinds of sentential objects that appear with prepositions. They are of three types:

(a) Regular finite verb constructions (corresponding to PREP-N-REL), but with gerundive reduction disallowed:

- (6) (a) After the show,...
- After the show was over,...
- After the time at which the show was over,...
- *After the show's being over,...

- (b) *When the show, ...
When the show was over, ...
At the time { when } the show was over, ...
 { at which }
- *When the show's being over, ...
- (c) *While the show, ...
During the show, ...
While the show was on, ...
During the time { at which } the show was on, ...
 { when }
- *While the show's being on, ...

(b) Gerundives without expressed subjects:

- (7) (a) While (*her) reading the book, I had an idea.
(b) When (*her) reading books, I have ideas.
(c) After (*her) reading the book, I had an idea.
(d) By (*her) reading books, I get ideas.
*By (that) I read books, I get ideas.
(e) On (*her) reading that book, I got an idea.
*On (that) I read that book, I got an idea.
(f) Without (*her) working harder, I won't succeed.

(c) Gerundives with or without expressed subjects, factive:

- (8) (a) Between his hammering in the garage and her running
the washing machine, I can't get a thing done.
- Between working in the garage and running the
washing machine, I can't get a thing done.
- *Between (that) he hammers in the garage and (that)
she runs the washing machine, I can't get a
thing done.
- Between the fact that he hammers in the garage and
the fact that she runs the washing machine, I
can't get a thing done.
- Between the fact of his hammering...and of her
running...
- (b) Except for (his) having read Shakespeare, he would
be ignorant.
- Except for the fact of (his) having read...
- Except for the fact that he has read, ...
- Except that he has read, ...

- (c) In spite of (his) buying all the stock, he is not wealthy.

In spite of the fact of (his) buying,...

In spite of the fact that he bought,...

*In spite of that he bought,...

- (d) He is ashamed of (my) having bought the stock.

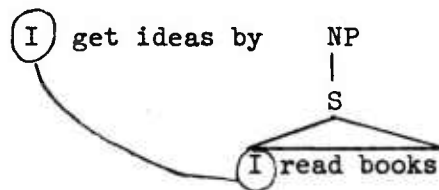
He is ashamed of the fact of (my) having bought the stock.

He is ashamed that $\left\{ \begin{array}{l} I \\ he \end{array} \right\}$ bought the stock.

He is ashamed of the fact that $\left\{ \begin{array}{l} I \\ he \end{array} \right\}$ bought the stock.

Type (a), as in examples (6.a,b,c) clearly must be analyzed either as non-prepositional (i.e. after, when, while must be taken as representatives of another category, conjunction), or as containing dummy nouns with relative clauses (as proposed in Katz and Postal 1964). Either way, the question of sentential from when governed by PREP is irrelevant. Type (c), as in examples (8.a,b,c,d), is clearly factive (see NOM); factive examples say nothing about the relation of gerundivization to the preposition because the head item fact is sufficient to permit gerundivization; but a striking constraint on the form of sentences after prepositions appears from the ungrammaticality of (8.a.iii) and (8.c.iv), namely that only gerundive form is permitted when the head noun fact is deleted. Sentence (8.b.iv) is an exception to this, and it suggests that except is not itself a preposition.

Type (b) is the revealing type: there is no grammatical example without equi-NP-deletion among these examples. Now, equi-NP-deletion is surely a rule or principle of some kind which operates between higher and lower sentences; e.g. (7.d)



We must block structures like (7) which do not have the identity necessary for equi-NP-deletion, and it is clearly necessary to assign structure to (7) which will guarantee that equi-NP-deletion is mandatory when identity exists. But EQUI-NP-DEL is a governed rule. Since the string after the comma in the examples of (7) can be virtually anything whatever and therefore need not contain the

item that governs EQUI-NP-DEL in the gerundive, it must be that the preposition governs it; and there is also no other possible item to explain why the form is gerundive, in non-factive examples; the conclusion is that a preposition requires, as the only possible form of a sentential object, a subjectless gerundive. Any apparent exception to this requires explanation.

2. Apparent Exceptions to Subjectless Gerundives as Prepositional Objects

Consider, then, the apparent exceptions. They are of two types: (a) those in which there is a deep structure factive that determines gerundivization; and (b) those which argue for the view that certain prepositions are not really present at the time of gerundivization — i.e. those which provide a justification, given the rest of this rather complex argument, for the view that prepositions are, so to speak, either "real" or "unreal", referential or case-marking, — and only the former govern gerundivization.

a. Factive

The factives were previewed in example (8) above. They constitute an extensive class of apparent exceptions. Fully discussed in NOM, it is necessary here to indicate only the outlines of gerundive derivation in factive examples:

- (9) (a) He regretted the fact that she took sick.
 (b) He regretted the fact of her {taking
 having taken} sick.
 [From (a) by FACT-GER rule]
 (c) He regretted that she took sick. [From (a) by FACT-DEL rule]
 (d) He regretted her {taking
 having taken} sick. [From (b) by FACT-DEL rule]

That is, all factive predicates (including the prepositions of example (8)) permit gerundivization of a sentential object. The factive verbs (as in (9)) pose no exceptions to the claim that subjectless gerundives are the only possible form of sentential objects of prepositions; but many factive adjectives and nouns are linked to their factive objects by of or (rarely) other prepositions, and they permit subjects. They thus constitute a very large class of apparent exceptions:

- (10) (a) She is { proud
 envious
 cognizant
 aware
 ashamed
 confident
 certain } of (the fact of) his having been a war criminal.

(b) His dismissal was $\left\{ \begin{array}{l} \text{indicative} \\ \text{independent} \end{array} \right\}$ of (the fact of)
his having engaged in political activities.

(c) He was $\left\{ \begin{array}{l} \text{amused at} \\ \text{angry at} \\ \text{amazed at} \\ \text{interested in} \end{array} \right\}$ (the fact of) her trying
to seduce him.

The factives constitute, then, a clear class of exceptions which are not really exceptions, since at the time of gerundivization by the rule that applies to examples like (8), all of the factives are protected by an intervening node fact, and they undergo a different form of gerundivization by virtue of the presence of that node.

b. Case-Marking Prepositions

The other class of exceptions apparently needs to be made for a class of predicates in which gerundivization is optional. Consider first a verb of which the same fact is characteristic:

- (11) (a) He prefers (*her) working.
(b) He prefers to work.
(c) He prefers that she work.
(d) *He_i prefer that he_i work.

(11.a) is governed by the feature [+GER]. The item prefer is marked [+/-GER] in the lexicon; if [-GER] is chosen, either (11.b) or (11.c) is the output, depending on whether the condition of coreferentiality for EQUI-NP-DEL is met, (11.b), or not, (11.c). (11.d) is the form that would emerge if EQUI-NP-DEL were not obligatory — i.e. (11.d) underlies (11.b).

So far, no problem arises since there is no preposition to block the derivation of (11.b) or (11.c) — recall our strong generalization that subjectless gerundivization is the only form permitted to the sentential object of a preposition: if there were a preposition, (11.d) would reduce to (11.a), and (11.b) and (11.c) would be impossible to generate, given this generalization.

Now consider a verb that has a marked preposition (aberrant, since verbs do not ordinarily mark "direct objects"/"neutral cases" with prepositions):

- (12) (a) John insisted on leaving.
 (b) (?) John_i insisted that he_i leave.
 (c) John insisted on her leaving.
 (d) John insisted that she leave.

It is intuitively clear that (12.a) and (12.b), and (12.c) and (12.d), are paired in every respect. But if they are, then (12.b), (12.c), and (12.d) are flagrant violations of the principle in question: (12.b) because the underlying preposition on (deleted in the surface) should have required gerundivization; (12.c) because the principle disallows a subject with non-factive gerundivization; and (12.d) like (12.b).

Suppose, however, that on is only a case-marking preposition: i.e., insist is lexically marked with the feature [+NEUT PREP on], a feature which causes [+on] to be attached to the prepositional node dominated by NEUT. Since insist is marked [+/-S], (12.d) is normal output, granted a late rule that deletes any prepositional node before that-S, which is needed to relate (12.c) and (12.d). Since on is not at the time of gerundivization a real preposition — only a feature on the head verb — gerundivization can apply exactly as to prefer (11), and other such verbs by virtue of the fact that insist is, like them, marked [+/-GER].

Alternatively, one might save the cost of this feature by inserting the preposition on optionally provided that the realization of NEUT were sentential. This would require a feature of the following approximate form:

[+/-NEUT PREP on / NEUT [NP [S]]]

That is, a rule-governing feature that not only names the rule but spells out part of the structure index of that rule. This is beyond the power that we have permitted our rule features in this grammar, since the others merely name a rule in which they apply. That is, a feature like this is considerably more powerful than one like [+GER] — which merely tags a rule, namely the rule GER — or a strict-subcategorial one like [+S], which merely states that a form can occur in the environment of a sentential object. This putative feature both tags a rule and specifies that the tag applies only if a certain strict-subcategorial condition is also met. The feature would permit the optional insertion of the preposition; if inserted, the output would be (12.a) or (12.c); if not, (12.b) or (12.d). There would of course be no need then for a rule to delete a prepositional node before that-S, since this context-sensitive feature would permit that-S only when no preposition had been inserted. This alternative is not merely notationally different from the one chosen here: it makes the substantive claim that all prepositions are "real" in that they all govern gerundivization; in terms of the

complexity of the mechanics it requires, it eliminates [+/-GER] from verbs like insist, at the cost of extending the power of feature notation to include a type of feature which we have otherwise not found necessary. But since we have no real contribution to make to the question of what the proper formal constraints on features and rules ought to be, the latter is not a serious consideration. The fact appears to be that under either alternative analysis the sentences (13) are related equally closely:

- (13) (a) He insisted on the answer.
 (b) He insisted on her answering.
 (c) He insisted that she answer.

Under the analysis we have chosen, all three have on to mark the NEUT object, and it is deleted in (13.c); gerundivization vs. that-S is determined under the lexical convention of obligatory specification for [+/-GER]. Under the alternative outlined above, the preposition on would be inserted obligatorily in (13.a), and under the convention of obligatory specification either that-S without preposition would be selected, or preposition with S would be selected and gerundivization would apply to all prepositional objects. The difference, then, is between insertion and non-insertion of the preposition. To choose between these alternatives one must find some construction in which both the preposition and the full sentential that-S are preserved. Finding this would convincingly demonstrate that the alternative we have chosen (with the preposition deleted by a late rule in He insisted that she answer) is preferable.

Such a construction exists in the so-called "pseudo-cleft" (see CLEFT):

- (14) (a) He insisted that she leave.
 (b) *What he insisted was that she leave.
 (c) What he insisted on was that she leave.

But, there are some speakers who find (14.b) satisfactory. There are, however, examples with adjectives, of precisely parallel structure and derivation where the grammatical facts are unarguable.

- (15) (a) He is afraid that she will leave.
 (b) He is afraid of her leaving.
 (c) *What he is afraid is that she will leave.
 (d) What he is afraid of is that she will leave.
- (16) (a) He is desirous that she change her makeup.
 (b) He is desirous of her changing her makeup.
 (c) *What he is desirous is that she change her makeup.
 (d) What he is desirous of is that she change her makeup.

- (17) (a) He is keen that she should win the contest.
 (b) He is keen on her winning the contest.
 (c) *What he is keen is that she should win the contest.
 (d) What he is keen on is that she should win the contest.

In these examples it is clear that pseudo-clefting cannot drop the preposition that marks the complement of the adjective. For some speakers, the same is true of pseudo-clefting with verb-prep constructs, but for others the dubious examples are all right:

- (18) (a) He agreed that she could go to Harvard.
 (b) He agreed to her going to Harvard.
 (c) (?) What he agreed was that she could go to Harvard.
 (d) What he agreed to was that she could go to Harvard.

Thus the crucial basis for decision between preposition-deletion in the examples (14.a) and (18.a), and non-insertion of the marked preposition, is tainted by dialect disagreement. But the fact that the derivation we have chosen makes (11) and (12) exactly parallel, combined with the fact that the pseudo-cleft argument is correct for some dialects and the fact that the formalism does not have to be further elaborated, convinces us that the present derivation is correct and that gerundivization with case-marking prepositions is not an exception to the general position that real prepositions take only subjectless gerundives as objects.

B. "Natural" Prepositions in Relation to Case Nodes

The assumption of this grammar is that for any given instance of an actant, there is some unmarked or "natural" preposition. Any other preposition with that actant must be lexically marked. We consider below what the natural preposition is for each of the five cases provided by the base rules of this grammar.

1. Neutral Case

Any preposition that appears in the surface structure that derives from the node NEUT in the deep structure is either (1) a marked preposition, introduced by the rule PREP-SPREAD, as in (19):

- (19) (a) He convinced her of her error.
 (b) He deprived the prisoner of his rights.

or (b) it is a preposition transformationally inserted by a general rule that makes no reference to a particular case, as in (20):

- (20) (a) The arrival of the train...
 (b) The analysis of the equation...
 (c) An appraisal of the situation...

If a prepositional node dominated by NEUT in the deep structure is not filled out by either (a) or (b), it is deleted late in the rules.

The claim of the present grammar with respect to the Neutral case, then, is that it is not naturally marked by any preposition. This is in contrast with the assumption of Fillmore (1967) that of is the natural marker of the "objective" (= our NEUT) case. Of does in general mark the relationship to a head item which is in some sense most dependent on the meaning of the head item itself: i.e. of is the least discriminating preposition, semantically. But it comes into a structure from so many different sources (see Section III.c below) that there appears to be little to gain by considering one of those sources to be direct derivation from Neutral case in a way parallel to the derivation of to for Dative, by for Agentive, etc.

2. Dative Case

The unmarked preposition for Dative is taken to be to: that is, given a node DAT dominating a PREP, and given no further specification of the form of the PREP, it will turn out (in the Second Lexicon) to be to.

Some instances of marked prepositions with the Dative case are these:

- (21) (a) He asked a question of Mary.
 (b) He prevailed upon John to answer his question.

There is a close relation between Dative Case and Directional Adverbs which is not captured in the present analysis:

- (22) (a) John sold the house to Bill.
 (b) Bill bought the house from John.

In (22.a) to Bill would be analysed here as Dative. But in (22.b) from John would either be an instance of a case which we have not included (say, "Source") or it would be an adverb of some unexplored type. Yet there are several verb pairs which seem to embody the same to/from relationship: teach/learn, give/receive, lend/borrow. Perhaps all of them should be analyzed as taking Directional Adverbs with to/from (and appropriate switching between the alternate verbs and their subjects/objects). An alternative possibility would be to consider the "receiving" member of each pair as taking from as a marked preposition for Dative case. These remain unexplored problems for the present grammar.

3. Locative Case

With the Locative there is no single unmarked preposition: all locative prepositions have semantic content that includes more than the feature [+LOCATIVE], whereas the preposition to as Dative marker is claimed to be empty. Thus any locative preposition has to be looked up in the First Lexicon.

There is, however, a distinction between marked and unmarked locative prepositions. Consider verbs of the class load, smear, ... which occur in sentences like (23):

- (23) (a) He loaded/smeared the truck with mud.
 (b) He loaded/smeared mud on the truck.

If the truck in (23.a) is an underlying LOC, as it appears to be in (23.b), we should not permit (23.a) to be related, for example, to (23.c):

- (23) (c) He loaded/smeared mud under/over/beside/in/
 throughout...the truck.

Clearly there is a single preposition — on, in (23.a) — which is somehow lost in the transition between the deep structure and the surface structure of (23.a), not just any one of the many prepositions that could occur in the LOC of (23.c).

On the basis of this deletability argument some single locative preposition is taken as the unmarked one for each head item (verb, noun, or adjective) which allows objectivalization of the locative NP and consequent deletion of the preposition. It is not clear just what the best mechanism to provide for this desired result is. Our device is a rule-governing feature $[+_{[P_i]}^{LOC} \rightarrow OBJ]$ where $[P_i]$ is some specified preposition that is deletable with that particular head item. This device is adequate to account for the facts outlined above; but there is a further set of observations that render the device wholly inadequate. Consider the locative phrases of (24):

- (24) (a) He loaded hay {on the truck.
 {in the cargo hold of the 707.}
- (b) He loaded {the truck
 {the cargo hold of the 707} with hay.
- (c) He stays {at the hotel.
 {in the room.}
- (d) They got {on the bus.
 {in the car.}

(24.c,d) illustrate merely the fact that prepositional selection depends on a sort of intersection of both the verb that precedes the preposition and the object that follows it. It is not obvious how this is best stated even with adverbs in intransitive sentences like (24.c,d); in (24.a,b) we are dealing with a similar selection problem which here has the consequence that the "disappearing"

preposition -- i.e. the unmarked one, in the sense of (23) -- cannot be indicated as a feature on the head item at all, unless we could devise a way to indicate the semantic class of the appropriate object at the same time (e.g. in (25.a) the preposition is on with an open-top container, in with a closed container, or some comparable statement). We leave this problem open; the solution of it requires a device for stating selection restrictions across several categories simultaneously.

Overlooking the inadequacy of the interim solution provided by these rules, there is a further problem in determining which preposition is the marked one. The verb cross, for example, can be argued to have an unmarked LOC preposition over:

- (25) (a) He crossed the bridge/river.
 (b) He crossed over the bridge/river.

That is, (25.a) and (25.b) seem to be good paraphrases of each other. But if the verb cross is considered more closely, it appears to contain two notions: "move" and "across". Thus (26.a) is a paraphrase of (25.a):

- (26) (a) He went across the bridge/river.

One can further argue that "cross over" in (25.b) contains somewhat more than just the notions "move" and "across". Thus (26.b) is perhaps anomalous:

- (26) (b) He crossed over the Hudson River in the Holland Tunnel.

but (26.c) is normal:

- (26) (c) He crossed/went-across the Hudson River in the Holland Tunnel.

Such rather tenuous arguments suggest that the deletable preposition with cross is across, even though (26.d) is sufficiently infelicitous that one might argue that prepositions such as this one are obligatorily deletable:

- (26) (d) He crossed across the bridge/river.

4. Instrumental Case

The unmarked preposition with the instrumental case, provided that the object is concrete, is taken to be with:

- (27) (a) He shot the criminal with a gun.
 (b) He flew the plane with a transmitter.

With abstract objects, other prepositions appear in phrases which in this grammar are considered to be instrumentals:

- (28) (a) He was amazed at her behavior.
 (b) He is interested in studying architecture.

These are marked by a feature [+INS PREP P_i] on the head item. This preposition-feature is spread onto the appropriate node by one of the early rules of the grammar (Section IV.A below). For justification of the view that sentences like (28) contain instrumentals at all see NOM.

5. Agentive Case

The unmarked preposition is taken to be by. By is, however, also necessarily inserted by the passive rule, since not only deep structure agents are marked as surface agents:

- (29) (a) Mary received the package.
 [DAT]
 (b) Mary received the guest.
 [AGT]
 (c) The package/guest was received by Mary.

We do not claim, however, that by NP (in the agentive interpretation) derives only from the passive rule. Such a claim is reasonable enough for verbs, in view of the fact that the Active Subject Placement rule always moves an agentive, if there is one, into surface subject position: i.e. it can never remain behind, as it were, and so we don't get sentences like (30):

- (30) (a) *The door opened by the janitor.
 (b) *The city destroyed by the enemy.

But with nouns heads, there is no obvious motivation to claim that nominals with by-phrases have undergone passivization unless the object has been moved to the front (genitivized):

- (31) (a) The opening of the door by the janitor...
 (b) The destruction of the city by the enemy...
 The city's destruction by the enemy...

In order to provide for the agentive-marking by in (31.a) and (31.b.i), where there is no independent justification for claiming that there has been passivization, we assume that the unmarked agentive preposition is by just as the unmarked dative is to and concrete instrumental is with.

C. "Unnatural" or "Aberrant" Prepositions in Relation to Case Nodes

As noted earlier, variation among prepositions to mark any given case relationship is of two types: that which is governed by the head and inserted directly from a lexical feature that appears with the head, and that which results more indirectly from the application of various transformations. We consider these two types of variation in more detail below.

1. Lexically Marked Prepositions

The examples of (4) are repeated below for convenience:

- (4) (a) He laughed at her behavior.
- (b) He insisted on the answer.
- (c) He puzzled over the solution.
- (d) He referred to the solution.

We take these all to be examples of aberrant prepositional marking of NEUT. We have seen other examples like (19),

- (19) (a) He convinced her of her error.
- (b) He deprived the prisoner of his rights.

where of marks a NEUT with a verb, which we take to be aberrant in view of the fact that objects in general are not prepositionally marked with verbs (He gave her the money, He hit her, He threw the ball, etc.). We have also seen instances of DAT marked by prepositions other than to:

- (21) (a) He asked a question of Mary.
- (b) He prevailed upon John to answer his question.

and instances of INS marked by prepositions other than with:

- (28) (a) He was amazed at her behavior.
- (b) He is interested in studying architecture.

We have no instances of AGT marked by any preposition other than by. LOC is peculiar in that the notion of marked/unmarked has to be defined somewhat differently: whatever preposition is deletable when objectivalized is taken as the natural locative for that head (and object, where that is relevant), and all others are taken as marking some non-implicit relationship -- i.e. as bearing a full semantic load like any other item entering the sentence from the First Lexicon.

The question is how these marked prepositions actually enter into structures under the rules proposed here. They are all marked by a feature of the following general form:

(32) [+C_i PREP P_j]

e.g., [+NEUT PREP on], [+DAT PREP of], [+INS PREP at]...

These features govern an early rule, PREP SPREAD, which takes the feature from the head and attaches it to the appropriate prepositional node. This feature is then used in the Second Lexicon to provide the phonological form of the marked preposition.

In general the lexically marked prepositions correspond to what Lees (1960) and others have called VERB-PREPS -- i.e., verb-plus-preposition functioning as a unit verb. The only evidence that they are units, other than some not-entirely-clear evidence from passivization, is precisely the intuition that the preposition that is required is not really that preposition in its ordinary relational sense. The prepositions generally (though with some exceptions that have to be lexically marked) remain constant as markers of the corresponding noun heads: laugh at/laughter at, insist on/insistence on, refer to/reference to, etc. They differ from particles with verbs in being non-separable and in several other respects most carefully studied by Fraser (1965). Particles are left without comment in this grammar because getting into them would involve the grammar in the explicitly excluded domain of adverbs.

The non-entirely-clear evidence from passivization is the fact for most speakers that the passives (33), where the preposition is part of a verb-prep unit, are better than those of (34), where the preposition is part of an adverb:

- (33) (a) The document was referred to frequently by the dean.
 (b) The retreat was insisted on by the general.
 (c) The problem was puzzled over by a whole generation of youth.

- (34) (a) *America was traveled to by the Pilgrims.
 (b) *The bed was slept on by Goldilocks.
 (c) *The city was flown over by a squadron of P-38's.

The evidence is not clear, however, since the examples of (33) are considered ungrammatical, or at least marginal, by some speakers. Taking the evidence as viable, we have structured the rule that makes a surface structure object from some deep structure actant in such a way that the preposition of such verb-preps as those of (33) comes to be attached to the verb, which is not true of the prepositions of non-objectivalized actants such as a locative with an intransitive verb.

2. Prepositions neither Natural nor Marked

We consider now certain instances where the preposition that appears on the surface is neither the one that is to be expected on the basis of its deep case nor one which we have reason to mark as exceptional. We are concerned only with prepositions, meeting either of these negative conditions, which are still within the restricted case-frame of this grammar: i.e. prepositions in adverbs (temporal, manner, means, etc) which are outside the case-frame (or perhaps within it but not dealt with here) are not now under discussion.

a. The Rule of OF-INSERT

Given these restrictions, it turns out that we are really discussing instances of the preposition of which are not already explained by naturalness or marking. Consider the following examples:

- (35) (a) The performance amazed the child.
 (b) The performance was amazing to the child.
 (c) The amazement of the child at the performance.

If we assume that the child is DAT in all three, how are we to account for the prepositional node being represented as \emptyset , to, and of? In (35.a) it seems clear and paradigmatic that objectivalization has occurred, and that this process always erases unmarked prepositions (though it retains marked ones, such as on in insist on). In (35.b), with an adjective head, it seems again clear and paradigmatic that there has been no objectivalization (that process being blocked with adjective heads, since there is no possibility of passivization), and the deep case preposition shows up as to, correctly. In (35.c) we have a violation of the paradigm established so far: we have of with a dative, and no basis for calling it a marked preposition since it is unmarked with the corresponding adjective amazing. Furthermore, this one is representative of a large class: amuse, annoy, interest, irritate, stimulate,... But in (35.a) we note that the preposition was erased by the objectivalization rule with the verb; if we let the objectivalization rule apply to nouns in precisely the same way it applies to verbs we will derive (35.d) as a structure intermediate between (35.c) and (35.e):

- (35) (d) The amazement -- the child -- at the performance...
 (e) The amazement -- DAT[PREP the child] -- INS[PREP
 the performance]

In (35.d) we have a structure which is clearly ungrammatical, and something must be done to fix it up.

There is, we suggest, a rather general rule of English which inserts of between N and NP anytime other rules happen to generate such a string (provided that they are immediately dominated by a common node). There are examples like (36),

- (36) (a) The city of London...
 (b) That fool of a man...

which seem to require this same rule, though since we are not entirely clear about such examples as (36) we merely point them out and suggest that our justification of the OF-INSERT rule that is now under discussion may go beyond the kinds of arguments we are considering.

It is possible that the OF-INSERT rule as we formulate it could be better formulated as a general PREP-REPLACE rule, in view of instances where of replaces either the natural or the marked preposition:

- (37) (a) He aimed at her with a gun.
 (b) He aimed a gun at her.
 (c) His aiming at her with a gun...
 (d) His aiming of a gun at her...

But such instances are precisely those where the objectivalization rule would erase the preposition anyway, so that it may as well be assumed (though nothing substantive hinges on it) that the preposition is deleted in the same way with both noun and verb heads under the objectivalization rule, and then of is inserted under a separate subsequent rule in the environment $NP[...N \quad NP]$. The rule must not apply to adjective heads in view of the fact noted in example (35) that the natural preposition remains unchanged when the head is an adjective. With adjectives like afraid, fond, desirous, sick, envious, cognizant, aware, ashamed, indicative, independent, guilty, confident, tired, certain, sure, the preposition of must be taken as the marker of the neutral case. Since of is not elsewhere necessarily the marker of the neutral case, it is most easily inserted by a redundancy rule of roughly the form (38):

- (38) [+ADJ] → [+NEUT PREP of]

Rule (38) must be specified in such a way that it applies only if the adjective is not already marked for some other preposition on neutral case (see LEX).

To recapitulate: we have seen one set of examples where of must be inserted by a transformation that operates after the prepositional node has been erased by the rule of objectivalization. This rule, OF-INSERT, applies only to nouns, and it may be more general than it needs to be for the immediate purpose here. It does not apply to adjectives or verbs; but the insertion of of with adjectives is general and unmarked, by virtue of a redundancy rule. Since the rule applies only to the output of the objectivalization rule, and since that rule can only apply to a head item with at least two actants, it is necessarily true that the rule will come into effect only when there are two or more actants in the case-frame.

b. The SINGLE-ACTANT-OF Rule

In addition to the violations of preposition-expectation dealt with by the OF-INSERT rule above, there is a class of violations that appear to have an equally general property of a rather different sort from the preceding. Consider these examples:

- (39) (a) The shooting of the hunters... [AGT]
 (i.e. the shooting which the hunters
 did to something or someone)
 (b) The knowledge of the student... [DAT]
 (c) The intelligence of the rats... [DAT]
 (d) The leg of the table... [LOC]
 (e) The aiming of the gun... [INS]

In (39.a), where we would expect *The shooting by the hunters, by is replaced with of -- even though by would be retained if an object were present (cf. The shooting of the lions by the hunters). In (39.b) and (39.c), where it is clear that we are dealing with underlying DAT and not derived possessives (i.e. not like that hat of John's), if for no other reason than the fact that they are grammatical with a definite determiner and no relative clause (*the hat of John's, the hat of John's that I admire; but The knowledge of the student was insufficient), and where ...of the student clearly is not the result of objectivalization (i.e. the intended sense is "knowledge that is inside the head of the student" -- the only kind of interpretation of (39.c) that is possible), we must explain why *The knowledge to the student is ungrammatical.

Our principle will be this: Where there is only a single actant at the time of application of this rule (which is necessarily early -- it must precede at least the rules of OBJ-DEL and AGT-DEL which delete the objects and agents, respectively, of He sells for a living and The book reads easily), that actant's natural preposition is replaced by of.

To defend this principle we must consider the numerous examples where the "natural" preposition is retained, to see whether they are real or only apparent violations of the SINGLE ACTANT principle. Consider (40) and (41):

- (40) (a) The book by Chomsky/Chomsky's book.
 (b) The book {^{on}_{about}} syntax by Chomsky.
 (c) Chomsky's book {^{on}_{about}} syntax.

(d) {The } {A(n)} {poem
article
story
photo
portrait
statue
song
opera} ({on
of
about}) NP) by someone.

(41) (a) {The } {A(n)} {insult
injury
promise
rebuke
gift
affront
stimulant} to someone (by
from NP)

In (40.d), where the head nouns in some sense contain or imply relatively specific objects (e.g. a statue of someone), it is not unreasonable to maintain that their case frame in the lexicon is of the form (42):

(42) [+ ___ NEUT AGT] e.g. story
or
[+ ___ DAT AGT] e.g. statue

and further to maintain that whenever only the AGT appears on the surface it is the result of OBJ-DEL, a governed rule which deletes the objectivized NEUT or DAT of these case frames provided that the object is indefinite (or perhaps specified as some particular object: He drinks too much may be argued to derive not from He drinks some beverage too much but rather from something like He drinks intoxicating beverages too much). The parallel argument for (40.a-c) is weaker, but at least books are obligatorily about something in the same way that statues are of someone and stories are of or about something or someone.

Similarly, in (41) there is a strong sense that an agent has been deleted in the derivation -- that it is present in the deep structure and is very much a part of the semantic interpretation. To clarify this claim, consider the two logically possible case frames for a noun like insult:

(43) (a) [+ ___ DAT (AGT)]
(b) [+ ___ DAT AGT]

The only difference is the optionality of AGT. If AGT is marked as optional, there should be two possible readings of the sort we get with open:

- (44) (a) The door opened.
 [+ _____ NEUT (AGT)] with AGT not selected.
- (b) The door was opened.
 [+ _____ NEUT (AGT)] with AGT selected, then PASSIVE,
 then AGT-DEL.

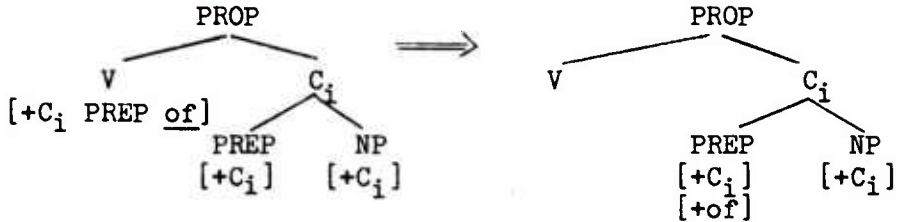
Since there is only one possible reading with the items of (41), we conclude that the correct case-frame for them is (43.b), and that the rule of INDEF-AGT-DEL operates to delete the by-phrase at some time after the SINGLE ACTANT-OF rule has operated, thus leaving -- on the surface -- a single actant that is marked still by its "natural" preposition rather than being replaced by of.

IV. THE RULES OF CASE PLACEMENT

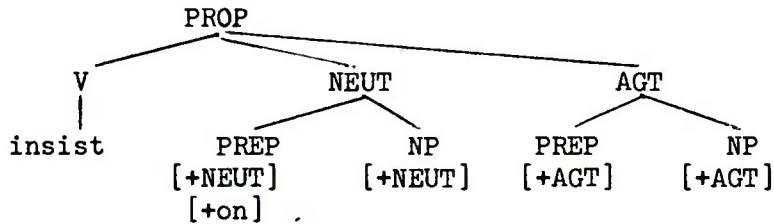
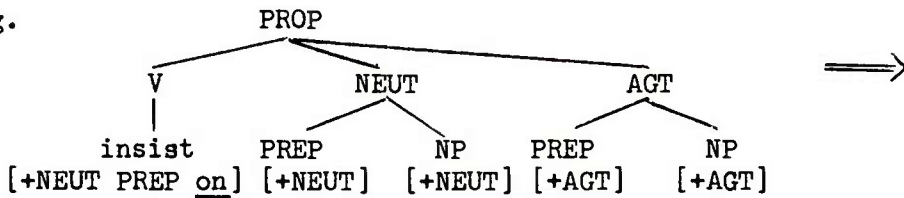
A. PREP SPREAD

This rule applies within the case frame only. It provides for the selection of aberrant case-marking prepositions on the basis of features on the head. The only major rule of the grammar that must precede it is GER (non-factive). The insertion of of on the actants of adjectives that are not otherwise marked for PREP SPREAD is accomplished by a redundancy rule which in effect requires that unless they are otherwise marked for this rule they enter into it as if they were marked for of. That is, the redundancy rule examines the adjective, determines whether it has a feature of the form [C_i PREP prep]; and if it does not, it redundantly attaches the feature [+NEUT PREP of]. Thus sick of, fond of, afraid of, tired of, sure of, certain of, guilty of, envious of, cognizant of, ... acquire this redundant feature; but preferable to, keen on, doubtful about, generous with, ... are marked in the lexicon for the appropriate preposition to be spread by this rule. There are other devices which might be used to guarantee of with adjectives of this type, -- e.g. the of-INSERT rule might be extended to them, arbitrarily, but to do so would require ad hoc deletion of the PREP node which is non-ad-hoc-ly deleted with V and N by the objectivalization rule, since that in turn is motivated by passivization (clearly irrelevant to adjectival predicates). Or, e.g., the PREP SPREAD rule itself could be modified to spread either marked prepositions, or if none were marked then to spread of with adjectival predicates. But the present device is notationally simpler, and exactly equivalent in content: it claims that of is the unmarked preposition with adjectival predicates, which is the only substantive fact that any of these alternatives would capture.

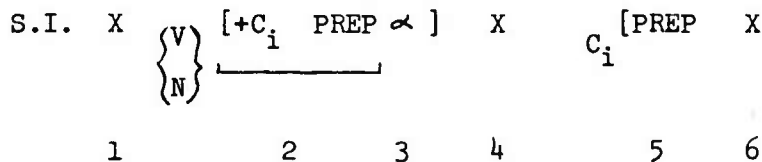
1. Schematic of PREP SPREAD



e.g.



2. The Rule of PREP SPREAD



S.C. Attach 3 to 5, Erase 2-3

3. Notes on the Rule

The preposition of the feature "2" above is extracted and attached (rather than the entire feature) to the appropriate prepositional node, as illustrated in the schematic given above under section 1. The convention of the second lexicon, then, is to specify the

phonological form of such prepositions given only that the single feature [+on], [+of], [+with], etc., is within the feature matrix of the node in question. The second part of the structure change which erases the exception feature that governs the rule in the first place has no purpose except to unclutter the tree somewhat. It can probably be stated in some much more general way: e.g. a convention imposed on all rules that an exception feature is erased after doing its work -- i.e. after governing some rule. The difficulty with such a convention is that one would have to take care to provide that the feature was relevant in only one rule; in the face of that hazard, we have erased features within each rule when we were sure they were no longer needed -- and we have not been consistent in erasing them even under those circumstances.

4. Examples

See in particular III.C, examples and arguments that the prepositions from this rule and other case-marking prepositions and transformationally-inserted ones are intrinsically distinct from prepositions that are lexically inserted. Further examples of spread prepositions:

- (46) (a) He asked Mary for money. [for = marked NEUT]
- (b) He laughed at her discomfort. [at = marked NEUT]
- (c) He is familiar with the problem. [with = marked NEUT]
- (d) His fondness for wine shows in his weight.
 [for = marked NEUT]
- (e) He asked a question of her. [of = marked DAT]
- (f) He agreed with her to leave early. [with = marked DAT]
- (g) He was amazed at her doing it. [at = marked INS]

B. OBJECTIVALIZATION: MARKED (abbreviated M-OBJ)

The "marked object" features are of the following sorts:

- (a) [$C_i \rightarrow$ OBJ]

e.g. [INS \rightarrow OBJ] "He aimed the gun at her"
INS
c.f. "He aimed at her with the gun"
[DAT \rightarrow OBJ] "He gave her the money"
DAT
c.f. "He gave the money to her"

- (b) [$\begin{matrix} \text{LOC} \\ \text{[prep]} \end{matrix} \rightarrow$ OBJ]

e.g. [$\begin{matrix} \text{LOC} \\ \text{[up]} \end{matrix} \rightarrow$ OBJ] "He climbed the mountain"
LOC
cf. "He climbed up the mountain"
≠ "He climbed down the mountain"

(c) [LOC
[prep] → OBJ, NEUT]
[prep]

e.g. [LOC
[on] → OBJ, NEUT] "He smeared the wall
[with] LOC
with paint
NEUT

cf. "He smeared paint on the wall"

[LOC
[of] → OBJ, NEUT] "He drained the bucket of water"
[from] LOC NEUT

cf. "He drained water from the bucket"

The general rule of objectivalization [Section C below] is that the first actant to the right of the head is objectivalized, provided there are at least two actants. The three classes of exception features above are optional (i.e. either plus or minus may be chosen in the lexicon) for most items on which they appear; the rule itself is governed by one of these features, and like all governed rules is obligatory. The features which govern the rule appear mostly on verbs. Since adjectives do not permit passivization, and since they always retain the preposition inherent to them, there is no reason to expect them to permit objectivalization at all, and the rules here are so structured as to exclude adjectival predicates. But with nouns, which do permit passivization (cf. The city was destroyed by the enemy, The city's destruction by the enemy), and which do not always retain the preposition inherent to them (It is amazing to the man, but The amazement of the man, ...), we are surprised, a priori, to find few instances of nouns marked by these exception features (even though the general rule of objectivalization, U-OBJ below, includes verbs and nouns equally). It appears to be correct, however, that verbs and nouns are distinct with respect to these exception features. Consider:

- (47) (a) He gave the money to John.
(a') His giving of the money to John...
- (b) He gave John the money. John was given the money.
(b') *His giving of John the money... *John's giving of the money.

From examples like (47) we conclude that the feature [+DAT → OBJ] is characteristic only of verbs. Note that this feature is excluded only as an exception feature on nouns: it is perfectly normal to have DAT objectivalized under the U-OBJ rule that objectivalizes the first actant:

- (48) (a) The church canonized the saint.
 (b) The church's canonization ^{DAT} of the saint...
 (c) The saint's canonization by the church...

Features which govern this rule with actants other than dative do, however, appear on nouns, so that M-OBJ does apply:

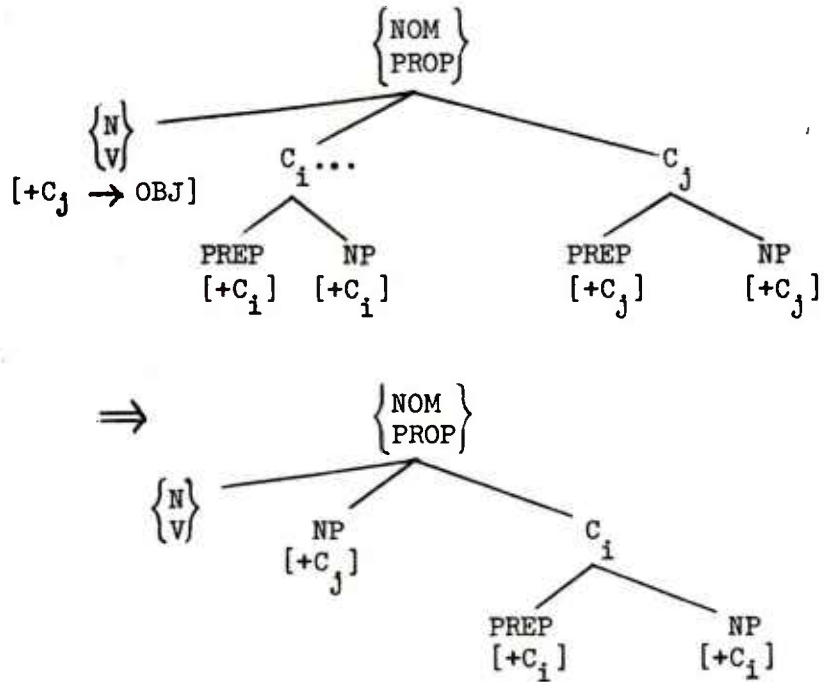
- (49) (a) He aimed the gun at her.
 (a') His aiming ^{INS} of the gun at her...
 (b) The gun was aimed at her.
 (b') *The gun's aiming (of) at her...

It is clear from (49.b') that such examples do not passivize, which removes one of the motivations for the objectivalization rule; but it is equally clear from (49.a') that they do not retain the inherent preposition but instead pick up the generalized of that typically shows up after objectivalization, via the N-NP of-INSERT rule. The question is, what blocks passivization? If it is only the general fact that non-animates do not prepose comfortably (see GEN), then there is no more problem in blocking passivization of these than of blocking non-animate pre-posing in general. It is difficult to test, since none of the exceptional items--those marked for M-OBJ--are to be construed comfortably with animate nouns, which are the only ones that comfortably prepose as genitives. The question remains unanswered in this grammar: but to avoid generating unwanted passives like (49.b') the PASS SUBJ rule is blocked for nouns in the presence of marked prepositions: this immediately excludes all the possible examples (aim at, fill with, empty of, swarm with, ...) of M-OBJ by the same device that excludes passivization on nouns where the preposition is aberrant: insistence on, compliance with, puzzlement over, as in *The rules' compliance with by the students: while allowing The city's destruction by the enemy, where there is no marked preposition.

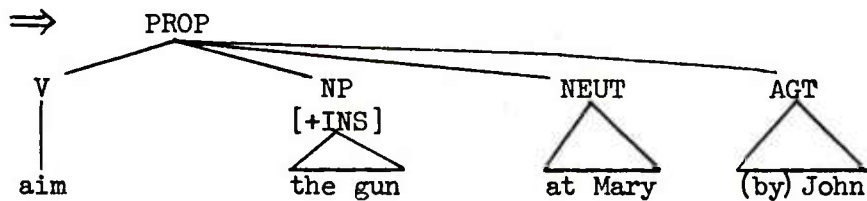
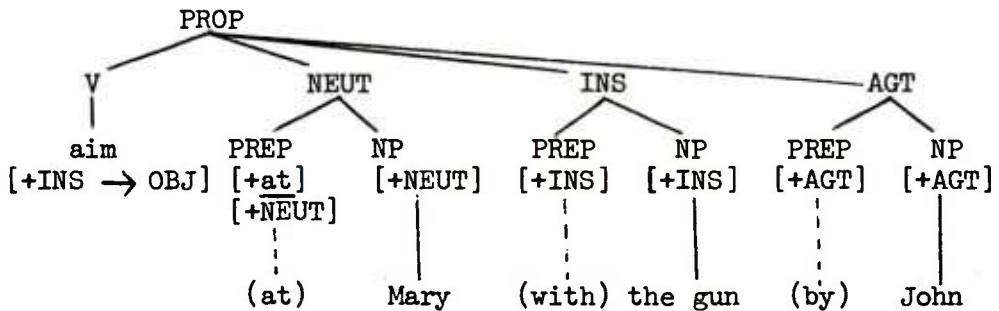
Since the first actant, when there are two, is either NEUT or DAT, exception features like those illustrated above must be provided for all instances where any other actant is objectivalizable, or where DAT is objectivalized even though it is not first actant.

The rule M-OBJ is disjunctively ordered with U-OBJ, since if M-OBJ applies then U-OBJ must not apply to the output.

1. Schematic of M-OBJ.



e.g.



"John aimed the gun at Mary" ACT SUBJ

"The gun was aimed at Mary by John" PASS SUBJ

2. The Rules of M-OBJ

(a) S.I. X $\left\{ \begin{matrix} V \\ N \end{matrix} \right\}$ $\xrightarrow{[+C_j]} \text{OBJ}$ C_i [PREP NP] X C_j [PREP NP] X $\left\{ \begin{matrix} \text{PROP} \\ \text{NOM} \end{matrix} \right\}$ X

1 2 3 4 5 6 7 8 9

Condition: 2 through 8 are a constituent.

S.C. Attach 7 as right sister of 2; delete 6-7.

(b) S.I. X $\left\{ \begin{matrix} V \\ N \end{matrix} \right\}$ $\xrightarrow{[+C_j]} \text{OBJ, NEUT}$ $\left[\begin{matrix} \text{NEUT} \\ [+Prep] \end{matrix} \right]$ [PREP NP] X C_j [PREP NP] X $\left\{ \begin{matrix} \text{PROP} \\ \text{NOM} \end{matrix} \right\}$ X

1 2 3 4 5 6 7 8 9

Condition: 2 through 8 are a constituent.

S.C. Attach 7 as right sister of 2;
 Attach [+PREP] (from 2) to 3;
 Delete 6-7.

3. Notes on the Rule

The two forms of the rule differ only in that (b) has built into it essentially a delayed PRED-SPREAD--it requires a marked preposition for the NEUT just in case the indicated actant has been objectivalized. This provides for two polar classes that are semantically related in such a way as to suggest that this syntactic peculiarity of theirs ought to be a general property derivable somehow from their semantic similarity: namely the "privative" and "additive" verbs:

- (50) (a) He emptied water from the bucket.
- (a') He emptied the bucket of water.
- (b) He loaded hay on the wagon.
- (b') He loaded the wagon with hay.

The reason these kinds of examples are not ordinary marked neutral prepositions, handled by the PREP SPREAD rule, is that they pick up the aberrant preposition only if the LOC is objectivalized; their form is unmarked in (50.a) and (50.b) when the LOC is not objectivalized.

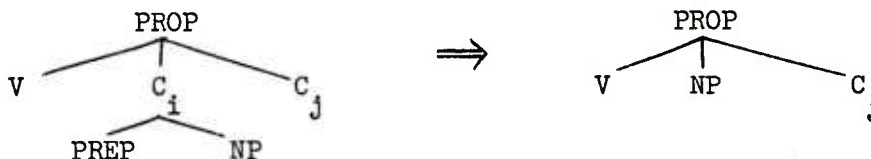
4. Examples

See the beginning of this section, IV.B.

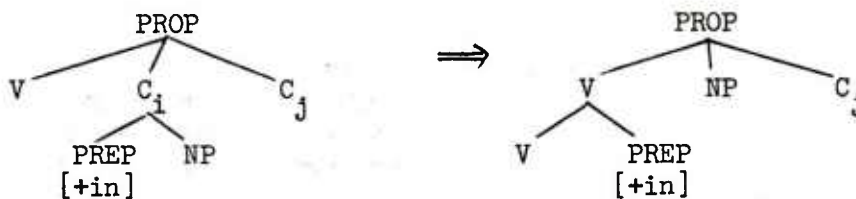
C. OBJECTIVALIZATION: UNMARKED (U-OBJ)

Since the exceptions in general are handled by M-OBJ, it is to be expected that U-OBJ should be a relatively clean rule. It simply takes the first actant, wipes out its dominating case node, and either erases its PREP node (if it is unmarked--i.e., if no feature [+PREP] has been spread to it by the PREP-SPREAD rule), or attaches its PREP to the head verb by Chomsky-adjunction.

1. Schematic of U-OBJ



or:

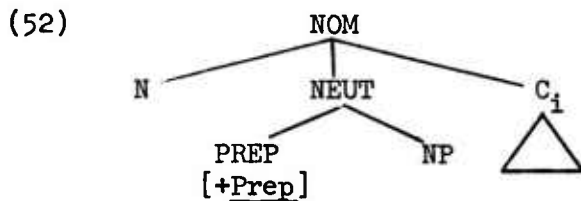


Whether this rule should also provide for Chomsky-adjunction of aberrant prepositions to nouns, making insistence on parallel to insist on, is an open question: it is fairly clear that Chomsky-adjunction with the verb is necessary to provide for the correct passivization (The new program was insisted on throughout the South), and it is certainly clear that passivization must be blocked with the corresponding nouns (*The new program's insistence on throughout the South). But since passivization has to be blocked anyway for nouns with marked prepositions in the case frame (see discussion under IV.B), it costs nothing more to

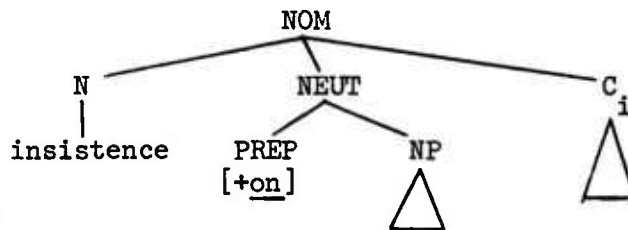
block these by the same device within the PASS SUBJ rule. For some speakers all passivization on heads with marked prepositions, either nominal heads or verbal heads, is at best marginally grammatical--i.e. such speakers reject (51) throughout:

- (51) (a) (?)The proposal was referred to by the chairman.
 (a') *The proposal's referral to by the chairman...
 (b) (?)The privilege was insisted on by the general.
 (b') *The privilege's insistence on by the general...
 (c) (?)The problem was puzzled over by the whole class.
 (c') *The problem's puzzlement over by the whole class...

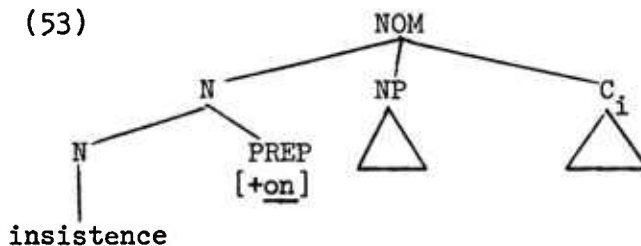
It is not worthwhile to make much over this: either the U-OBJ rule can exclude nouns with marked prepositions from its domain, thereby guaranteeing they will not passivize since they will have the structure (52) at the time of passivization;



e.g.



or the PASS-SUBJ rule can exclude them even though they have the structure (53), because they contain a marked preposition which is the basis for excluding some of the output of M-OBJ anyway:



Since the PASS SUBJ rule has other idiosyncrasies (e.g. some verbs like have, resemble, want... must be excluded by an exception feature), it is on the whole less capricious to assign this one to the passive rule also.

2. The Rule of U-OBJ

(a) S.I. X $\left\{ \begin{array}{c} V \\ N \end{array} \right\} C_i [PREP NP] X C_j X$
 1 2 3 4 5 6 7

Conditions: 1) 2 through 6 are a constituent;
 2) if 5 is null and 6 = LOC, the rule does not apply.

S.C. Chomsky-adjoin 3 as right sister of 2;
 Attach 4 as right sister of 2;
 Erase 3-4.

(b) S.I. X $\left\{ \begin{array}{c} V \\ N \end{array} \right\} C_i [PREP NP] X C_j X$
 1 2 3 4 5 6 7

Conditions: 1) 2 through 6 are a constituent;
 2) if 5 is null and 6 = LOC, the rule does not apply.

S.C. Attach 4 as right sister of 2;
 Erase 3-4.

3. Notes on the rule

The two forms of the rule (a) and (b) differ only in that the preposition of the first actant is a marked preposition in (a) and therefore Chomsky-adjoined (as in insist on), whereas in (b) the preposition of the first actant is unmarked and therefore deleted under objectivalization. The rule applies equally to true verbs, to adjectives, and to nouns--though only the (a) version of the rule will in fact ever apply to adjectives because they all have (by virtue of a redundancy rule) a prepositional marking of their object. As noted in the discussion of M-OBJ above this is not a substantive claim about adjectives: it would be equally possible to except adjectives from this rule and allow the of to be inserted by the N-NP of-INSERT rule. The only substantive claim in either mechanism is that of is the unmarked preposition with adjectives.

It is worth pointing out that X-6 guarantees the rule will apply only if there are at least two actants in the PROP or NOM. Otherwise all intransitive verbs would have their subjects pass through this rule and indeed would be able to get surface subjects only via the passive subject rule. Also NP's like the intelligence of the rats would have the single actant objectivalized and undergo of-INSERT in a way that is counter-intuitive: see III.C.2.b above.

4. Examples

Objectivalized examples have been scattered throughout the discussion up to this point. Some typical instances of the (a) version of the rule are seen in (54):

- (54) (a) He insisted [^]on an answer right away.
NEUT
- (b) His insistence [^]on the correct answer was a pain
NEUT
in the neck.
- (c) He is pretty keen [^]on golf.
NEUT
- (d) I'm very fond of golf. [Unmarked ADJ Prep = of]
NEUT
- (e) My fondness for golf gets me into trouble.
[Marked N Prep = for]

Typical instances of the (b) version of the rule are seen in (55):

- (55) (a) The church finally canonized the saint.
DAT
- (b) I never did hit the ball.
NEUT
- (c) The church's canonization of the saint...
DAT
[of by subsequent rule of of-INSERT]
- (d) I like golf.
NEUT
- (e) I like Mary. [Note that the object of like is not
NEUT dative, though animate in this example, because it is not obligatorily animate. Objects which are necessarily animate are dative.]

D. PASSIVE SUBJECT PLACEMENT (PASS-SUBJ)

Most verbs and nouns in the lexicon are marked +/- for the feature PASS--that is, the passive rule is optional for most head

items. But it is marked minus for verbs like have, marry, resemble, and also for some nouns like marriage, resemblance. Consider:

- (56) (a) John married someone.
 (b) John's marriage to someone...
 (c) Someone married Jane.
 (d) Jane's marriage...

Clearly (56.a) and (56.b) are proper paraphrases; but (56.d) is not a paraphrase of (56.c)--the genitive comes only from the underlying agent, not the underlying dative, with this noun. This is not a general fact about what can genitivize, but rather a particular constraint on the noun marriage, since other nouns allow genitivization of the object (i.e. passive) or of the agent, equally:

- (57) (a) The city was destroyed by someone.
 (b) The city's destruction...
 (c) A portrait of Smith by Jones...
 (d) Smith's portrait by Jones...
 (e) Jone's portrait of Smith...

Of course many nouns--probably most concrete nouns and the majority of abstract nouns that are not verb-related--do not have lexically-defined case frames, and the questions raised by nouns like destruction or portrait do not arise with them. That is, nouns like tree, street, linguistics, ivy, microphone, glass, ... [a random list of nouns, intended to represent the great majority of all the nouns in the language] do not imply any particular actant, whereas portrait implies object and agent, and verb-related nouns like destruction imply (usually) the case-frame of the corresponding verb.

As developed in GEN, there are conditions which appear to constrain the genitivization of actants in nominal constructions, but these appear to be functions not of constraints on the subject placement rules but rather of general output conditions on length and animateness of preposable genitives. The conditions are extremely complex, involving such questions as whether the NP to be genitivized is [+DEF] or [-DEF], as in (58):

- (58) (a) *The girls were disturbed by a man's sudden appearance on the balcony. [GEN 207.a]
 (b) The girls were disturbed by the sudden appearance of a man on the balcony. [GEN]07.b]

and the conditions are complicated further by considerations of pronominal form (see especially the discussion of this point in GEN, centering around the examples 211-216). The most crucial condition--and even it cannot in fact be more than partially formulated here--

has to do with the animateness feature of the genitivized noun. While it is true that such strings as (59) are well-formed, those of (60) suggest that inanimates ought to be blocked in genitivization, especially where it results from the passive rule:

- (59) (a) The city's destruction...
 - (b) The city's destruction by the enemy...
 - (c) The building's demolition...
 - (d) The building's recent demolition by the wrecking crew...
 - (e) The sentence's construction left little to be desired.
-
- (60) (a) *Our house's picture... Picture of our house...
[NEUT -- Passive]
 - (b) *The table's leg... The leg of the table...
[LOC]
 - (c) *Linguistics' aim... The aim of linguistics...
[Possessive? Dative?]
 - (d) ?The book's author... The author of the book...
[NEUT -- but no AGT]

The examples of (59) have in common the fact that the head nouns are obviously verb-related--i.e. they are classic instances of the type of noun which would be transformationally, not lexically, derived by e.g. Lakoff (1965) and Lees (1960). The examples of (60) have in common the fact they are at least not obviously to be derived transformationally under any theory (i.e. picture, leg, aim, and author, though all of these except leg could be derived from verbs with a little pushing). Quite possibly, the difference is a relatively surface matter of the following sort: the nouns of (59) all contain an obligatory actant NEUT in their case frames (i.e., they all have to have objects). No similar fact obtains for the examples of (60). Another set of verb-related nouns which require DAT objects (e.g. canonization, assassination, murder, rejuvenation, promotion, execution, ...) clearly are well-formed with preposed genitives (i.e. preposed by virtue of the passive rule):

- (61) (a) the saint's canonization... the canonization of the saint...
- (b) Kennedy's assassination... the assassination of Kennedy...
- (c) the prisoner's execution... the execution of the prisoner...

From (59) and (61) one might well conclude that the constraint, at least for passive subject placement, could be stated on the basis of presence or absence of obligatory object in the case frame (whether NEUT or DAT then being irrelevant for this purpose). But further examples render this suggestion unpromising:

- (62) (a) *the settlement's negotiation by Harriman...
 the negotiation of the settlement by Harriman...
 (b) *her resignation's acceptance by the dean...
 the acceptance of her resignation by the dean...
 (c) *the sound's pronunciation by a foreigner...
 the pronunciation of the sound by a foreigner...
 (d) *the offer's refusal by the professor...
 the refusal of the offer by the professor...
 (e) *the food's distribution by America...
 the distribution of the food by America...

Certainly the nouns negotiation, acceptance, pronunciation, refusal, and distribution are as closely verb-related, and imply objects as strongly, as the nouns of (59) destruction, demolition, construction.

By and large, however, it is difficult to get agreement among informants on the question of the viability of (59), (60), (61), and (62). The most discriminating speakers seem to reject all of them except (61) and--against any reasonable rule we can infer--also (59.a,b). Ignoring the city's destruction, a constraint which appears to be close to the truth is one which limits passive subject placement on nouns to objects which are deep structure datives: i.e. (61). One would then like to make the generalization that the well-known though imperfect constraint of preposed genitives to animates is redundant on the constraint of datives and agents to animates. But such a generalization immediately fails in the face of evidence that there can be animate neutrals which prepose under the passive rule as easily as datives. Portrait and statue are restricted to animate objects--i.e. to Datives; whereas photograph and picture take any concrete object. But, as the examples of (63) show, preposing is determined by animateness:

- (63) (a) the portrait of the queen/*tree (by Titian)...
 (b) Titian's portrait of the queen/*tree...
 (c) the queen's/*tree's portrait by Titian...
 (d) the photograph of the queen/tree (by Eichner)...
 (e) Eichner's photograph of the queen/tree...
 (f) the queen's/*tree's photograph by Eichner...

An additional set of observations about simple intransitives makes it pointless to consider trying to incorporate the animateness condition on genitivization into the general case placement rules: namely the fact that the animateness condition holds even with intransitives, though imperfectly there also:

- | | | |
|----------|--------------------------------|---------------------------------------|
| (64) (a) | John's late arrival... | ?The late arrival
of John... |
| (b) | *The package's late arrival... | The late arrival of
the package... |
| (c) | ?The train's late arrival... | The late arrival of
the train... |

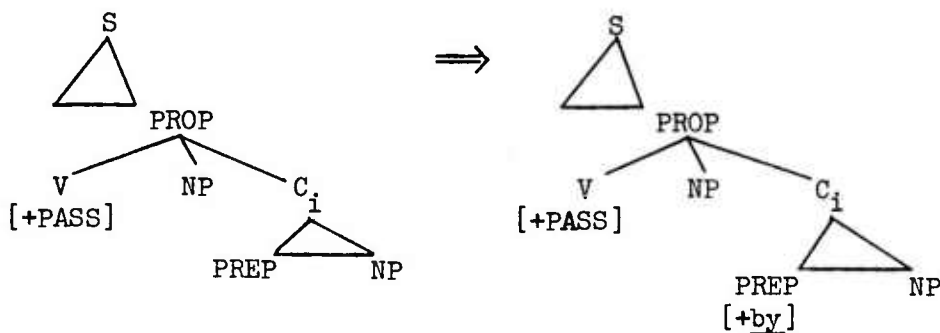
The fact that (64.a.ii) is highly suspect indicates that still other considerations--proper/nonproper, nominal/pronominal, ...--enter into the preposing constraints that set the limits of genitivization. For further discussion see GEN.

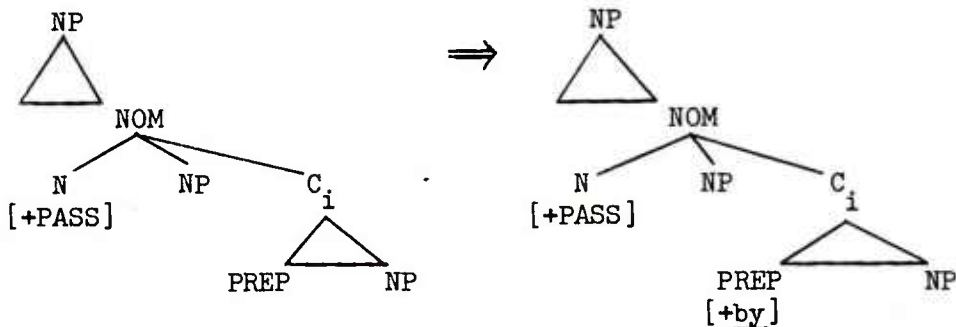
The PASS-SUBJ rule, as formulated below, simply ignores the problems outlined above, thereby generating many genitives that are rejected by most discriminating speakers (though for every type it is possible to find a few examples that are not especially unhappy). The rule is broken into two parts. The first part--which is all that has to take place with noun heads--replaces the inherent preposition of the last actant with the preposition by. This first part of the passive rule is motivated by the fact that by can mark the agent or the instrument with nouns (the destruction of the city by the enemy, the destruction of the city by fire) and with verbs it can mark instruments, datives, or agents as passive agents:

- | | | |
|----------|---|-------|
| (65) (a) | He was surprised <u>by the news</u> . | [INS] |
| (b) | The answer was known <u>by the dunce</u> . | [DAT] |
| (c) | The house was bought <u>by the broker</u> . | [AGT] |

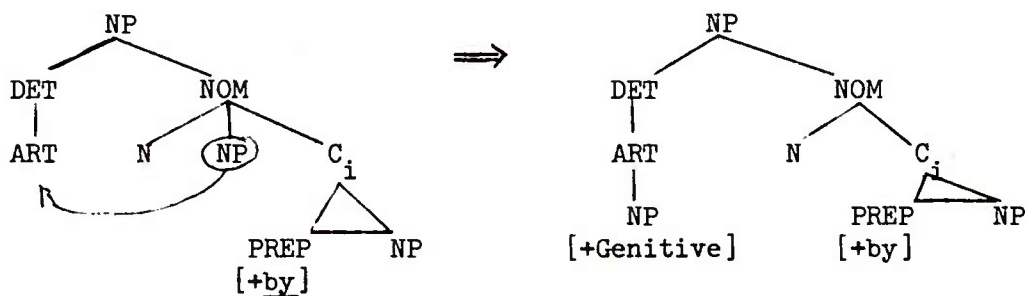
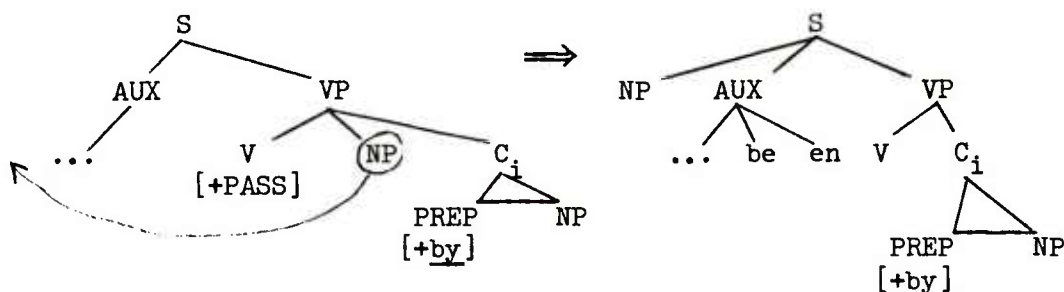
The second part of the passive rule performs the familiar operation of moving the object into subject and inserting the appropriate auxiliaries with the verb.

1. Schematic of PASS-SUBJ-BY-PLACE





Schematic of PASS-SUBJ



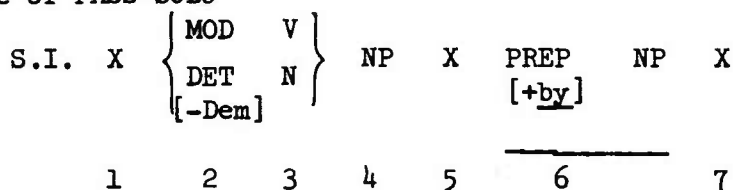
2. Rule of PASS-SUBJ-BY-PLACE

S.I.	X	$\left\{ \begin{matrix} N \\ V \end{matrix} \right\}$	NP	X	PREP	NP	X
	1	2	3	4	5	6	7

Conditions: 2-6 is a constituent;
 2 has the feature [+Pass];
 If 2 = N, then 5-6 is immediately dominated by
 AGT or INS.

S.C. [+Prep, by] replaces features on 5.

Rule of PASS-SUBJ



Conditions: 3-6 is a constituent;
 If 3 = N, the rule is optional;
 If 3 = V, the rule is obligatory.

S.C. Attach 4 as left sister of 2;
 If 3 = N, attach the feature [+Genitive] to 4;
 If 3 = V, attach be + en as right daughters of 2;
 Erase original 4.

3. Notes on the Rules

The condition of PASS-SUBJ-BY-PLACE that 2-6 is a constituent guarantees that the rule will apply to a single VP or NOM, and it also guarantees that 5-6 will be the last prep-phrase, the last actant, of the constituent. The corresponding condition performs the same function in PASS-SUBJ. The rule can easily be formulated to accomplish the same ends without this condition, by imposing appropriate brackets on the structure index. The condition that the head has the feature [+Pass] guarantees that the rule will apply only to those verbs and nouns which permit passive, and that it will apply only in those instances where under the convention of obligatory specification in the lexicon the choice of [+Pass] has been made (and, of course, it guarantees passive for those heads that require the passive: see LEX). The feature [+Pass] need not be mentioned in PASS-SUBJ, since the structure index is unique by virtue of the feature [+by] in 6, which can come only from the first half of the passive rule.

It is assumed that strings like the city's destruction (without an expressed agent) are derived from the city's destruction by someone by a rule of Indefinite Agent Deletion. Alternatively, the agentive node could be made optional for nouns in the rule. There are fairly strong motivations for the former alternative, however: in particular, unless this assumption is made, an explanation of the failure of the SINGLE-ACTANT-of rule to operate in examples like (41) above (insult to, injury to, etc.) must be sought, though its failure is a natural consequence of this analysis that derives passives without agents by deletion of indefinite agents. This analysis is semantically correct, also: nouns and verbs with passive subjects do imply the existence of agents.

Since adjectives are always (redundantly) marked [-Pass], they can never fit the structure index of the passive rules even though ADJ is dominated by V and has all the appropriate actants which would otherwise enable it to meet the structure index of the passive rules.

4. Examples.

See above, (57) - (65).

E. ACTIVE SUBJECT PLACEMENT (ACT-SUBJ)

Just as there are irregular objects (see IV.B above for discussion of "marked objects"), there are certain verbs which must be marked as permitting the subjectivalization of actants which are in some respects irregular. The general rule is that the last actant other than a locative becomes surface subject in the active:

- (66) (a) \overleftarrow{V} -- NEUT : The package arrived.
The book fell.
The door opened.
- (b) \overleftarrow{V} -- NEUT -- DAT: The boy knows the answer.
Mary received the package.
John inferred that he was wrong.
- (c) \overleftarrow{V} -- NEUT -- DAT -- AGT : John threw the ball to
Mary.
John gave the answer to
NASA.
- (d) \overleftarrow{V} -- NEUT -- INS : The key opened the door.
The knife cut the salami.
- (e) \overleftarrow{V} -- NEUT -- INS -- AGT : John opened the door
with the key.
John cut the salami with
the knife.
- (f) \overleftarrow{V} -- NEUT -- DAT -- INS -- AGT : John opened the
door for Mary
with the key.
John cut the salami
for Mary with the
knife.
- (g) \overleftarrow{V} -- DAT -- AGT : The church canonized the saint.
The criminal murdered the girl.

- (h) $\overset{\curvearrowright}{V} \text{ -- DAT} : \text{ The criminal died.}$
 John is certain.

A locative actant may optionally be present in any of the examples of (66) (or any of the other possible case frames) without affecting subject placement. But with a few subclasses of verbs, the locative can be subjectivalized:

- | | | |
|----------|--------------------------------------|--|
| (67) (a) | The pool filled with water. | Water filled the pool. |
| (b) | The garden swarmed with bees. | Bees swarmed in the garden. |
| (c) | The pool contains water. | *Water contains in the pool. |
| (d) | The floor was slimy from algae. | It was slimy on the floor from algae. |
| (e) | The battlefield was gory with blood. | It was gory on the battlefield with blood. |

Some verbs, it appears from (67.c), must be marked as having the locative subject obligatorily: i.e., in the format developed earlier for irregular objects, contain is marked [+LOC → SUBJ], and to be sure the semantics is preserved, it should probably be additionally specified that the locative preposition is in. With any other preposition the structure would have to block. The verb fill (67.a) is interesting in that the locative must either objectivalize or subjectivalize: that is, the locative cannot appear on the surface with a preposition (*In the pool filled with water, *Water filled in the pool). The adjectives of (67.d) and (67.e) appear to differ from the verbs only in that subjectivalization is optional: if the option is not taken, then the DUMMY-it-INSERT rule must apply--the same rule that applies to examples of extraposition, like It surprised her that he could be right.

Some adjectives appear to require a feature [+NEUT → SUBJ]:

- (68) (a) The music is familiar to him.
 (b) He is familiar with the music.

But the usual adjective case-frame does not have this exception feature:

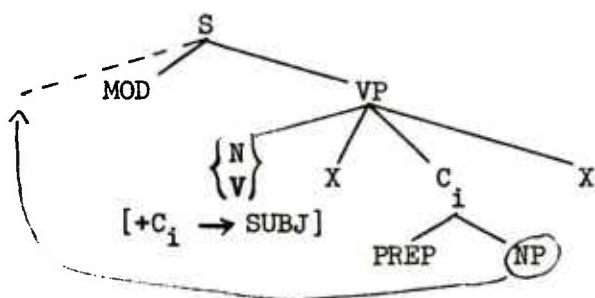
- (69) (a) He is acquainted with the music.
 (b) *The music is acquainted to him.
 (c) He is certain of the answer.
 (d) *The answer is certain to him.

Certain classes of nouns--in particular, meteorological nouns, part-whole nouns, and measure nouns--must be marked to permit LOC subject placement (see discussion in GEN), because of examples like:

- (70) (a) The weather in Chicago. - Chicago's weather.
- (b) The edge of the table. - the table's edge
- (c) The height of the mountain - the mountain's height

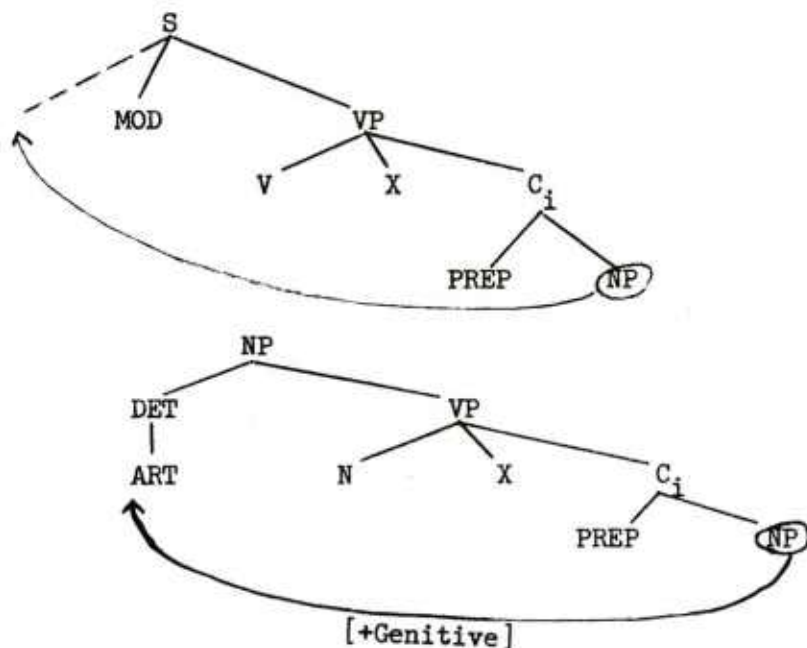
Because of these apparently exceptional items--verbs like fill, adjectives like familiar, and nouns like edge--the ACT-SUBJ rule must be set up, like objectivalization, in two forms: marked (governed, exceptional), and unmarked.

1. Schematic of M-ACT-SUBJ



The intention in the diagram above is to represent with the X's the fact that the actant which becomes subject need not be either first or last: that it is plucked out of a string of actants by virtue of the exception feature specified on the head.

Schematic of ACT-SUBJ (unmarked)



2. The Rule of M-ACT-SUBJ

S.I. X $\left\{ \begin{array}{cc} \text{DET} & \text{N} \\ \text{MOD} & \text{V} \end{array} \right\}$ X C_i [PREP NP] X X

1 2 3 4 5 6 7 8

Conditions: 3-7 is a constituent;
3 has a feature of the form [+C_i → SUBJ]

- S.C. (a) If 3 is V, attach 6 as left sister of 2;
delete 5-6.
(b) If 3 is N, attach 6 to 2 with the feature [+Genitive]
added to it;
delete 5-6.

3. The Rule of ACT-SUBJ

S.I. X $\left\{ \begin{array}{cc} \text{MOD} & \text{PROP}^{[V]} \\ \text{DET} & \text{NOM}^{[N]} \end{array} \right\}$ X C_i [PREP NP] X $\left\{ \begin{array}{c} \text{PROP} \\ \text{NOM} \end{array} \right\}$ X

1 2 3 4 5 6 7 8 9

Conditions: (a) Obligatory if 3 = V, or if 3 = N and 5 = DAT;
(b) 8 = LOC, or is null;
(c) 5 ≠ LOC.

- S.C. (a) If 3 is V, attach 7 as left sister of 2;
delete 5-6-7
(b) If 3 is N, attach 7 to 2 with the feature [+Genitive]
added to it;
delete 5-6-7.

4. Notes on the Rule

In the conditions stated for M-ACT-SUBJ, the first condition ("3-7 is a constituent") asserts no more than what the labeled brackets PROP [] and NOM [] assert. That is, X-7 is the last constituent of PROP or NOM. It is unnecessary to mark the brackets in this rule, since the constituent 5-6 can be any one of several, and is selected by a feature on the head. But in ACT-SUBJ the brackets are needed, in order to specify that the last actant other than a locative in that constituent NOM or PROP is the one which can/must be moved to surface subject. That is, condition (b) that X-8 is LOC or null has the consequence that 6-7 is the last actant, or the last actant but one, and that one is LOC. Thus He resides in Chicago

is generated from resides DAT he LOC in Chicago. The condition (c) that 5 ≠ LOC prevents the rule from applying to the same string if 8 is taken as null--that is, the two conditions (b) and (c) together guarantee that LOC will be subjectivalized only if the head contains a feature which brings the marked version of this rule into operation.

It is probably somehow correct that condition (a) is needed for nouns in the rule ACT-SUBJ, that the rule is obligatory if 3 = N and 5 = DAT, though it creates some problems. It is motivated by these kinds of examples, discussed further in GEN:

- (71) (a) his cleverness with his hands...
- (b) *the cleverness of him with his hands...
- (c) John's interest in music...
- (d) *the interest of John in music...
- (e) John's arm...
- (f) *the arm of John...

It is not hard, however, to find counterexamples to the claim that subjectivalization is obligatory:

- (72) (a) the monstrous nose of Cyrano de Bergerac...
- (b) she fell into the arms of her lover...
- (c) the main interest of the Chancellor in the space problem is...

Such examples stand, for the moment, unaccounted for by the present rules.

It is clear that if passive and active are to be derived directly, as in this grammar, from a common underlying deep structure, they must be ordered as in these rules. Passive can follow active only if it is stated as switching both agent and object, whereas in this grammar "agent" can be either a deep structure actant which remains untouched by the passive rule, or a surface structure phrase assigned to some other actant by the passive rule. The motivation is partly semantic, namely that the interpretation of (73.a) is quite distinct from that of (73.b):

- (73) (a) The packages were received DAT by Mary.
- (b) The guests were received AGT by Mary.

The traditional passive rule would, however, capture this distinction with verbs, since verbs have obligatory subject placement. In the corresponding nominal construction, such is not the case:

- (73) (c) *the package's reception by Mary...
- (d) the reception of the package by Mary...
- (e) the guests' reception by Mary...
- (f) *the reception of the package's by Mary...

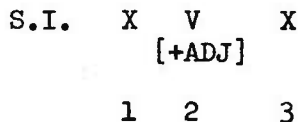
(73.c) is ungrammatical; to account for this fact, subject placement must be disallowed with inanimate objects (the problems thus entailed are discussed above under IV.C and in GEN). But (73.d) is viable, with passive agent but without subject placement (i.e. genitivization). To derive (73.d) from an underlying active would require that (73.c) be taken as an intermediate stage and thereby enormously complicate the description of the genitive, which under the present analysis, while it has problems, at least has no problem in stating the conditions of post-positioning of genitives. If (73.c) were taken as intermediate to (73.d), then special conditions would have to block (73.f). In short, given the initial framework of case grammar of genitivization from deep structure cases, it seems unavoidable that passives not be treated as formed from actives, but rather that both be formed by quite similar rules from a common deep structure.

F. MINOR RULES

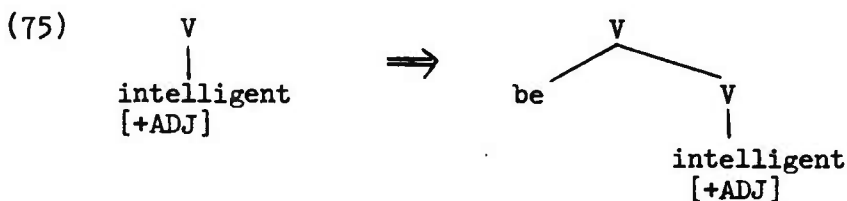
There are several minor rules, and minor conditions on major rules, that have been deliberately omitted (quite apart from many such that have been inadvertently omitted) because they are not clear enough to formulate with precision. Some of these are outlined below.

1. On the PASS-SUBJ rule, there needs to be some condition which will block its operation just in case the object NP is a subjectless infinitive (see discussion in NOM II.B.3.a).
2. There needs to be some rule to insert be just in case the main predicate is an adjective. Such a rule would be of approximately the form below:

(74) BE-insertion



S.C. Chomsky-adjoin be as left sister of 2.



3. The SINGLE-ACTANT-of rule (III.C.2.b above) must precede SUBJ-PLACE and INDEF-AGT-DEL in order not to generate injury of someone from injury to someone (by someone). The rule is approximately of the form:

(76) SINGLE-ACTANT-of

S.I.	S	{	V	}	PREP	NP	X
	1	2	3	4	5		

Condition: 2-4 is a constituent.

S.C. Attach [+of] to 3 and delete features other than [+PREP] on 3.

The condition guarantees that the prepositional phrase will be the only actant on the head, which is apparently the only condition needed if the rule is ordered correctly.

4. The of-INSERT rule is quite possibly of much broader utility than that to which it is being put here. It is used here (see III.C.2.a above) only to insert the preposition of after any preposition whatever has been deleted under the conditions of objectivalization with noun heads. It may well need to be invoked to account for of in strings like (77):

- (77) (a) the vice of intemperance
- (b) the age of senility
- (c) the city of Paris

The formulation of the rule below, which includes (77), is almost certainly too loose, too broad, for serious use:

(78) of-INSERT

S.I.	X	N	NP	X
	1	2	3	4

Condition: 2 and 3 are immediately dominated by NOM.

S.C. Attach _{PREP}[of] as left sister of 3.

August 1969

DETERMINERS

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DETERMINERS

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II. ANNOTATION AND DISCUSSION OF ISSUES

A. ART

1. Sources of Articles

(a) Outline of Positions

There have been a number of sources suggested for the items which we call Articles.

(i) A Category Plus a First Lexical Lookup

In Chomsky (1957) and Lees (1960) articles were the final re-write of a terminal category. They were thus handled exactly like other lexical items.

Again in (1965) Chomsky treated articles much the same as other lexical items. They both were inserted into appropriate base P-markers from the lexicon. There was now the added refinement of matching features of the terminal node with those of the lexical items, however.

The deficiencies of this position will be taken up momentarily.

(ii) Segmentalization from Features on the Noun

Postal (1966) has suggested that articles (and pronouns as a subset) be represented in the deep structure as syntactic features on the head noun. There is no such category as ART in the phrase structure. The features relevant to articles are in part inherent to the noun (e.g., [ANIMATE], [MASC], etc.) and in part determined by T rules such as pronominalization, reflexivization, and definitization. Relatively late in the derivation "segmentalization" rules apply to each NP copying out the features needed for articles. The phonological shape of the items matching these sets of features is then attached in a late lexical lookup.

Rosenbaum (1968) adopts Postal's position in toto. Bach (1967) adopts such a position also but does not elaborate on it. Perlmutter (1968) also holds that the node ART has no motivation but he obtains only the definite article from features on the noun, the indefinite article coming from the numeral one.

(iii) A Category Plus a Second Lexical Lookup

The UESP has adopted a position midway between the first two proposals. In this view the PS contains a terminal category ART into which only syntactic features are inserted on the first lexical lookup. Following various T's which change the feature composition of the ART's (cf. REL, PRO, and NEG), a second lexical lookup provides the phonological shape of the reconstituted ART.

Fillmore (1966d) postulated such a view stating that features such as [DEF] and [DEMONS] are inherent while [PLURAL], [COUNT[, [MASC], [HUMAN], and [ACCUS] are added by feature-modifying T's.

(iv) Subsources

The sources which are considered in the above three sections have not been accepted universally for all types of articles. Some particular articles have been assumed to come from sources not yet mentioned.

Perlmutter (1968) has suggested the category numeral as source for the indefinite articles. Baker (1966) contends that indefinite articles derive from existential sentences. Annear (1967) and Robbins (1962-3) have proposed that the definite article be transformationally derived. We will consider each of these views under the sections relating to them specifically.

(b) Justification of the UESP Position

We argue first for the validity of a feature source for articles (common to positions b and c above). Then we will give motivations for having a node ART.

From the metatheoretical viewpoint, a feature analysis simplifies greatly the description of syntactic phenomena which are indicated by articles in English. The fact that some languages express definiteness by suffixes, others by proclitics, others by both, and still others by choice of sentence types or ordering, can be captured in one metatheory if features are employed.

Analyzing the articles into component features allows this and that to be treated as articles sharing with the the feature [+DEF] but differing with the with respect to the feature [\pm DEM(onservative)] and differing from each other only by a single feature (which we have arbitrarily called [\pm FAR]). It also allows which and what to be regarded as deep structure articles differing from other articles by the feature [+WH] and from each other by the feature [\pm DEF]. Without such an analysis, a much larger number of otherwise unmotivated nodes would be needed in the deep structure. Other features utilized in the article system are discussed below in III.B.1.-2.

The decision as to whether a node ART is desirable is not so clear-cut. In favor of segmentalization, Bach (1967b, p. 464) has argued that (1) many of the T rules involving nouns are simpler if the DET is omitted until late in the T's and (2) the absence of an article with some proper names and generics argues against an obligatory node ART. Bach's point re: the non-universality of the modes of manifestation of concepts expressed in English by articles is a third argument against a node ART for English (if one assumes the quest for a universal base valid).

The counter-argument to Bach's first point is that there are other T's which refer to ART and these are simplified by the presence of a constituent or node ART. All such T's under Postal's segmentalist position would require reference to a set of features which characterize articles. Under Rosenbaum's approach (1968) a feature [+ART] identifies the segmentalized item so that later T's could refer simply to that feature. In answer to Bach's second contention, it is quite simple to have certain sets of features be realized phonetically as zero.

It should be noted that one important consequence of the segmentalization of ART's would almost certainly be the abolition of the D(eterminer) node. This follows from the fact that all of the determiner constituents other than the article are optional: hence if the article itself originates as a bundle of features on the noun, the whole D constituent would be optional. But then in order that all segmentalized ART's end up with the same constituent structure, if ART is added under D when D is present, the segmentalization rule would have to add a D node in just those cases where D was not chosen in the base.

It may be possible to find strong support for the claim that D is not a deep structure category, but just a notational abbreviation for a sequence of separate categories all dominated directly by NP. However, since we have not found any independent motivation for giving up the D node and are not aware of any alternative proposals which include other parts of the determiner besides the article without using a D node, we prefer to keep the D node and therefore have additional reason not to introduce articles by segmentalization.

2. Indefinite

We have noted above the various proposed sources of articles. Practically all analyses, regardless of the source posited, have treated the definite and indefinite ART's in the same way.

Perlmutter (1968) has proposed a fundamental dichotomy between definite and indefinites which is based on their having different origins. The is introduced as a feature on the NP (reminiscent of Postal). A(n) is a surface form derived from the deep structure numeral one. Thus, in contrast to some other views which oppose the and a in the deep structure, the and a are entirely independent of each other in the deep structure under Perlmutter's approach.

Perlmutter has given an impressive list of eleven contexts which a and one have in common. One of these suggests they are in complementary distribution. Three indicate contexts in which they both occur but the definite article does not. Five indicate contexts in which neither a nor one occur but the definite article does. The other two are contexts in which neither a, one (nor the) may occur. From these Perlmutter has tried to show that the restrictions on a are stated quite simply assuming that one underlies it. He also indicates some of the rules which provide for the appearance of both a and the (e.g., one is reduced to a when it is an unstressed proclitic; the is obligatorily attached to an NP which has a RRel).

Much, but not all, of Perlmutter's evidence is accounted for in our grammar by a rule (see PRO) which derives one from a (in the same contexts where my → mine, etc.). The two chief objections that we have to his analysis are the following:

(i) Within his analysis, the feature [DEF] is optional, and so are the numerals (which can appear with count nouns only). But then it would appear difficult, if not impossible, to state that with a singular count noun it is obligatory to choose at least one of them. This objection at least counterbalances his claim to have a non-ad-hoc explanation of the distribution of a/an.

(ii) If the numerals occur only with count nouns (which is central to his argument), then problems arise in relating numerals to other quantifiers. Many behaves in all relevant respects like a numeral, but it differs from much only by its co-occurrence with count vs. mass nouns. The similarity between many and much cannot be captured without including much in the same category, but this of course would refute the claim that that category occurs only with count nouns. Similar problems arise for quantifiers like some which occur freely with both mass and count nouns.

There are parts of Perlmutter's evidence for which we have no account, but these seem relatively minor compared with the preceding arguments. They include the following facts:

(i) Only numerals and a can be the first part of a fraction.

(ii) Only one and a can occur in certain idioms, e.g. not ___ bit. Other evidence which he adduces is either accounted for on other bases in our grammar or else considerably more indirect and debatable.

Since Baker's (1966a) paper is a preliminary version of his (1966b) thesis, we shall consider them together.

Baker makes three major claims in (1966b). (1) All indefinite NP's have existential sentences as their source. (2) There is a large, well-defined set of definite NP's in which the definite article is a marker of the presence of an existential sentence, in the same or previous tree, containing the same noun. (3) [-SPEC] articles arise when certain embedding rules delete previously existing reference markers.

Baker's primary motivation for his claim that indefinites are to be derived from existential sentences is to illuminate the difference between [\pm DEF] with respect to sentence negation. We have crucial differences of opinion regarding the data which Baker bases his argument on. For example, we see no difference in grammaticality between (1) and (2), the second of which he considers ungrammatical.

- (1) (a) The halfback didn't run with the ball.
 [Baker, (1.b) p. 14]
 (b) John didn't see the salesman. [Baker, (2.b) p. 14]
- (2) (a) A halfback didn't run with the ball.
 [Baker, (1.d)]
 (b) John didn't see a salesman. [Baker, (2.d)]

Baker contends that (3.a,b) are negations of (4.a,b), and that (2.a,b) are not. In our analysis, however, (4.a,b) are considered ambiguous with the indefinite article either [\pm Specific] (see below and also NEG, with (2.a,b) the negation in the case of [+Specific], and (3.a,b) the negation for [-Specific].

- (3) (a) No halfback ran with the ball.
 (b) John saw no salesman or John didn't see any salesman.
- (4) (a) A halfback ran with the ball. [(1.c)]
 (b) John saw a salesman. [(2.c)].

Baker's claim that some definite articles are transformationally derived will be taken up in the following section on definites, as will the claim re: specific under the Specific section (II.A.5).

In (1966a) Baker himself raises some problems for his position on indefinites. It should also be noted that a crucial technical problem is present in his T which is supposed to convert existentials into indefinites, namely, the T does not insert an ART.

Sentences with more than one indefinite NP would seem to raise other problems for Baker's analysis. Thus, a sentence like (5) either has no source (since endless recursion might be required with the existential S's) or a number of sources (since various stackings of existentials would be possible).

- (5) A man gave a man a nickel.

Under Baker's analysis, existentials themselves arise from a special PS rule.

Baker notes that Sørensen (1959) and Lees (1961) have also suggested an existential source for indefinites.

3. Definite

(a) Orientation

Views on definiteness are widely divergent. Some writers (e.g., Smith, 1961b) have given the impression that the comes solely from lexical insertion. Later authors have contended that all instances of the arise transformationally (e.g., Robbins, Annear). Still others (e.g., Postal 1967) have taken the position that the definite article arises from both the base and from T's.

Some complexity has been added by the switch from looking at articles as non-decomposable lexical items to considering them composites of features (one feature of which is [DEF]). Assuming (some) definite articles arise from T's, under the non-decomposable view definitization consists of replacing a by the. Under the feature viewpoint, definitization involves changing the specification of the feature [DEF] to +.

The feature analysis permits the relating of the definite article the to other articles also obviously definite (e.g., relative, demonstrative, and personal pronouns).

Viewing definitization as applying either to units or to feature composites, it is possible to consider it either as a part of various T's (such as pronominalization and relativization) (cf. PRO, REL) or as a single separate definitization T (cf. Kuroda, 1967a).

In considering the sources of definite articles, there are several distinct types of uses of them to be considered, not all of which will necessarily have the same analysis. The following examples are clear cases of three types.

(i) Anaphoric (within a sentence)

- (6) I saw a cat in the tree this morning, but when I looked this afternoon the cat was gone.
- (7) A boy and a girl were walking down the street together, and the girl was shouting at the boy.

(ii) Definite description with relative clause(8) The boy who gave me this book wants it back tomorrow.(9) The new teacher seems to be very popular already.(iii) Non-linguistically anaphoric(10) Did you wind the clock?(11) The cat is on the mat.(12) The moon is full tonight.

We would not want to suggest either that these three types of uses exhaust the significant classifications, or that the lines between them are easy to draw or to justify. Sørensen (1959) for example, apparently considers all uses of the definite article to be instances of type (ii), with deleted relative clauses of specified types underlying (i) and (iii). A similar position is taken by Vendler (1968) (cf. discussion below).

It is also possible to consider that type (i) is simply a special case of type (iii), i.e. that there is the same process of anaphora in both, and it is a relatively superficial matter whether the antecedent happens to be in the same sentence or not.

Some transitional cases are illustrated in the following examples.

(13) I saw a cat in the tree this morning.
This afternoon the cat was gone.

(14) I saw a cat in the tree this morning.
...(intervening discourse) This afternoon the cat
that I saw in the tree this morning was gone.

(15) A boy with long hair and a boy with short hair were
arguing, and the boy with long hair appeared to be
winning.

Example (13) would presumably be treated in the same way as sentence (6) in a discourse grammar, but in a sentence grammar it must be treated either like sentence (12) or as having a deleted relative clause or preceding conjoined sentence.

Example (14) shares characteristics of types (i) and (ii), and has led some authors (e.g. Vendler (1968) following Robbins) to postulate the relative clause in the second part of (14) as part of the underlying structure of the corresponding definite NP in (6). (Note the difficulty posed for such an analysis by (7) if the relative clause is to be directly related to the clause in which the antecedent appears.)

Example (15) shares characteristics of types (i) and (ii) in a different respect, in that the definite NP appears to be anaphoric but the postnominal modifier cannot be deleted, so that the NP has the form of a definite description.

The anaphoric use of the definite article will be discussed further in PRO, and most of the arguments for and against its transformational derivation in that use will be deferred to that section. We include here some of the discussion of various authors' views on it, since it is not readily separable from other aspects of their treatment of definite article.

(b) Critique of Positions

Smith (1961b), working with a non-feature analysis and concentrating on the co-occurrences of articles and relative clauses (both restrictive and appositive), split the DET's into three groups: (1) indefinite (any, a, every, etc.) which occur only with RRel's; (2) specified (a, the) which occur with both RRel's and NRRel's; and (3) unique (the, proper names) which occur only with NRRel's. She does recognize the need for a [⁺DEF] distinction within group (2) but does not deal with it in regards to relatives. Smith proposes a complex subclassification within PS rules trying to capture these restrictions. That is, all articles, definites included, are introduced through the PS rules.

Her analysis has the unfortunate consequences of (a) introducing generics in two places under DET and (b) requiring the inclusion of the within group (1) since proper names with the can only take RRel's. Her subclassification seems to collapse when a, the, and proper names are shown to occur with both RRel's and NRRel's. Her observation that some quantifiers disallow NRRel's (or vice versa) is well made.

To put this critique another way, we disagree with the position that determiners should or can be distinguished solely on the grounds of their interaction with relative clauses.

A more fundamental objection to the view that definite articles are all introduced in the base has arisen with the widespread acceptance of the view that the semantic interpretation should be determinable from the base structure and that coreferentiality is part of semantic interpretation. Under these assumptions, the following sentences indicate that at least anaphoric definite articles should be transformationally derived.

- (16) Someone called a boy to the telephone while the boy was talking to a pretty girl.
- (17) While a boy was talking to a pretty girl, someone called the boy to the telephone.
- (18) Someone called the boy to the telephone while a boy was talking to a pretty girl.
- (19) While the boy was talking to a pretty girl, someone called a boy to the telephone.

Deep structure introduction of definite articles would assign identical deep structures to (16) and (19) and to (17) and (18); but under the assumptions stated above, only (16) and (17) should have a deep structure in common, since only in those sentences can the NP's with boy be interpreted as coreferential. Those in (18) and (19) cannot be.

At the opposite extreme, Annear, Robbins, and Vendler have contended that all instances of the are transformationally derived. We believe that such a view leads to an impasse within a sentence grammar. T's would have to be permitted on domains larger than a single sentence. Shopen (1967), Wolfe (1967), and others have shown that antecedents relevant to definitization are sometimes not only non-locatable but also linguistically non-existent. (Cf. (10), (11), (12).)

Annear (1967) has tried to sidestep this problem by assuming that every appearance of a definite article must be in the second part of a conjunction, the first part of which may be deleted (at the speaker's discretion) leaving an anaphoric semi-sentence. I.e. she attempts to bring all antecedents into the linguistic context.

Dean (1966) suggests a similar way out; i.e., one might claim that all occurrences of the definite article depend on an implicit relative clause which ensures uniqueness and hence definiteness.

Dean wisely rejects her proposal (and implicitly Annear's), noting the problems of (1) infinite ambiguity of underlying relative or conjoined clauses and (2) vagueness in what the features in

the non-verbal environment are which will specify an object as unique. She points out that the hearer's linguistic competence recognizes that some unique object(s) is intended by the speaker when he uses the definite article. Determining which object is being referred to is a skill only partially linguistic. The logical conclusion is that the SD of the definitization T would have to include non-linguistic material.

Dean retreats to a position she considers more defensible, namely, that the definite article in sentences with a relative clause can be predicted on purely syntactic grounds. (She is not claiming that all sentences with definite articles have relative clauses.) We shall return to her position in discussing relativization and definitization.

Robbins (1962 and 1963) has written two lengthy papers dedicated to the proposition that all definite articles are derived. "Kernel" sentences have only indefinite articles. The bulk of her papers is concerned with showing how various T's (e.g., relativization, adjectivalization, genitivization, nominalization, and anaphora) change the kernel indefinites to derived definites. (Her perspective is that of the Harrisian T school.)

Vendler (1968) claims that all definite articles arise through the process of relative clause formation, and the existence of definite NP's without relative clauses is accounted for by postulating deletability of a relative clause which is identical with a preceding sentence. No formal account is offered for the fact that NP's with relative clauses need not end up definite, however.

As we have intimated, we feel that although the quest for a transformational derivation for all the's may have semantico-philosophical justification, it cannot be supported on linguistic grounds within the framework of a sentence grammar. Within such a framework, it appears to us preferable to leave the interpretation of the in examples such as (10)-(12) to the semantic component.

Since the third position incorporates both base and T derivation of definites, we shall provide arguments relevant to both of the foregoing views as we discuss it.

Among proposals for deriving only some definite articles by T-rules, some are primarily concerned with anaphora and others with definite descriptions with relative clauses. The former are discussed further in PRO, the latter in REL. We include only a few brief remarks here.

There are some sentences which indicate that definitization is involved with pronominalization. In pronominalization, when coreferentiality is not intended the indefinite one is employed. Cf.

- (20) She saw a criminal and shot one.
- (21) She looked at a puppy and bought one.

If the speaker wants to express coreferentiality, the pronoun must be him or it [+DEF] regardless of whether the preceding NP is [+DEF]. Cf.

- (22) She saw a/the criminal and shot him.
- (23) She looked at a/the puppy and bought it.

One interpretation assumes that the second NP is indefinite in the deep structure. However before (or as) pronominalization operates the second NP is made definite.

One view of pronominalization holds that definitization is a part of pronominalization of coreferential NP's. Another (cf. Kuroda, 1967a) holds that definitization is a separate T dependent on coreferentiality and preceding pronominalization in the T cycle. The burden of coreferentiality is thus removed from pronominalization.

The latter view has the advantage of collapsing a recurring phenomenon which would have to be stated separately for relativization, nominalization, genitivization, and pronominalization.

Note that the anaphoric use of the does not always involve formally identical nouns.

- (24) I saw a boy flying a kite on a very windy day and the little fellow was almost being pulled off the ground.

If all anaphoric definite articles are to be uniformly derived by T-rules, such examples suggest that referential identity will require an apparatus considerably more complex than just an indexing of nouns. The same conclusion is suggested by such examples as the following:

- (25) John, Bill, and Mary all set out at noon, but only the boys got back by dinner time.

- (26) John and I started arguing yesterday, and the argument is still going on.
- (27) A prince and a princess were married and then driven apart by a wicked witch, but finally the couple was (were) reunited and lived happily ever after.

Turning to the relevance of definitization for relativization, we note that it has bearing on both the matrix NP and the constituent NP. Definitization of the constituent NP is discussed in Kuroda (1966) and in a section of REL. A brief recapitulation is in order here. Under the NP--S analysis discussed in REL, in which NP's are identical, sentences like (28) require both articles to be [-DEF] in the deep structure.

- (28) The car struck a child that ran out into the street.

However, in every constituent sentence the ART to which WH is attached must be definite before WH-pronominalization to guarantee that its result is a definite relative pronoun, i.e., who, which, or that rather than what. In sum, definitization during the relative operation is one way to insure the conversion of constituent non-definite articles to definite status. Otherwise, an ad hoc feature [+REL] would be required, missing the fact that the relative pronouns already form a natural class.

Kuroda justifies the possibility of transformational derivation of definite articles primarily with arguments about anaphora, using examples like (16)-(19) above. In his relative clause analysis, he allows all four possible combinations of definite and indefinite articles in matrix and constituent; both definite leads to non-restrictives, both indefinite to "whoever"-type structures. If the two articles have opposite values a restrictive relative results with the matrix NP keeping its original article; in any case a definitization transformation applies to the embedded one to account for the form of the relative pronoun.

Kuroda proposes the following T which definitizes the constituent DET.

$$(29) N_1 - X - \text{DET} - N_2 \longrightarrow N_1 - X - \text{THAT} - N_2 \quad [25]$$

Cond: $N_1 = N_2$ (coreferential)

In regards to the matrix NP, Dean (1966) suggests that a similar definitization T operates converting the matrix article to the when the head Noun is marked as having unique reference. This marking arises when the constituent determiner is some (particular)--apparently equivalent to our [+SPEC]--and derivatively the. By applying the feature [+UNIQUE] to some (particular) and the, Dean states the matrix definitization T as follows.

$$(30) \text{ SD: } X - \underset{1}{\text{DET}} - \underset{2}{N_1} - \underbrace{S \left[\text{WH} - \left[\underset{3}{\begin{array}{c} \text{DET} \\ +\text{UNIQUE} \end{array}} \right] - N_1 - X \right]} \\ \text{SC: } 1 - \left[\begin{array}{c} 2 \\ +\text{UNIQUE} \\ +\text{DEF} \end{array} \right] - 3$$

Baker (1966a & b) has suggested that the is inserted transformationally when an underlying existential sentence is embedded within the DET. Thus (32) is derived from (31).

- (31) ART #there was a girl Anderson kissed#girl called the police
 (32) The girl that Anderson kissed called the police.

In his account, anaphoric the as in (34) arises from the same source by the deletion of the relative clause; he suggests that an embedded existential relative clause can be deleted when it is identical to some previous existential sentence in the discourse. Thus (34) can be derived from (32) if sentence (33) precedes (32) in the discourse.

- (33) There was a girl Anderson kissed.
 (34) The girl called the police. [Baker (1966b), (8.b), p. 18]

Baker's analysis is closely related to that proposed by Vendler (1968) for all occurrences of the definite article. Baker, however, claims that relativization is only one of several sources for definite articles.

The most obvious problem with such an analysis is the fantastic embedding problem which arises for the last sentence of a discourse about "the girl". Intuitively the definitization does not involve all that is said about "the girl" but simply her (co)referentiality. Baker notes this fact also and reduces the requirement for definitization to there being an identical coreferential N in a preceding existential sentence.

Kuroda (1966b) claimed that definitization (though not pronominalization) was possible in certain adverbials on the basis of examples like (35)-(37).

- (35) That was the manner of disappearing John described to Mary, and he actually disappeared in that manner. [95]
- (36) That was the day John told Mary he would disappear, and he actually disappeared on that day. [96]
- (37) *That was the day John told Mary he would disappear, and he actually disappeared on it. [98]

But, as noted in PRO (II.D.5), sentences like (35) and (36) with the in place of that are ungrammatical, and the is possible only with a relative clause present. Thus (35) and (36) do not appear to be cases of anaphoric definitization. Exactly what that in these examples is is not clear.

- (38) *That was the day John told Mary he would disappear, and he actually disappeared on the day.
- (39) John disappeared on the day on which he had said he would.

It would seem that the definite article usually indicates co-extensiveness with a particular set. In the case of the anaphoric definite article, the NP is assumed to be coextensive with that previous NP which caused the definitization, whether within a sentence, as in type (i), or extra-sentential or perhaps even non-linguistic, as in type (iii). In type (ii), where the definite article occurs with a relative clause, then the relative clause defines the set. For instance, in (9), the implication is that there is only one new teacher. If the sentence were pluralized, then the number of new teachers would be unspecified, but the implication would be that all the new teachers (i.e. the total set) were already very popular. It is not at all clear how it would be possible to represent this in the deep structure (and cf. PRO II.C.3 for further discussion).

The fact that some occurrences of the definite article are obligatory does not really provide any justification for any one of the above positions. Nevertheless we should note such obligatory

contexts. The definite article is obligatory when it is: (a) accompanying superlatives (cf. 40), (b) accompanying other quantifiers such as same, only, next which require a unique noun (cf. 41), and (c) in certain idioms (cf. 42).

- (40) the/*a best way to get home
- (41) the/*a same day
- (42) beat around the/*a bush

If a base derivation is assumed, cases (a) and (b) would be assumed by a contextual feature. If a T derivation is assumed, a fairly idiosyncratic T would be added. (c) will be a lexical problem under either assumption.

Oriented toward exploring the relationship of proper nouns and determiners, Sloat (1968) discusses the presence of the definite article the but not its origin. He points out that articles operate identically with proper and countable common nouns except that the definite article is zero before singular proper nouns (unless heavily stressed or in the presence of a relative clause). His point that proper and common nouns are very similar is well made. His observations regarding the absence of the are handled within the UESP grammar by a late T-rule deleting the before proper nouns which have no additional modifiers.

Although we agree strongly in principle that at least some definite articles arise transformationally, we have not included a definitization rule but are simply choosing definite and indefinite articles freely in the first lexical lookup. The reason for this is that an adequate formulation of such a rule would appear to require a considerably enriched theory, and it seems more reasonable within our framework to omit the rule entirely than to try to give an ad hoc formulation of it.

4. Generic

(a) Delimitation of the Term

The term "generic" has been used in a number of constructs.

(i) Generic Person

Jespersen (Essentials, p. 150f) speaks of a generic person which vaguely comprises all persons. It is represented on the surface by one, he, his, himself, you, and we.

- (43) One always finds himself embarrassed when he is in a situation which highlights his stupidity.
- (44) You can never tell about such things.
- (45) We live to learn.

(ii) Generic Present

Jespersen (MEG IV, 2.1) also distinguishes generic and non-generic present tense (though not with great categorical certainty. He proposes a graduated continuum between the two.) Non-generic present is exemplified by (46) and generic present by (47).

- (46) He is ill.
- (47) None but the brave deserves the fair.

Syntactic evidence of the distinction may be present in tense agreement in indirect quotation in some dialects. For Chapin (1967), non-generic tense requires tense agreement while generic does not. Viz.,

- (48) He told us that Ellen was writing/*is writing a letter.
- (49) He told us that Ellen ?wrote/writes books.

(iii) Generic Restrictive Relative

Further, Jespersen (MEG, 5.1ff) applies the term generic to some RRel's which occur with personal and demonstrative pronouns. Viz.,

- (50) He that fights and runs away may live to fight another day.
- (51) Those who live by the sword will die by the sword.

(iv) Generic Articles

Finally, Jespersen (Essentials, pp. 212-14) uses the terms "generic number" and "generic article". This is the use of "generic" relevant to the present paper and will be expanded on in the following sections.

Chapin (1967, pp. 30-7) has reviewed each of the above uses and related them to one another. His conclusion is that genericness is not a characteristic of nouns or verbs but of sentences. He considers it a mood like IMP which determines which base structures are admissible. Admitting the possible fruitfulness of such a position for further investigation but cognizant of the complete absence of work presently done in this area, we restrict the use of "generic" here to NP's and introduce it as a feature on ART.

(b) Characteristics of Generic Articles

Jespersen (1933, pp. 212-14) notes that an assertion may be made to apply to a whole species or class, explicitly by the use of every, any, or all, or implicitly by certain combinations of definite/indefinite article with singular/plural nouns.

(i) No article, singular: used with mass nouns, man, and woman.

(52) Blood is thicker than water.

(ii) Indefinite article, singular: "it may be considered a weaker any" (Jespersen, p. 213)

(53) An oak is hardier than a beech.

(iii) Definite article, singular

(54) The early bird catches the worm.

(iv) No article, plural

(55) Owls cannot see well in the daytime.

(v) Definite article, plural: used chiefly with adjectives (the rich, the old, etc.), and in scientific or quasi-scientific descriptions.

(56) The owls have large eyes and soft plumage.

The fifth usage, i.e., the with plurals, is not widespread if acceptable at all. Note that (57) is not generally understood generically.

(57) The elephants are huge animals.

In sum, the surface forms of generics are a, the, and \emptyset .

It has been suggested by Smith (1961b) and others that any is also a realization of generic. Cf.

- (58) (a) An owl sees poorly in daylight.
 (b) Any owl sees poorly in daylight.

Perlmutter (1968) has shown that any and generic a have a great deal in common. He particularly points out (fn. 10) that these two items have many restrictions in common which are not shared by the other generic articles. We repeat his arguments and examples below.

(a) Any and generic a can not undergo conjunction reduction with and. The other generics can.

- (59) *A/any beaver and an/any otter build dams.
 [ix, xi.a]

- (60) (a) The beaver and the otter build dams. [vii]
 (b) Beavers and otters build dams. [viii]

(b) Any and generic a do not occur in the Agent NP of a passive sentence. The other generics do.

- (61) *Dams are built by a/any beaver. [xiii, xiv]

- (62) (a) Dams are built by the beaver. [xii.a]
 (b) Dams are built by beavers. [xii.b]

(c) Any and generic a can not occur in of-constructions like the following.

- (63) *I said of a/any beaver that it builds dams.
 [xvi, xvii]

- (64) (a) I said of the beaver that it builds dams. [xv.a]
 (b) I said of beavers that they build dams. [xv.b]

(d) Any and generic a can not occur with items predicated of an entire group or class. The other generics can.

- (65) (a) *A/any beaver is found in Canada. [xxi.a, xxii.a]
 (b) *A/any beaver is extinct. [xxi.c, xxii.c]

- (66) (a) The beaver is found in Canada/is extinct.
 [xviii.a, xx.a]
 (b) Beavers are found in Canada/are extinct.
 [xviii.b, xx.b]

(e) Any and generic a cannot occur with progressives while the others can.

(67) *A/any beaver is building dams these days.
[xxiv, xxv]

(68) (a) The beaver is building dams these days.
[xxiii.a]

(b) Beavers are building dams these days.
[xxiii.b]

(f) Any and generic a do not occur with past tense (the others do).

(69) *A/any beaver built dams in prehistoric times.
[xxvii, xxviii]

(70) (a) The beaver built dams in prehistoric times.
[xxvi.a]

(b) Beavers built dams in prehistoric times.
[xxvi.b]

Smith (1961b) suggests two other syntactic phenomena which distinguish the generic possibilities.

First, generic a accepts only RRel's and generic the only NRRel's, according to Smith. There are some apparent counter examples, although the generalization seems basically valid.

(71) An eagle, which is the national bird, is generally seen only by zoo visitors.

(72) An owl, which can see in the dark, can pounce on a rabbit from a great distance even on a moonless night.

For some slight counterevidence to the occurring only with NRRel's, see our comments below on Postal, reference, and generics. Note also that plurals with \emptyset article can have either R or NRRel's.

(73) Snakes, which move with deceptive speed, are one of the most feared animals.

(74) Snakes which shed their skins annually are sometimes poisonous.

Second, according to Smith a is restricted to non-past while the has no such restriction. Once again there is some evidence against this proposed distinction, though the bulk of the evidence is favorable.

- (75) (a) A dog is a pet.
(b) *A dog was a pet.

BUT: (76) (a) A dog was a pet in ancient times too.
(b) A book was a rare and valuable possession before the invention of the printing press.

Smith (1964) makes a point which is fundamental to the problem of generics, namely that at least with the generic article the, there are no purely distributional properties which distinguish generic from non-generic. She therefore suggests that genericness might better be viewed as a matter purely for interpretive rules, since there are apparently no distinctions of grammatical/ungrammatical that rest on the generic/non-generic distinction.

It is significant that even though generics indicate semantically a class of indefinite size (i.e., having an indefinite number of members), the surface forms have relevance for number agreement in the verb. Viz.

- (77) (a) A/the dog is a mammal.
(b) Dogs are mammals.

The relationship of generics and post-articles remains to be investigated.

Postal (1966) has pointed out that generics operate syntactically like definites in some respects. Thus, only definites and generics can occur in sentences like those in (78).

- (78) (a) Big as the boy was he couldn't lift the suitcase. DEF
(b) Strong as gorillas are, they can't outwrestle Superman. GEN
(c) *Big as a giant was, he/one couldn't lift it. INDEF.

Furthermore, generics can be pronominalized by personal (i.e. definite) pronouns (cf. Wolfe (1967)).

- (79) (a) A dog is a carnivore, but it also eats vegetables.
 (b) Milk is nutritious, but some children don't like it.
 (c) Cats are independent, but they are also affectionate.
 (d) The lion is the king of beasts, and all the other animals fear him.

However, ordinary anaphoric definitization does not apply to generics such as (81) as it does with non-generics such as (80).

- (80) (a) A dog and a cat were fighting, and the dog won.
 (b) I offered him some milk and some coffee and he chose the milk.
- (81) (a) *Milk and eggs are both nutritious but some children don't like the milk.
 (b) *Cigarettes are more toxic than cigars, but most people still prefer the cigarettes.
 (Ungrammatical as generic.)

Since definitization is assumed to be prerequisite to personal pronoun formation (both by Postal and by UESP), the absence of definitization presents a problem in interpreting the significance of the examples in (79). One possibility is that the pronouns in (79) arise by some other process peculiar to generics, in which case (79) does not constitute any evidence for calling all generics definite. Another possibility is that definitization does take place as in (81), but that the article, being a generic definite, is then realized as \emptyset , so that the surface forms derived from (81) are simply (82).

- (82) (a) Milk and eggs are both nutritious but some children don't like milk.
 (b) Cigarettes are more toxic than cigars, but most people still prefer cigarettes.

But this suggestion leaves a great deal to be explained in light of the fact that the is also a possible generic article. Note that something very much akin to anaphoric definitization takes place in the following sentences, which if not generic are very close to being so.

- (83) (a) Milk and eggs are both called for in this recipe; the milk provides most of the nutrition and the eggs are for binding.
- (b) Whenever a dog and a cat fight, the dog wins.
- (c) In most cases involving a man and a woman, Judge Jones is inclined to rule in favor of the woman.

However, it is not clear that these are true generics despite the "generic tense"; the line between generics and non-specific indefinites is not at all clear, and perhaps the latter are involved here. In any case, (78) and (79) do not, in the face of (81), provide nearly conclusive evidence that generics are definite.

A further difference between definites and \emptyset -article generics is that only the former occur as subjects of possessives, even though so-called "generic quantifiers" like all and every can occur with possessive.

- (84) (a) The house is John's.
- (b) *Swans are the Queen's.
- (c) All swans are the Queen's.

On the question of the interpretation of generic NP's, Jespersen (1933, p. 212) suggests that generics are used in making an assertion about a whole species or class which is equally applicable to each member of the class. But note that in addition to the problems raised for such a claim by predicates such as extinct and numerous (which do apply to a class or species but not to its members), there is an important distinction between quantified expressions like all men and simple generics like men. The simple generic NP is used of a whole class or species, but does not necessarily implicate every single member as all N does: (85) does not assert that no men are bachelors.

- (85) In our society men marry one wife each.

Generics occur in some constructions in which coreference is generally considered a factor. In order to account for their behavior in such constructions, it seems that we must either consider any two formally identical generic NP's to have the same referents, or else we must interpret generics as non-referential and reformulate obligatory coreferentiality conditions as simply obligatory absence of marked non-coreferentiality. Two relevant constructions are relative clauses and respectively-conjunction. (Pronominalization and anaphoric definitization are also relevant, of course: see discussion above.)

Generic NP's containing restrictive Rel's do seem to occur, although Postal (1966) claims otherwise.

- (86) (a) Dogs that have short tails are unattractive.
- (b) A gorilla that lives in Africa is usually bigger than one that lives in a zoo.
- (c) The gorilla that he is speaking of became extinct long ago.

And as he points out, the preposed adjectives are unquestionably grammatical.

- (87) (a) Short-tailed dogs are unattractive.
- (b) Strong as big men are, the flu will lay them low.

However, it is in cases like (86.a,b) that the distinction between generic and non-specific indefinite tends to become elusive. But there is no obvious distinction in the nature of assertions about dogs vs. short-tailed dogs vs. dogs that have short tails.

Of Postal's counterexamples, one is judged grammatical by a number of speakers if that is substituted for who. Cf.

- (88) Strong as gorillas that live in Africa are, they can't tear down banana trees.

The second counter-example appears to be ungrammatical because of the tightness of the restriction placed on it by the RRel. I.e., it is hard to consider the NP as applying to an indefinite, general subclass. Cf.

- (89) *Expensive as butter which I bought yesterday was, it turned rancid.

Note that by expanding the subclass it becomes quite acceptable as a generic.

- (90) Expensive as butter which one buys on Fridays is, it usually turns rancid.

Sentences (89)-(90) illustrate the relevance of Jespersen's concern with generic present (vs. past in this example).

A second phenomenon concerning generics and reference is the way they operate in conjunction reduction and respectively insertion. Dogs [+GEN] in (91.a) cannot be interpreted as non-coreferential in the deep structure, i.e., "dogs are mammals and dogs are carnivores". Contrast (91.b) in which those men [-GEN] can be either coreferential or not in the underlying structure.

- (91) (a) Dogs are mammals and carnivores.
 (b) Those men are plumbers and electricians.

A syntactic reflex of coreferentiality (or absence of non-coreferentiality) of generics is the fact that respectively cannot be used with generics unless they are formally different. The obvious deduction is that since respectively occurs only with non-coreferential items, generics cannot be non-coreferential: i.e., they must be considered either coreferential or else nonreferential altogether.

- (92) *Dogs are mammals and carnivores respectively.

(c) Source of the Generic Article

Under the assumption that the various types of articles (generic, definite, indefinite, etc.) are plugged into different terminal categories one would have the following choice for the generics.

First, present when no determiner is chosen. E.g.,

NP → (D) N (S)

Second, as an alternative to DET. E.g.,

NP → { D } N (S)
 { GEN }

Third, as an alternative to ART. E.g.,

D → { ART } (POST)
 { GEN }

Fourth, as an alternative to DEF/INDEF. E.g.,

ART → { GEN }
 { DEF }
 { INDEF }

Fifth, as a subtype of DEF. E.g.,

DEF → { GENERIC }
 { SPECIFIC }

Thomas (1965) chose alternative 3. The present analysis represents a variant of the fifth. Generics are considered one realization of the subclass [+DEF] of the category ART.

Assuming the source for articles to be feature complexes, there is still the possibility of allowing feature changes so that one underlying article is changed to a different surface article. Postal suggests such a thing vaguely when he says that some generics which start out [+DEF] become [-DEF] on the surface. He uses the questionable (cf. above) RRel argument to argue that what are generics without RRel's turn into indefinites with a RRel. The UESP disallows any such switch. What begins as generic ends as generic. No significance is attached to the surface form similarity of generic a and indefinite a, although as we pointed out above, there are cases where the generic seems more like a non-specific indefinite than like a definite. No contextual restrictions have been put on generic articles. The analysis should be considered highly tentative, since many of the arguments discussed above are unresolved.

5. Specific

The feature [SPEC] is used as Fillmore (1966d) used it. He has given the following illustration of the feature's relevance. If the some in (93) is [+SPEC] then the speaker is asserting that certain specific friends of his speak French.

(93) Some of my friends speak French.

If it is [-SPEC] the sentence indicates simply that the speaker has friends who speak French.

[SPEC] has surface structure relevance in that only [-SPEC] articles are candidates for undergoing some-any suppletion and hence any-no suppletion. Thus, the [\pm SPEC] distinction is clearer both semantically and syntactically in negative sentences. Looking at sentence (93) again, the negation of the [+SPEC] interpretation is (94.a).

(94) (a) Some of my friends don't speak French.

The negation of the sentence with the [-SPEC] article is (94.b)

(94) (b) None of my friends speak French.

The same feature is responsible for the difference in the following sentences with many.

(95) (a) Not many of them understand the protocol. [-SPEC]
 (b) Many of them don't understand the protocol.
 [+SPEC]

[SPEC] also has surface relevance indirectly in pronominalization. Normally, only the [+SPEC] article allows coreference. Viz.,

- (96) (a) I asked the lady for a nickel [-SPEC] and she gave me one.
 (b) I asked the lady for a nickel [+SPEC] and she gave it to me.

However, Baker (1966.a,b), Karttunen (1968), and Dean (1968) have all discussed examples of the type first pointed out by Baker, in which pronominalization can occur even if the antecedent is [-SPEC].

- (97) John wants to catch a fish and eat it for supper.

This contrasts with (98), in which the antecedent can only be interpreted as [+SPEC].

- (98) John wants to catch a fish. You can see it from here.

There is a great deal of work going on currently on this and related problems from many different points of view, the most recent of which is not included in our bibliography. One consideration which presents a problem for the feature [SPEC] is the fact that semantically, the distinction marked in negative sentences, i.e. (94.a,b) or (95.a,b), is not always the same as that marked in "opaque contexts" such as wants--, is looking for--, etc. For example, (99.a) below is ambiguous with respect to whether specific girls are meant or not. And when a negative is in the matrix sentence, the some-any distinction does indeed seem to parallel the two senses of (99.a).

- (99) (a) The teacher expects some of the girls to pass the test. [\pm SPEC]
 (b) The teacher doesn't expect some of the girls to pass the test. [+SPEC]
 (c) The teacher doesn't expect any of the girls to pass the test. [-SPEC]

But when the negative is in the embedded sentence, the some-any choice seems to cross-cut the ambiguity of (99.a), since (100.a) is still ambiguous in exactly the same way as (99.a).

- (100) (a) The teacher expects some of the girls not to pass the test. [+SPEC]? [\pm SPEC]?
 (b) The teacher expects none of the girls to pass the test. [-SPEC]

Example (100.a) indicates that the single feature [\pm SPEC] is not sufficient to mark both kinds of distinction, yet from examples like (99.b,c) and (100.b) it would appear that setting up two independent features would lead to a great deal of redundancy in their choice.

Further indication of the insufficiency of a single feature for marking the ambiguities that exist in opaque contexts is provided by examples such as the following.

(101) John thinks Mary wants to marry a hippie.

If a hippie is interpreted in the [-SPEC] sense, it is presumably part of Mary's wish that the descriptive term "hippie" apply to the one she marries. However, in the [+SPEC] sense, it seems that the descriptive term "hippie" may be attributable to Mary, to John, or to the speaker of the sentence. Such matters have been discussed in the philosophical literature for some time, and are now beginning to make their way into linguistic concerns. The linguistic work, however, is too recent to be included here, and the philosophical references have been omitted because they are in entirely different framework.

As mentioned above, Dean (1966), in proposing to derive the definite article the from indefinites in a matrix NP having an embedded relative clause, postulated a some(particular) which seems to be identical with [+SPEC].

The features [DEF] and [SPEC] are sometimes confused. Perhaps one reason this is so is that both [+DEF] and [+SPEC] involve a referent (in contrast to (other) indefinites). There seems to be a distinction though in the fact that with [+DEF] the referent is assumed known by the hearer, while with [+SPEC] the speaker makes no such assumption regarding the hearer (in both cases the speaker knows the referent). Cf.

- (102) (a) He needs the book. [+DEF]
 (b) He needs some books. [+SPEC]
 (c) I'm looking for the little boy. [+DEF]
 (d) I'm looking for a little boy. [+SPEC]

The UESP considers [SPEC] to further delimit only the [-DEF] elements. So, in a sentence like (103), specificity has no relevance for the definite NP's; one might alternatively say that all [+DEF]'s are [+SPEC] redundantly.

(103) John is the teacher you met at the drinking fountain.

However, it could be suggested that insofar as the [\pm SPEC] distinction is appropriate for capturing the ambiguity of sentences like (99.a), it would likewise be appropriate for capturing the ambiguity in cases like (104) with definite articles.

- (104) (a) John is looking for the man who murdered Smith.
 (b) John wants to talk to the man who owns the house next door.

In the definite cases, the existence of a referent for the NP is not in question; the ambiguity rather concerns whether John (or perhaps the speaker) has independent acquaintance with referent other than via the given description.

In the present view [GEN] and [SPEC] are non-intersecting. In 1967 (UCLA Syntax Conference), Schane suggested that [+SPEC] and [-SPEC] should be used instead of [-GEN] and [+GEN] respectively.

However, such an identification would pose problems for the three-way contrast of some-any- \emptyset in (105.a,b,c):

- (105) (a) I don't like some books. [+SPEC]
 (b) I don't like any books. [-SPEC]
 (c) I don't like books. [+GEN]

There are certainly many contexts in which a distinction between generics and non-specific indefinites is virtually impossible to find (cf. above, A.4) and it is to be hoped that deeper relations between these two phenomena will eventually be found.

6. Pronouns

Traditional descriptions of English have considered pronouns and articles as quite different. Articles accompanied nouns while pronouns replaced them.

Early TG also maintained this distinction. Articles were inserted under their own category while pronouns were a subclass of nouns (Chomsky, 1958) and the result of the pronominalization T (Lees and Klima, 1963).

In (1966), Postal proposed that pronouns and articles have the same underlying source. This viewpoint was accepted and modified somewhat by Fillmore (1966d). The present UESP position is close to Fillmore's.

Postal's arguments in favor of treating articles and pronouns alike (i.e., both as segmentalizations of features on the head noun) follow.

(a) The consideration of pronouns as articles allows the element self to be treated as a noun stem. Thus herself is the result of a rule attaching the article her to the noun stem self.

(b) This analysis also allows a parallelism between he/him and himself, I/me/my and myself, it and itself, etc. in regards to animacy, gender, person, etc. Himself is like herself above while him is an article whose underlying head noun has been deleted because it was $\left[\begin{array}{l} +\text{PRO} \\ -\text{REFLEX} \end{array} \right]$.

(c) The definiteness of the non-derivative pronouns is handled in a natural way since the pronouns will result only if the segmentalized article is [+DEF].

(d) The complementary distribution of pronouns and the definite article the plus one(s) in the presence and absence of RRel's is nicely shown when pronouns are considered articles.

- (106) I met the one who Lucille divorced.
- (107) *I met him who Lucille divorced.
- (108) *I met the one.
- (109) I met him.

Thus in the absence of a RRel, one is deleted after the definite article, the latter then being realized as he, she, etc., while in the presence of a relative clause one is not deleted after the article, resulting in the one(s) (that...).

(e) A natural derivation is provided for structures such as we men, you troops, etc., where the surface exhibits the article--N relationship in [+I] or [+II] plurals. Likewise, similar structures occur containing RRel's (both full and reduced).

- (110) You men (who wish to escape)...
- (111) We (honest) policemen...

(f) The article source of pronouns gives a natural account of structures in which pronouns, adjectives and pro-forms all appear together. Viz...

(112) You great ones...

(113) ...us quieter ones.

In these phrases, ones is not deleted because it does not immediately follow the article. (cf. PRO for details of the rules.)

(g) The consideration of pronouns as articles is supported by the appearance in non-standard dialects of the posited underlying forms, i.e., we'uns, us'uns, you'uns, etc. This dialect merely has one less rule than the standard dialect, namely, the non-reflexive pro-stem deletion rule.

(h) A final bit of evidence for treating pronouns like articles is the simplification of phonological statements. The voicing of dental nonstrident continuants is predictable in both articles (the, this, that, these, those) and pronouns (they, them, their, theirs).

7. WH

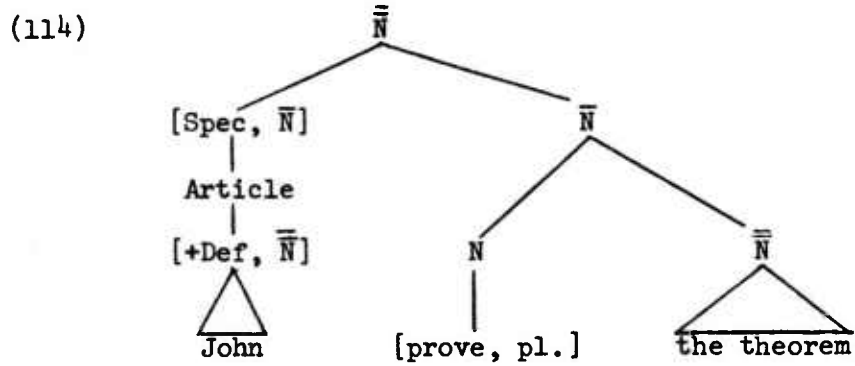
The UESP position on the combination of WH and other features is quite like Kuroda's (1966) in some respects. Kuroda holds that WH + SOME (in our terms, [+WH,-DEF]) is realized as what, while WH + THAT ([+WH, +DEF]) becomes which. Fillmore's (1966) analysis is similar, but differs terminologically (i.e., what is [-DEF,+INTERROG] and which is [+DEF,+INTERROG]) and basically in that relative and interrogative markers appear to be separated.

The UESP differs from Kuroda superficially in the use of features rather than representative symbols (e.g., [-DEF] vs. SOME and [+WH] vs. WH). More importantly, Kuroda asserts that who, where, and when are ambiguously [\pm DEF]. The UESP and Fillmore consider these unambiguously [-DEF], although the matter is far from clear. See discussion below in III.B.1.d.

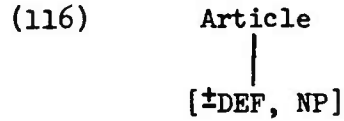
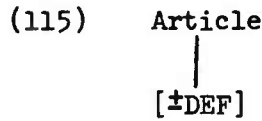
8. Genitive

We note here only briefly the relation of genitives to the determiner, since the question is discussed at some length in GEN.

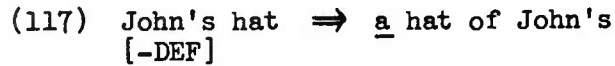
Chomsky (1967) proposed the following deep structure for John's proofs of the theorem.



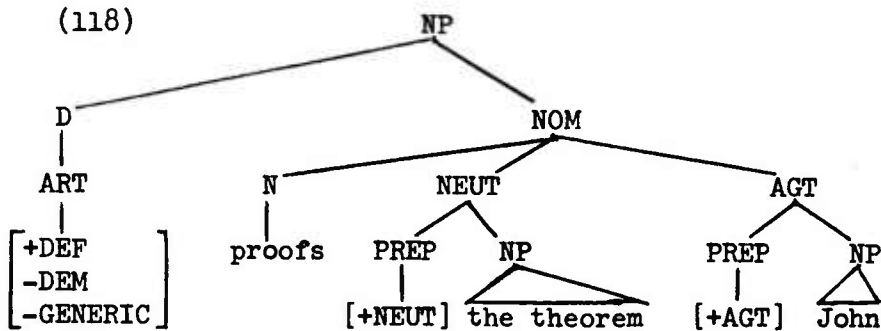
Thus Article has two expansions, exemplified by (115) and (116).

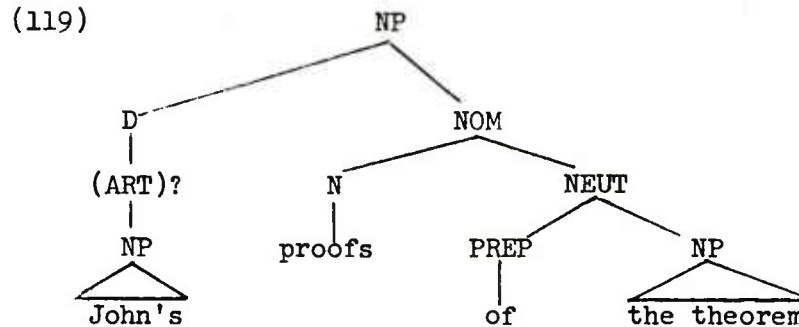


Chomsky's proposal allows the ART to be either a set of features or a full NP which becomes a possessive. If the NP is extraposed the features remain to provide an article. E.g.,



Under the UESP position, a tree similar to Chomsky's deep structure arises in the derivation of some genitives. Thus, (118), which is the deep structure, becomes (119) transformationally.





By adopting the case grammar framework, we are able to capture Chomsky's generalizations about the parallels between NP and S without generating genitives in the determiner: preposed genitives in the NP, like subjects in the S, are positioned by the case placement rules.

With regard to derived structure, there are two main possibilities. Either (1) the genitive NP replaces the article, or (2) the genitive NP is adjoined to the article and the article is subsequently deleted. Relevant arguments are included in CASE PLACE and in GEN.

B. POST and PART

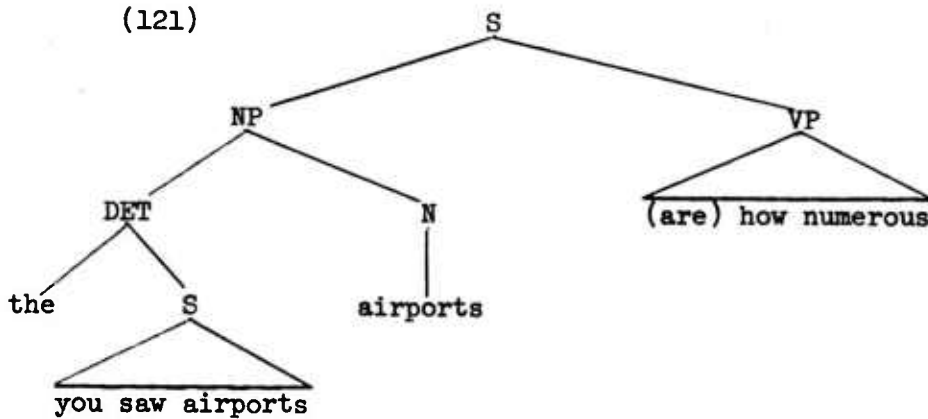
1. Quantifiers

The most fought-over bone of contention in regards to quantifiers has been their source. Most transformationalists have considered them to come from lexical insertion into a terminal node dominated by the NP they are associated with. These writers have argued the relative merits of pre-article (Hall, 1962; MITRE, 1965) vs. post-article (UESP; Dean, 1966; Jackendoff, 1968) vs. pre and post article (Hall, 1963a; Chomsky, 1965; Thomas, 1965; Roberts, 1964) sources.

Recently a quite different view has been taken by Lakoff (1965b, Appendix F) and Carden (1967a,b). Lakoff introduces quantifiers as predicates of higher and lower sentences. They are then transformationally inserted into the relevant NP's.

(a) The Predicate Source of Quantifiers

Under Lakoff's proposal a sentence such as (120) would have the underlying structure of (121).



Lakoff argues first, that this permits a single source for NP quantifiers such as many, much and measure adjective quantifiers such as long, numerous. Cf.

(122) How long are the airports that you saw?

(123) How many are the airports that you saw?

At the same time it explains the existence of archaisms like (123).

Second, NEG can be associated directly with the quantifiers because of the higher S. This provides for the fact that the interpretation of (124) and (125) do not deny that the soldier was hit but simply assert that he was hit by not much shrapnel.

(124) Not much shrapnel hit the soldier.

(125) The soldier was not hit by much shrapnel.

Similarly and third, Q can likewise be directly associated with the quantifier. This accounts for the questioning of (126) and (127) to be of the amount of shrapnel which hit the soldier, not of whether or not it hit him.

(126) Did much shrapnel hit the soldier?

(127) Was the soldier hit by much shrapnel?

Jackendoff (1968b) has given several arguments against the predicate analysis: (1) Assuming that quantifiers are verbs disallows an explanation of the similarities of quantifiers and the constructions involving group, herd, gallon, etc. The latter are obviously nouns since they can be pluralized and counted. (2) Sentences like (128) in which quantifiers occur alone as pronouns would require two dummy NP's in their deep structure.

(128) Some seem to be quite content.

(3) The fact that quantifiers (e.g., each) influence number agreement suggests that they are not inherently verbs. (4) The similarity of the pronoun one and the quantifier one is not easily shown if the quantifier is a verb. These arguments are concerned with relatively superficial structure, however, and are therefore not fully convincing.

Further arguments for and against Lakoff's position have been developed in Partee (1968). We incorporate verbatim a part of that paper below (reordered and with the examples renumbered).

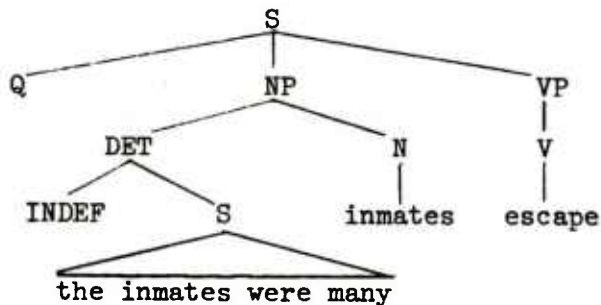
(Lakoff has replied at length to these arguments, defending some parts of his analysis and revising others, in a paper received too recently to be included here, "Repartee" (1968), to appear in Foundations of Language.)

Lakoff claims that sentences containing quantifier predicates may occur as either matrix or constituent with other sentences, with the same surface result but different semantic senses. Thus for the sentence

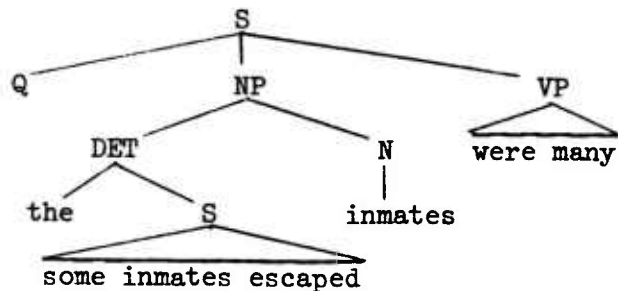
(129) Did many inmates escape?

he suggests two deep structures:

(130)



(131)



Sentence (129) is asserted to be ambiguous in a way captured by the structures (130) and (131). The ambiguity itself is marginal, and the structural distinction proposed to account for it is called into question by some other evidence.

Lakoff claims that any noun phrase can have a quantifier embedded within it, but that only (surface) subject noun phrases can combine with a quantifier from the next higher S. The second part of this claim is false under his assumptions, however, since

(132) Does John read many books?

is interpreted as presupposing some book-reading and questioning the many to at least as great an extent as the analogous claim is true of

(133) Do few people read books?

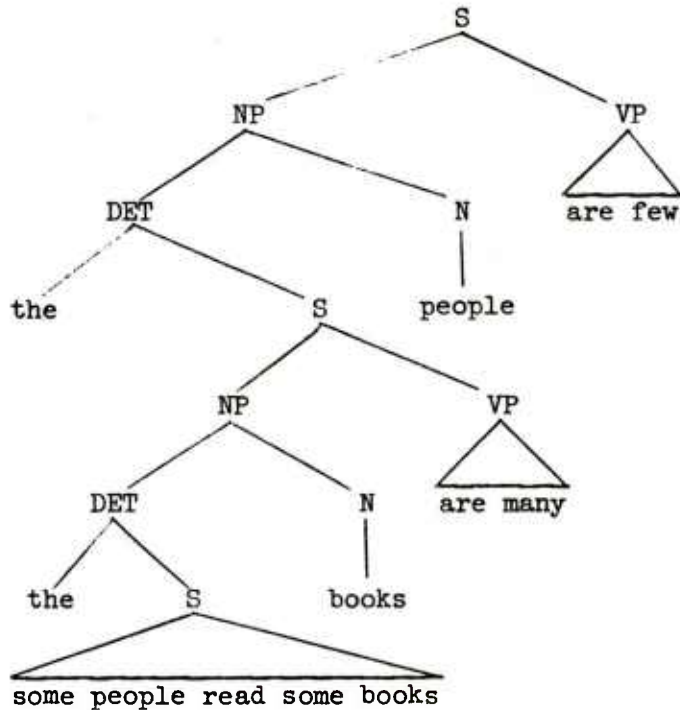
Thus it would appear that his line of reasoning would require the possibility of incorporating a matrix-sentence quantifier into at least both the subject and object noun phrases of embedded sentences.

But this necessary extension leads to a superabundance of available deep structures for certain sentences. Consider the following example:

(134) Few people read many books.

Given that both (132) and (133) can derive their quantifiers from higher S's, it follows that both quantifiers of (134) can come from higher S's. Thus one possible underlying structure for (134), and a semantically plausible one, would be:

(135)



Since the rule which lowers matrix quantifiers into embedded S's is not stated, it is difficult to be certain whether it could apply to a structure like (135). Certainly normal relativization could not apply: a comparable case with ordinary predicates in place of the quantifiers would yield:

(136) *People who books which read are best-sellers are extroverts.

Sentence (136) is blocked by the Complex-NP Constraint described in Ross (1967). The downward insertion of quantifiers would also seem to be a "chopping rule" and should therefore be subject to the same constraint. But it may be that the product of the rule is not a complex noun phrase and thus that the constraint would not be violated in deriving (134) from (135).

Semantically, (135) is a more reasonable structure for (134) than a structure with one quantifier above the kernel sentence and one below it; however, if lower-S quantifiers are deemed necessary to account for the claimed ambiguity of (129), then there will be five possible deep structures for (134):

- i. (135)
- ii. a structure like (135) with the quantifiers interchanged;
- iii. and iv. one quantifier in a higher S, the other in an embedded S;
- v. both quantifiers in embedded S's.

There may be some dispute as to whether (134) is two ways or three ways ambiguous, but it will hardly be claimed to be five ways ambiguous. It would be reasonable to claim (i) and (ii) as its deep structures, or (iii), (iv), and (v), but not all of them.

The semantic arguments all require the possibility of quantifiers in higher sentences. The suggestion that they also be derivable from embedded sentences was motivated primarily by syntactic arguments; the claim that quantifiers were predicates gained most of its syntactic plausibility from the apparent similarity of behavior of e.g., numerous and many:

- (137) (a) The flowers, which were numerous, were covered with dew.
- (b) The numerous flowers were covered with dew.
- (138) (a) ?The flowers, which were many, were covered with dew.
- (b) The many flowers were covered with dew.

Note that the relative clause of (137) must be non-restrictive; it is not obvious that adjectives like numerous can occur in a restrictive relative clause, or that there is any possible relative clause source for the numerous of

- (139) Numerous animals were driven from the forest.

It may well be true that some quantifiers have essentially the same syntax as quantificational adjectives; but it does not appear that those adjectives share the syntax of ordinary adjectives.

The treatment of quantifiers as predicates (presumably as adjectives or verbs) has at least some plausibility for such quantifiers as many, few, several, and the cardinal numbers, (i.e. for

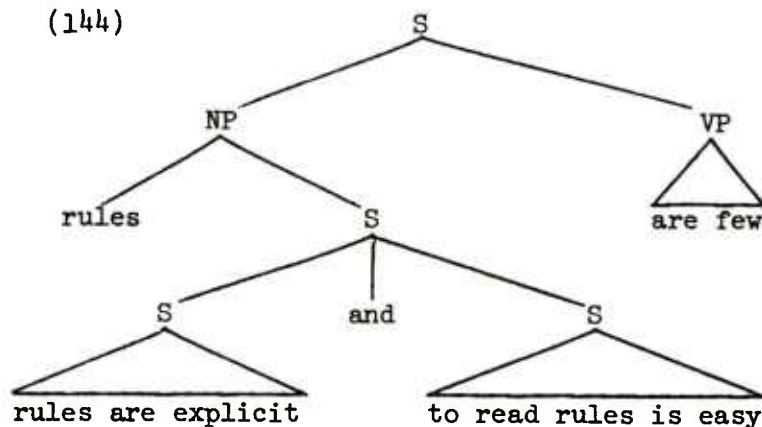
those quantifiers which can follow the definite article inside a noun phrase), whose predicative use, as Lakoff points out, sounds more archaic than ungrammatical. But there are a number of quantifiers which cannot even "archaically" occur in predicate position; they happen to be just the quantifiers which cannot follow the definite article. Compare (140) and (141):

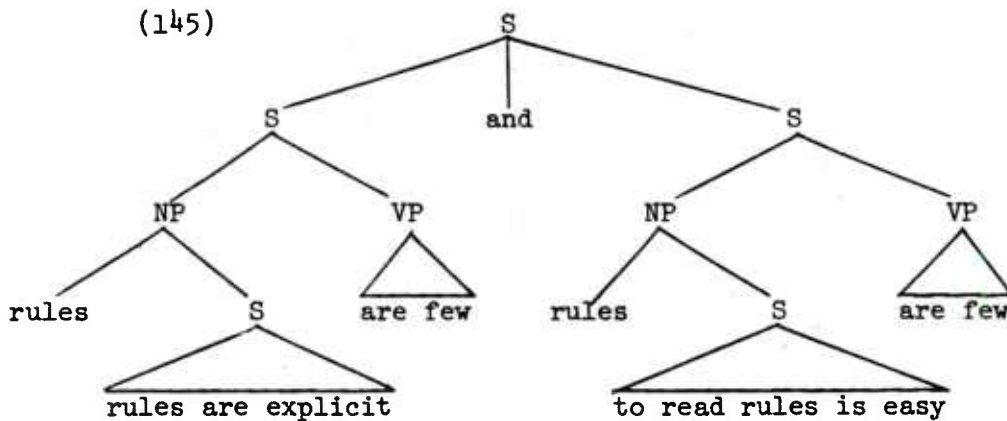
- (140) (a) *?the arguments are many / the many arguments
 (b) *?the arguments are five / the five arguments
 (c) *?the arguments are few / the few arguments
- (141) (a) *the arguments are some / *the some arguments
 (b) *the argument(s) is (are) every / *the every argument
 (c) *the arguments are all / *the all arguments
 (d) *the arguments are none / *the no arguments

The quantifiers in (140), like the quantificational adjectives numerous, scanty, etc., describe the size of a set. Those in (141), however, describe a certain proportion of a given set and not its absolute size.

But this distinction does not coincide with the synonymy or non-synonymy of pairs like (142) and (143), which would have the underlying structures of (144) and (145) respectively under Lakoff's proposal.

- (142) Few rules are both explicit and easy to read.
 (143) Few rules are explicit and few rules are easy to read.





If for few in (142) and (143) we substitute many, five, some, or no, we still have non-synonymous sentences; but all or every yield synonymy. Thus the independent syntactic grounds for calling some quantifiers predicates do not lead to the right class of quantifiers with respect to the semantic behavior of quantifiers with conjunction. It would therefore be quite misleading to try to claim independent syntactic justification for structures like (144) and (145) on the evidence of (140).

A semantically consistent approach would require that only also be treated as a predicate. In this case, the counterarguments are even stronger, since not only is only not permitted in predicate position in ordinary sentences (see (146)), but it can modify structures that are by no stretch of the imagination noun phrases, as in (147)

(146) *The three rules on this page are only

(147) The three rules on this page are only explicit and easy to read (i.e., they are not, for instance, interesting or revealing).

Sentence (147) presents a grave problem for the proposal under consideration. It cannot be maintained that only is a predicate which takes whole sentences as its subject, for then the deep structure of (147) would be identical to that of (148), and the two are clearly not synonymous.

(148) Only the three rules on this page are explicit and only the three rules on this page are easy to read.

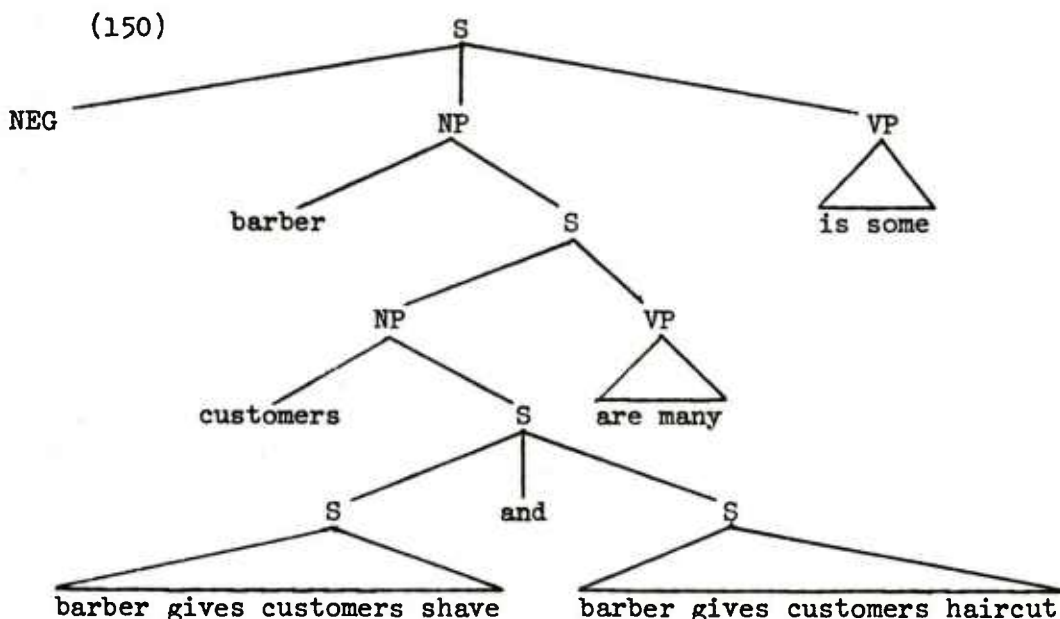
To provide the proper semantic interpretation, the deep structure of (147) would have to contain only as a predicate whose subject is explicit and easy to read; but easy to read cannot be a deep structure constituent. It thus appears particularly clear in this case that the semantic interpretation must depend in part on derived structure, where explicit and easy to read is indeed a single constituent in construction with only.

The possibility of deriving quantifiers from lower sentences was also used to account for the ambiguity of (129). But note that that ambiguity, at best tenuous, disappears if almost any other quantifier is substituted for many.

The arguments for deriving quantifiers from lower S's thus appear to be much weaker than those for deriving them from higher S's, given the Katz-Postal hypothesis. Further arguments for nesting of higher S's containing quantifiers appear when we turn to examples containing quantifiers and conjunction.

(149) No barber gives many customers both a shave and a haircut.

To provide the correct semantic interpretation, both quantifiers must be outside the conjunction, as shown below:



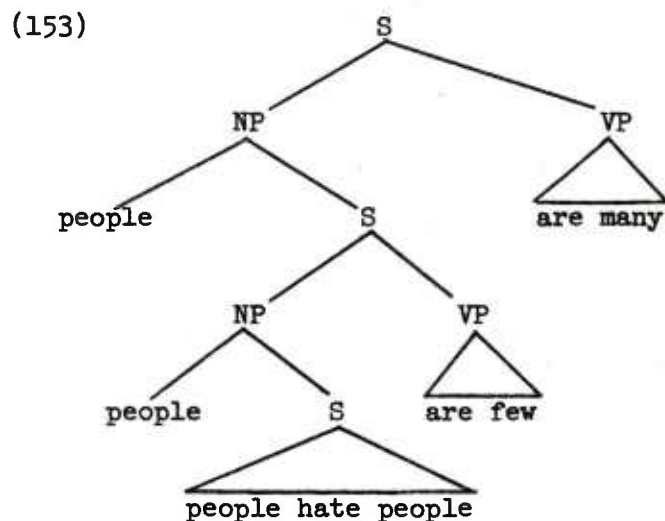
Since in this case the semantic interpretation can be captured only with quantifiers in stacked higher S's, not with one higher and one embedded, the argument for accounting for (134) in the same way is strengthened.

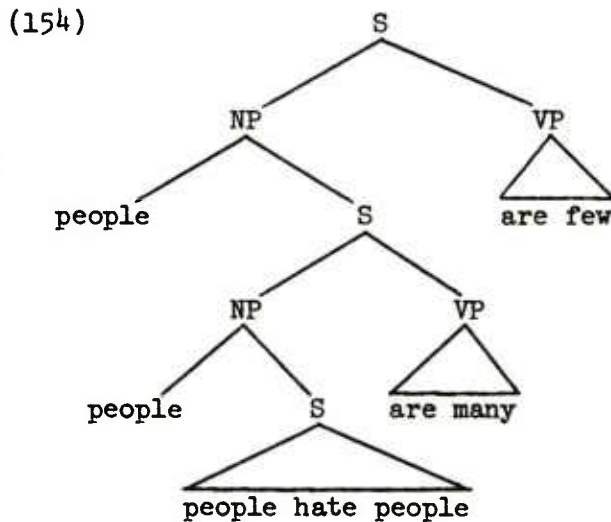
Structures like (150) and (135) have the quantifiers rather widely separated from the "kernel" occurrence of the noun phrase to be quantified; the matching of quantifier to noun relies on the identity of the nouns in matrix and constituent. But consider sentences like the following:

(151) Few people hate many people.

(152) Many people hate few people.

These sentences may or may not be ambiguous; in any case they have no readings in common. We will assume (as appears consistent with Lakoff, 1965) that if they are not ambiguous themselves, then their passives are interpreted with opposite order of quantifiers from that in the active. Then it would seem that both (151) and (152) (with their passives) have the same two possible deep structures:





In order to keep the structures for (151) distinct from those in (152), some kind of indexing will be required. It is not clear whether indexing of this kind is ever required for independent reasons. It is clearly not referential indexing in the usual sense, since at least one of the noun phrases in each sentence has a distributive sense, i.e. not the same "many people" for different individuals of the "few", or vice versa. Some such indexing may be independently necessary to account for:

(155) People who hate people are unhappy.

(156) People who people hate are unhappy.

However, there are other ways of accounting for this latter distinction, for instance by generating WH in the base attached to the appropriate constituent (cf. Katz and Postal, 1964). There are, so far as I know, no purely syntactic grounds for assigning different deep structures to (155), (156), and even (157):

(157) People who hate themselves are unhappy.

Without trying to resolve these last-mentioned details, we can summarize the basic conflict as follows:

Semantically, the arguments in Lakoff (1965) for deriving quantifiers from higher sentences are very strong, and become stronger when examples including conjunction are brought in. If

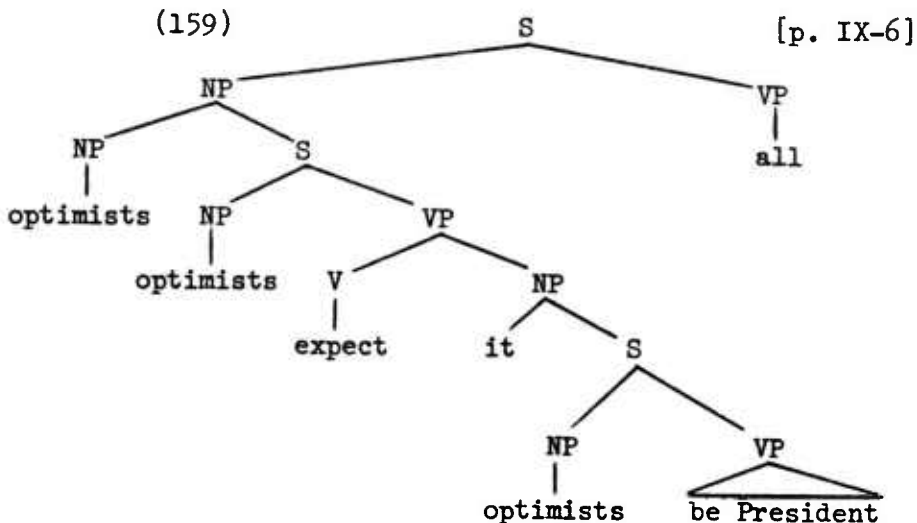
the Katz-Postal hypothesis that the semantic interpretation is determined solely by the deep structure is maintained, then sentences such as (142) and (143) must have syntactic deep structures essentially like (144) and (145). But we have shown above that any such proposal runs into extremely damaging counterarguments when its syntactic consequences are considered.

[This is the end of the excerpts from Partee (1968).]

Carden (1967b-1968)* discusses two arguments for quantifiers as higher predicates. (The article was written earlier than Partee (1968) but came into our possession later.) His first argument concerns sentences like (158.a-b).

- (158) (a) All optimists expect to be President. [6.a]
- (b) All optimists expect all optimists to be President. [6.b]

The traditional analysis of quantifiers and of equi-NP deletion derives the two sentences from the same source, but they are clearly not synonymous. Analyzing quantifiers as higher predicates would resolve the difficulty: equi-NP deletion could be ordered to precede the rule which incorporates the quantifier into the NP below it, so that equi-NP deletion would operate just on optimists in each sentence, yielding (158.a) from a tree like (159):



 * The only version we have actually seen is the 1968 revision, which apparently takes cognizance of some criticisms of the 1967b original but offers the same analysis. Example numbers are from the 1968 version.

The tree for (158.b) would have an extra sentence with the second "all" in it; equi-NP deletion would not apply because at the point in the derivation when it might apply, the embedded NP would be all optimists and the higher one would just be optimists.

There are at least two problems with this argument, both acknowledged by Carden in his 1968 revision of 1967b, and neither necessarily insurmountable. The first is that for an appropriate semantic interpretation of (158.a), obviously a desideratum for this kind of analysis, there should be some representation that each optimist expects the Presidency for himself, not for "optimists" in general. The second problem is that the distinction between (158.a) and (158.b) is also found in sentences with no apparent quantifier, such as the following, pointed out by Jackendoff (1968a):

- (160) (a) Senators from New England expect to be treated with respect. [Jackendoff (1968a), 12]
 (b) Senators from New England expect Senators from New England to be treated with respect. [13]

Carden (1968) mentions similar sentences, attributed by him to Brian Sinclair.

Carden's second argument for quantifiers as higher predicates concerns NEG-raising (there called "Not-Transportation"). Sentence (161.a) is synonymous only with (161.b), never with (161.c), even though (161.d) is ambiguous in a way corresponding to (161.b-c).

- (161) (a) John doesn't expect all the boys to run. [Carden, 9.a]
 (b) John expects that not all the boys will run. [9.b]
 (c) John expects that none of the boys will run. [9.c]
 (d) All the boys don't run. [5]

His explanation of the data is that (161.d) can start out either with NEG higher than all or vice versa, but that Not-Transportation can take the NEG only from the highest embedded S, i.e. only from the structure corresponding to (161.b). Jackendoff (1968a) gives some arguments against Not-Transportation being a rule at all, which are reproduced and augmented in this report, cf. NEG. In

addition, there is at least one serious flaw in this argument of Carden's even within his own framework. The claim that NEG-raising can operate only from one S to the immediately dominating one is crucial to his argument, but there is much stronger evidence against such a claim than for it. Consider the following sentence:

- (162) (a) I don't believe he thinks she's coming until after dinner.
 (b) The teacher doesn't expect three of the girls to pass the exam.
 (c) The teacher doesn't expect us to answer 10 of the questions right.
 (d) John doesn't expect any of the boys to arrive on time.
 (e) John doesn't expect some of the boys to arrive on time.

If there is a rule of NEG-raising, it would have to be able to re-apply at successive levels to account for (162.a). Furthermore, for some dialects at least, (162.b) and (162.c) are each ambiguous in just the way that (161.a) is not; generating both readings would require allowing NEG-raising to operate over either one or two S's. And reinforcing the same counter claim, it appears that (162.d) and (162.e) are each unambiguous: but then for (162.e) NEG-raising would have to operate up two levels.

Carden's restriction may or may not be incompatible with (162.a); it is certainly incompatible with the dialects for which (162.b,c) are ambiguous, and it is totally incompatible with (162.e).

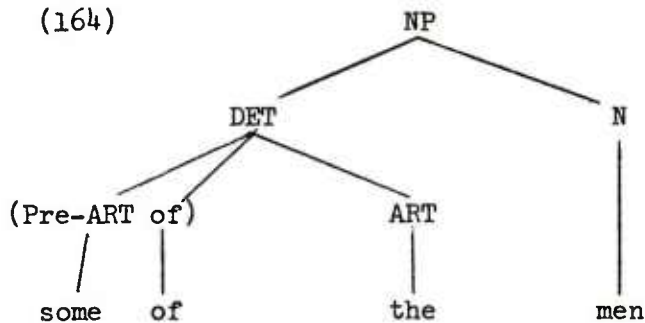
Hence we conclude that Carden has no good arguments for quantifiers as higher predicates. Cf. Lakoff's recent "Repartee" for what seem to be the strongest arguments so far for that analysis.

(b) Pre-Article vs. Post-Article Sources for Quantifiers

The choice between pre and/or post article sources for quantifiers hinges crucially on one's view of the source of constituents in phrases like those following.

- (163) (a) the three boys
 (b) some of the boys
 (c) each one of the boys
 (d) each of the first three of the boys

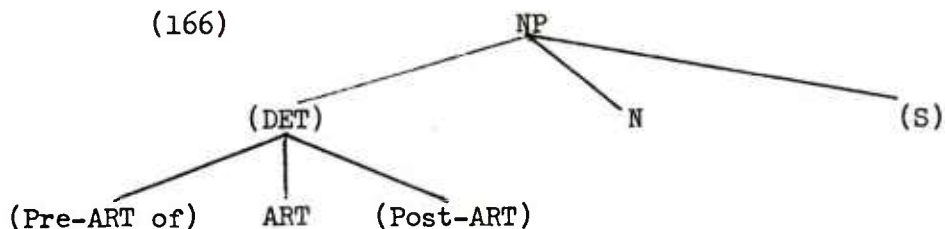
Those who have assumed that the surface structure reflects directly the deep structure have naturally proposed a quantifier source preceding the article. Thus, Hall (1962) and the MITRE grammarians (1965) proposed a pre-article quantifier something like the following.



This provides for phrases like those of (163.b). But in addition to its inability to generate (163.a) directly (except by calling three an adjective) and (163.c,d) by any means, its deficiencies (cf. Jackendoff, 1968b) include the following. (a) Of the men is not considered a constituent. Its prep-phrase qualities are not captured. (b) Number agreement is complicated since in some constructions agreement is with the head noun (165.a) while in others agreement is with either the pre-article or the head noun (165.b).

- (165) (a) All of the men shot themselves/*himself in the foot.
 (b) Each of the men shot ?themselves/himself in the foot.

In Hall (1963a) and Chomsky (1965) the following structure was proposed:

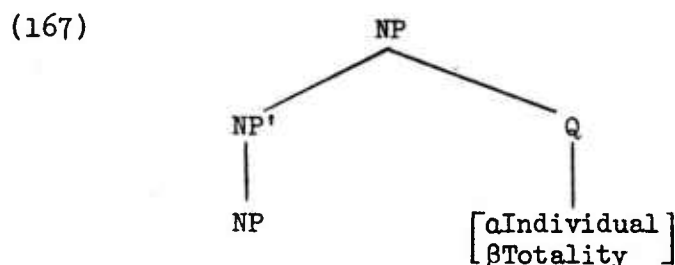


This accounts for both (163.a) and (163.b) directly. Furthermore it characterizes the fact that the pre-article quantifiers are a separate (but not disjoint) class from the post-article quantifiers. The former class include all, some, any, each, every, and either which cannot occur as post-articles.

Besides the obvious inability to account for phrases like (163.c) directly, Chomsky's analysis has the following drawbacks. Since some quantifiers occur in both positions (e.g., several, few, many, and the cardinal numbers), constructions such as three boys would be generated ambiguously even though they are semantically unambiguous. The recursive possibility of quantifiers (cf. (163.d)) has also been a difficulty for this and previous analyses.

The UESP grammar escapes these problems by employing a "partitive" analysis. (Cf. B.2)

Dougherty (1967a,b) proposed a post-NP source for a few quantifiers when dealing with conjunction. He assumed a NP structure as follows.



One innovation of his proposal is the use of features on the terminal symbol Q, the combination of which provides each, all, both, either, neither, and respectively. A second innovation is the employment of the features with constituents other than NP, i.e., S, VP, V. (In the present grammar the introduction of the above quantifiers on nodes other than NP is accomplished by transformational insertion in the conjunction process. Cf. CONJ.)

2. Partitives

The partitive analysis assumes that in the derivation of construction (168.a) there was a deletion of a noun after the quantifier. Thus (168.b) underlies (168.a).

- (168) (a) Two of the cooks
(b) Two cooks of the cooks

Some of the arguments in favor of a partitive analysis follow.

(a) Non-restrictive relatives such as (169) require that the boys in the phrase many of the boys be analyzable as an NP, which is not possible if the determiner is many of the.

(169) The boys, many of whom carried placards, marched a long way.

(b) Every one of the boys, each (one) of the boys, (n)either (one) of the boys, any (one) of the boys show traces of intermediate steps of the partitive derivation. The one is otherwise unexplainable. The variation in deletability of one after quantifiers has to be marked on independent grounds because of the "pronominal" use of quantifiers. Cf.

(170) John brought out some stamps and Bill
 examined $\left\{ \begin{array}{l} \text{a few (*ones)} \\ \text{every one} \\ \text{each (one)} \end{array} \right\} .$

Apparently some quantifiers also reflect the prior presence of a noun (or pronoun) which merged with it. Viz.,

(171) none of the books *none books
 *no of the books no books

(c) Dean (1966, p. 22) points out that the posited N actually appears in some sentences in which forward pronominalization occurs. Cf.

(172) Only four paintings of those which had been stolen were recovered. [60]

(173) Only four \emptyset of the paintings which had been stolen were recovered. [57]

(d) Dean notes also that a slightly different construction lends further credence to the partitive analysis. Sentences like those in (174-5) parallel the partitive closely both syntactically and semantically.

(174) Only one trout of the fish we caught was large enough to be worth cooking. [68]

(175) Of the fish we caught only one trout was large enough to be worth cooking. [69]

The only significant difference this construction has seems to be the retention of the first N when it differs formally from the second. (Naturally there are strong selectional restrictions on the pairs and their order.)

(e) In (176) at least one of the relative clauses is associated with three.

(176) The three of the twenty boys who were in the room who wanted help screamed.

This can be represented quite simply within a framework which incorporates several NP's, but it is not clear how it would be handled if the three of the twenty were all one determiner in deep structure. See the tree (177) (next page), which represents roughly the deep structure for (176) in the UESP grammar.

(f) Number agreement between quantifiers and RRel's associated with them is automatically accounted for in the partitive analysis. Viz.,

(178) One of the boys who are in the room who want to get out is screaming.

(179) One of the boys who are in the room who wants...

(180) One of the boys who is in the room who wants...

(181) *One of the boys who is in the room who want...

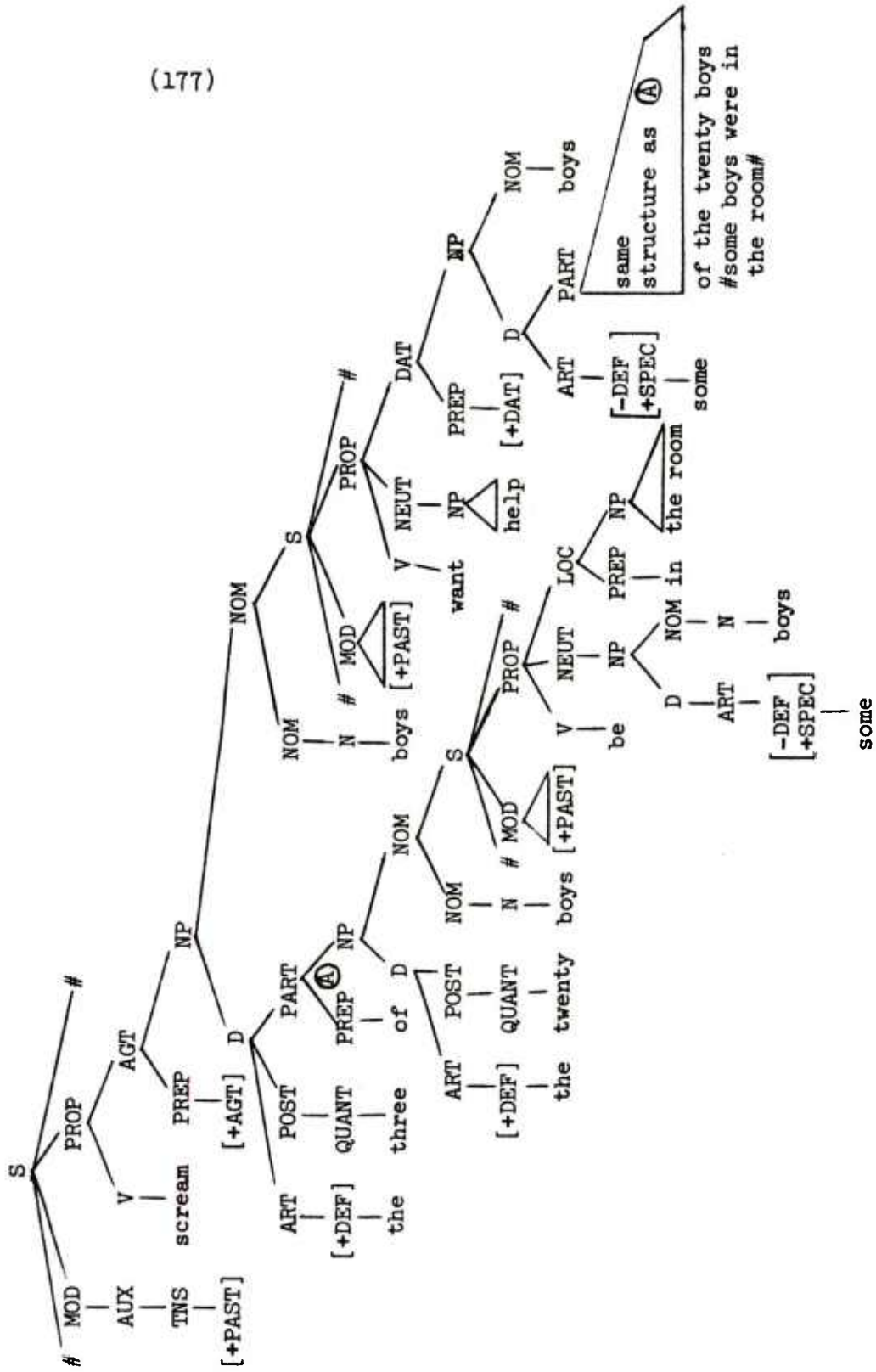
(g) Number agreement for singular one, each, every, (n)either of the boys is handled much more naturally since the head noun is singular.

(h) NRRel's provide evidence specifically for two occurrences of the head noun being present. Dean (1966) presents the ambiguous sentence (182).

(182) I bought a dozen of the eggs, two of which were cracked. [54]

On one reading, (a), two eggs of the dozen I bought were cracked; on the other reading, (b), two of the eggs were cracked and I bought a dozen of the eggs but I didn't necessarily buy any cracked ones. But as Dean points out, it is unambiguously two eggs that were cracked, so we may assume that the underlying structure had two eggs where (182) has just two. But then if it were claimed that dozen occurred by itself as an NP, we would expect (183) to be grammatical, since it differs from what would then be a stage underlying (182) only by the absence of the partitive phrase.

(177)



- (183) *I bought a dozen, two eggs of which were cracked.
[55]

Since (183) is ungrammatical, (182) should be analyzed as containing dozen eggs of the eggs at some earlier stage.

(i) The behaviour of negatives with quantifiers is more easily explained in the partitive analysis. If there were not an indefinite article preceding three in (184-5) as there is in the partitive analysis, then all the cardinal numbers in addition to the indefinite articles would have to be marked as [\pm SPEC], which would be both costly and counter-intuitive.

- (184) Not three of the boys could answer the question.

- (185) Three of the boys couldn't answer the question.

(j) In the partitive analysis, the plural indefinite article some (sm) can automatically occur in the environment ---- of the boys. Thus we do not have to postulate still another some, as would otherwise be necessary.

(k) The iterability of the quantifiers is accounted for, since with the analysis Quant N of NP, the last NP can itself be of the form Quant N of NP. E.g.,

- (186) He ate some of each of the ten pies.

The strongest counterargument encountered so far is that provided by Postal's (1967) tests for definite/indefinite NP. According to Postal, many of the boys would appear to be definite; under our analysis the head NP and hence the entire NP is indefinite.

- (187) There were many (*of the) boys at the party.

- (188) Big as $\left\{ \begin{array}{l} \text{many of the} \\ *many \end{array} \right\}$ boys were, they couldn't lift it.

- (189) $\left\{ \begin{array}{l} \text{Many of the} \\ *Many \end{array} \right\}$ books are John's.

These counter examples seem considerably weaker than the arguments in favor, however. The construction in (188) is rather peripheral and has never to our knowledge been explored, and in (189) it is not clear how such a constraint would be stated in any case. In the case of (187), there are further examples which seem to indicate that QUANT OF DEF N is not always excluded from THERE-inversion:

- (190) There were (a) few of his best friends on the list.
 (191) There's a little of the coffee left.
 (192) There were two of the Beethoven quartets on that program.

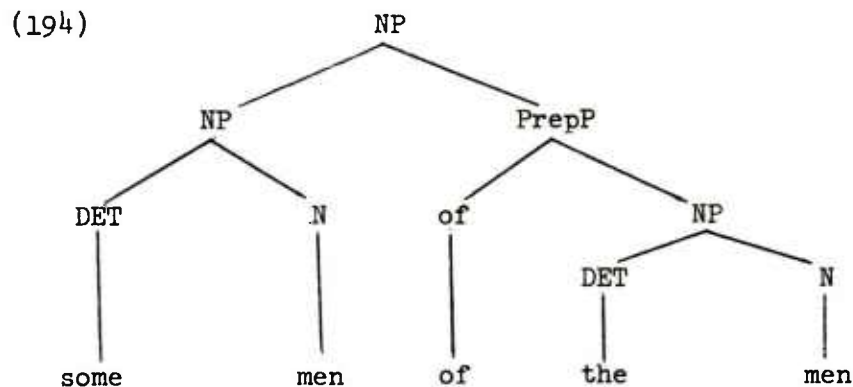
Even (187) with many of the boys does not sound so bad in the negative:

- (193) The boys at that school are even livelier than the girls, but unfortunately there weren't many of the boys at the party.

In sum then, we would suggest that of the three counterarguments, one is in error and the other two depend on relatively unexplored phenomena and are thus much less compelling than the many independent arguments in favor of our analysis, all of which concern fundamental rules of the grammar.

Those writers who have championed the partitive analysis (e.g., Dean, 1966; Jackendoff, 1968b; UESP) have all proposed slightly different variants.

Dean proposes a structure such as (194):



She contends (correctly we believe) that full NP's are related in the partitive construction and that the second NP provides "a reference class, a delimitation of the 'universe' of which the referent of the first NP is a member". (p. 49) Hence the name "partitive". (We do not agree with her interpretation of the dominance relationships of the NP's. Cf. below.) Under this view, RRel's are possible on both NP's.

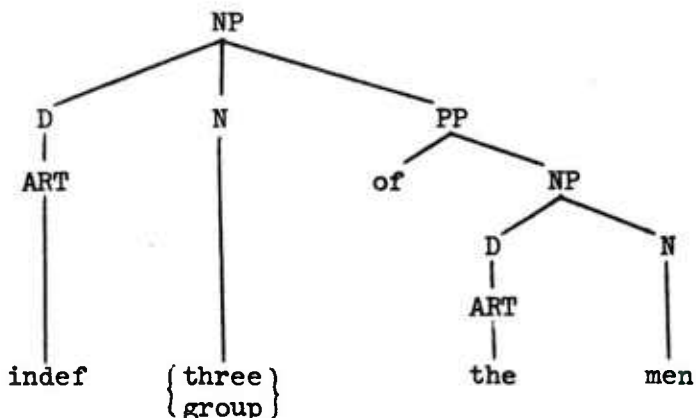
Dean also noted that when a RRel is present on the second N it is possible to pronominalize that N. Viz.,

(195) two cooks of those we hired last summer

She then explores the possibilities of having RRel's on each N and concludes that "whichever of the two N's deletes, the only relative clause which may delete is the one on the N of the preDeterminer" (i.e., the DET of the first N). She also contends (admittedly inconclusively) that the relative clause of the second N need not be present on the first N in the deep structure.

Jackendoff's (1968b) partitive proposal is similar to Dean's only in the use of a prep phrase for the of NP. He distinguishes three groups of items which precede of NP: (a) "classifiers"--a group, a herd, a gallon, a pound, etc.; (b) "pre-articles"--some, each, few, which, all, both, etc.; (c) "post-articles"--a few, many, one, three, etc. He then tries to derive the third in a manner parallel to the first. The result is a source such as (196).

(196)

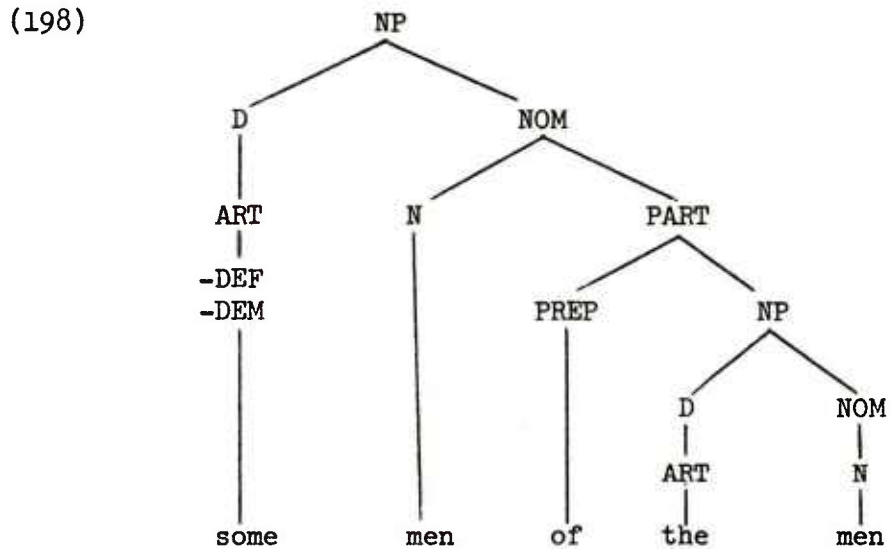


Because grave difficulties attendant to considering group (b) as nouns arise, Jackendoff treats them as articles with an "article-head combining" T, a theoretical innovation we are not prepared to accept on this single piece of evidence.

The UESP at one stage considered introducing the partitive construction in the NOM rewrite rule. PART could be chosen as a disjunctive option to the series of cases following N. Viz.,

(197) NOM \rightarrow $\left\{ \begin{array}{l} \text{NOM} \quad \text{S} \\ \text{N} \quad \left\{ \begin{array}{l} \text{(Cases)} \\ \text{(PART)} \end{array} \right\} \end{array} \right\}$

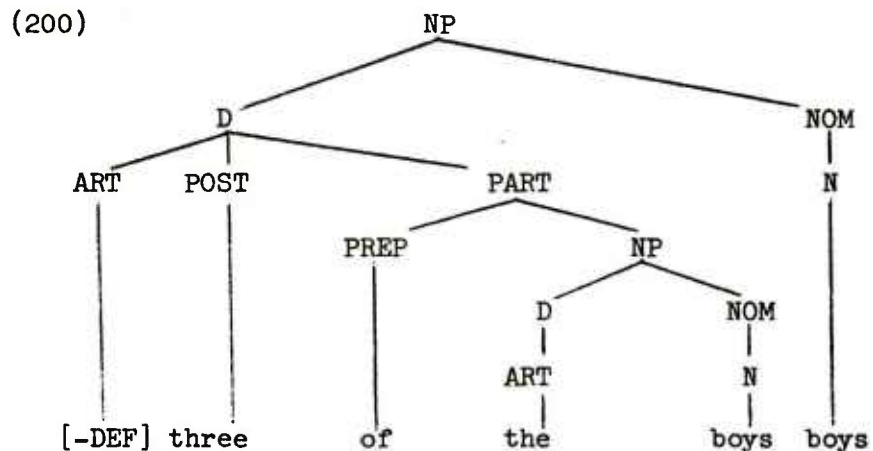
Like the cases, PART rewrites as PREP NP, where PREP is always of. This would allow a structure like (198) for some of the men.



Since the PART "case" would be restricted to noun phrases and excluded from sentences, and since furthermore even with nouns it shares virtually no relevant properties with other cases, such a position for the introduction of PART does not seem justified. The additional fact that some constituent of POST must almost always co-occur with PART has led us to adopt a D source for PART, namely by the rule

(199) $D \rightarrow \text{ART (POST (PART))}$

which produces the structure



Further comments on this choice and on restrictions required by partitives are found below, III.B.3.

III. THE ANALYSIS OF DETERMINERS

A. Introduction

The analysis of determiners involves primarily phrase structure rules and feature specifications and only secondarily transformations. The bulk of the discussion is centered around the two rules:

- (i) D → ART (POST (PART))
- (ii) POST → (ORD)(QUANT)(CHIEF)

Explicit feature specifications of deep structure and derived articles (corresponding respectively to first and second lexical look-up) are presented and argued for, including virtually all features that play a role in pronominalization. The use of Fillmore's (1966) feature [\pm SPECIFIC] in relating some and any is discussed at some length, along with the question of the number of distinct items some. It is argued that which and what should be represented as definite and indefinite respectively, not as specific and nonspecific indefinites. Generic articles are tentatively claimed to be definite.

The constituents POSTarticle and PARTitive are central to the treatment of quantifiers. The use of PART as a source for of-phrases with quantifiers is closely bound up with the absence of a PREarticle constituent. We claim that many of the boys is derived from many boys of the boys.

Among the constituents of POST, QUANTifiers are discussed in some detail, and subclasses with certain special properties are distinguished. ORDinals and CHIEF are only superficially described, and the relation of superlatives to POST, clearly an important one, only hinted at.

The short section on transformations includes the derivation of many of the boys, as well as certain idiosyncratic determiner transformations (e.g., deletion of of after all and both and the movement of certain quantifiers). This is followed by a section devoted to unsolved problems and unexplored areas.

Of the three analyses of relative clauses described in the REL section, viz. ART-S, NP-S, and NOM-S, it is the NOM-S analysis that has been assumed elsewhere in the grammar. Under that analysis it is crucial that the main break in the NP be between the Determiner and the rest, i.e. NOM. (Relative clauses then come from the expansion NOM → NOM S.) Identity for relativization is then claimed to be between NOM's; the embedded determiner is required to be a [+SPEC, -DEF] ART, while the matrix determiner is unconstrained. This choice of embedded determiner eliminates certain ungrammatical relative clauses by independently needed constraints on determiners, e.g.

(201) ?The boys of whom three were sick played better than the boys who were healthy.

(This seems to be just about exactly as odd as the sentence which would have to underly its relative clause, ?three of some boys were sick.)

(202) *The judge that my cousin is is honest. (The article in My cousin is a judge is not [+SPEC].)

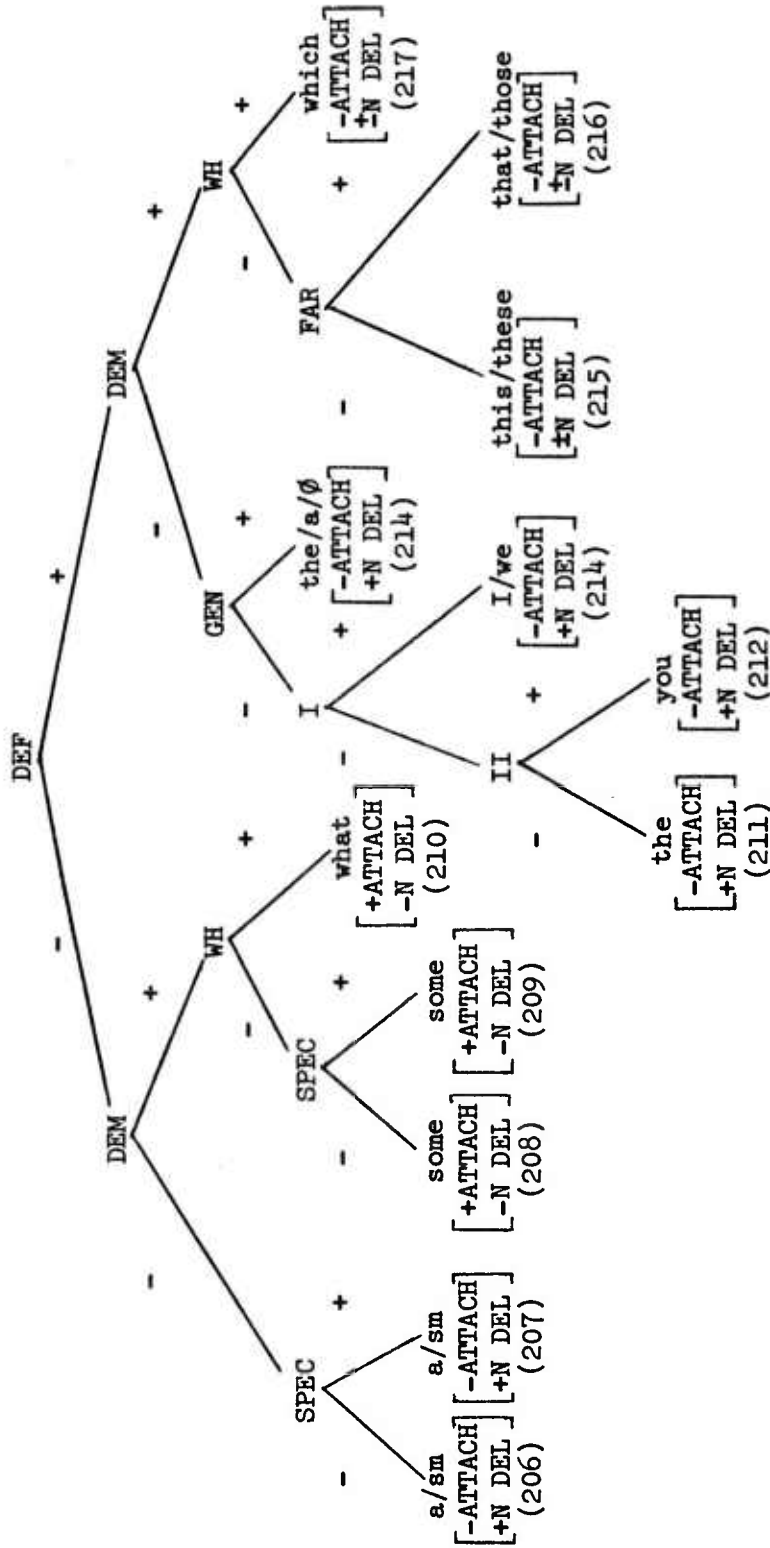
B. PS Rules and Feature Specifications

1. D → ART (POST (PART))

POST, PART, and the absence of PRE are discussed under the expansion of POST.

ART is being treated as a terminal node to which various lexical items with distinct feature specifications are attached. Since transformations cause considerable changes in the feature composition of these items (see, e.g. REL, PRO, NEG), a separate second lexical lookup will be required at the surface level. It is assumed that no phonological matrices will be inserted for these items until the second lexical lookup.

The following tree represents the possible articles inserted in the base. The spelled out forms are typical surface realizations of these deep structure feature complexes, but are not exhaustive. Further discussion of the features and of the various articles follows the tree. Numbers on the articles refer ahead to subsection (c).



(203) Deep Structure Articles

(a) Redundancy Rules

A quick glance at (203) reveals the possibility of stating several features and their specifications by redundancy rules in the lexicon. We list those rules here and note their two functions: (a) the rules in (204) fill in the values of the rule features

predictable, and (b) the rules in (205) specify the values for all the nondistinctive features.

(204) (a) [+DEF] → [-ATTACH]

(b) [-DEM] → $\begin{bmatrix} -ATTACH \\ +N\ DEL \end{bmatrix}$

(c) $\begin{bmatrix} -DEF \\ +DEM \end{bmatrix}$ → $\begin{bmatrix} +ATTACH \\ -N\ DEL \end{bmatrix}$

(205) (a) [-DEF] → [-GEN]

(b) [+DEM] → [-GEN]

(c) [-DEM] → [-WH]

(d) [] → $\begin{bmatrix} -PRO \\ -INDET \\ -NEG \end{bmatrix}$

The last rule above, (205.d), marks all deep structure articles as [-PRO], [-INDET], [-NEG]. The corresponding positive values are introduced by T-rules: [+PRO] by Noun-node Deletion (cf. PRO); [+INDET] by SOME-ANY Suppletion and SOME-ANY REL Suppletion (cf. NEG); and [+NEG] by ANY-NO Suppletion (cf. NEG). The features [\pm COUNT], [\pm HUMAN], [\pm MASC], and [\pm PLURAL] are also added transformationally, by an agreement rule, Transfer of Noun Features to Article (cf. PRO). Since that rule assigns the feature with its noun value to the article, and since the rule applies to all articles, those features can be omitted entirely from the underlying representation for articles.

(b) Explanation of Features

The non-self-explanatory features are used in the following ways.

[±SPEC(ific)] is used in the sense of Fillmore (1966d); it distinguishes the some's which become any from those that do not (see NEG and II.A.5 above).. The ambiguity of I need some books is attributed to this feature.

[±FAR] is simply the name arbitrarily given to the feature distinguishing this/that, here/there, now/then.

[±ATTACH] is a rule feature (see PRO for Article Attachment transformation). The feature [+ATTACH] is assigned to the combining forms every-, any-, some-, and -one, -thing, -body, -place, -time, and -times in the deep structure, and transformationally to article and noun stems which have the feature [+REFL(exive)]. The difference between everyone and every one is taken to reside in the noun, not in the determiner.

[±N(oun) DEL(ete)] is also a rule feature, used in the rule which erases one(s) after cardinal numbers, superlatives, many, few, several, etc., a/sm (which are then realized as one/some), the (then realized as he, it, etc.) and certain other determiners. Where it is optional, e.g. which(one), (n)either(one), each(one), etc., the value of the feature is chosen before insertion into the deep structure.

This feature presents a problem with this/that. Perhaps it should always be Minus with this/that as Fillmore's (1966d) analysis would suggest, and certainly in most dialects in the plural. (See PRO.)

The personal pronouns are assumed to be fundamentally articles, as in Fillmore's (1966d) modification of Postal's (1967) analysis. The person features must originate on the article to generate we Americans, etc.; although number, gender, etc., are derived by agreement with the noun, as mentioned above.

No strict subcategorization features have been listed, although a more complete grammar would have to include some. For instance, certain determiners cannot occur after be, i.e. in the ESSIVE case (cf. III.D.9). Most articles cannot precede S, and there are restrictions on the non-third person definite articles. Only the definite article can occur in PART (although there seems to be divergence of opinion on this point).

There are two restrictions commonly suggested that we reject even in principle, however. Many older transformational grammars analyze personal pronouns as nouns and require no article or only the definite article with them; such restrictions are obviated by Postal's analysis (and there are no special restrictions with our Pro-N one.) Similarly, proper names have been claimed variously to occur with no article or only with a definite article; but we agree with Sloat (1968) that there are no such restrictions, but only a late T-rule deleting the before a proper name if there is no following relative clause.

(c) Surface Structure Articles

The surface structure items which evolve from the underlying features, and some brief notes on their derivations, are listed next. A fuller discussion follows in the next section.

(206) a/sm all the items below have the features: [-DEF, -DEM, -SPEC, -GEN, -ATTACH, +N DEL, -WH, -I, -II, +III]

- | | | |
|-------------------|-------------------------------|---|
| (a) <u>a</u> : | [-PL, +COUNT, -PRO, -INDET] | } number agreement only |
| (b) <u>sm</u> : | [{-COUNT}, +PL, -PRO, -INDET] | |
| (c) <u>one</u> : | [-PL, +COUNT, +PRO, -INDET] | } the feature [+PRO] is acquired when the noun is deleted (see PRO) |
| (d) <u>some</u> : | [{-COUNT}, +PL, +PRO, -INDET] | |

Forms (c) and (d) also occur when the article receives stress by some process other than deletion of the noun, although we have not formulated the rules for this. For some of the relevant environments, cf. Perlmutter (1968); his analysis is quite different, as discussed above in II.A.2, but we agree at least on the fact of a/one suppletion in a number of environments.

(e) any: [±PL, ±COUNT, ±PRO, +INDET, -NEG]

[+INDET] is acquired by the some-any suppletion rule: see NEG.

(f) no: [±PL, ±COUNT, -PRO, +INDET, +NEG]: see NEG.

- (g) none: [[±]PL,[±]COUNT,+PRO,+INDET,+NEG]: this form occurs when the following noun is deleted-- see PRO.
- (207) a/sm: [-DEF,-DEM,+SPEC,-GEN,-ATTACH,+N DEL,-WH,-I,-II,+III]
- (a) a, sm, one, some as above, but not any/no/none.
- (208) some: all the items below have the features: [-DEF,+DEM,-SPEC,-GEN,+ATTACH,-N DEL,-WH,-I,-II,+III]
- (a) some: [[±]PL,[±]COUNT,-PRO,-INDET] in some boy(s), something
- (b) any: [[±]PL,[±]COUNT,-PRO,+INDET,-NEG] in any boy(s).
anything
- (c) no: [[±]PL,[±]COUNT,-PRO,+INDET,+NEG] in no boy(s), nothing
- (209) some: [-DEF,+DEM,+SPEC,-GEN,+ATTACH,-N DEL,-WH,-I,-II,+III,[±]PL,[±]COUNT,-PRO] no alternants
- (210) what: [-DEF,+DEM,-GEN,+ATTACH,-N DEL,+WH,-I,-II,+III,[±]PL,[±]COUNT,-PRO]
- What attaches to -thing to give what, to -one to give who, to -place to give where, etc.
- (211) All items below have the features:
the: [+DEF,-DEM,+N DEL,-I,-II,+III,-WH]
- (a) the: [-PRO,[±]PL,[±]COUNT,-ATTACH]
- (b) he: [+PRO,-PL,+COUNT,-ATTACH,+HUM,+MASC]
- (c) she: [+PRO,-PL,+COUNT,-ATTACH,+HUM,-MASC]
- (d) it: [+PRO,-PL,[±]COUNT,-ATTACH,-HUM,+[_NP [____]]]
- (e) that: [+PRO,-PL,-COUNT,-ATTACH,-HUM,-[_NP [____]]]

(f) they: [+PRO,+PL,-ATTACH,+_{NP}[____]]

(g) those: [+PRO,+PL,-ATTACH,-_{NP}[____]]

Number, [\pm HUM], [\pm MASC] are assigned by feature transfer from the head noun, as is Case, which is not included here (see PRO). [+PRO] is assigned when a following one(s) is deleted.

The feature +_{NP}[____] is assigned when N DEletion leaves no items in the NP other than the ART; it accounts for the use of that/those as non-demonstrative pronouns, used when a relative clause follows, in suppletion with it/they in the absence of a relative (see PRO).

The first half of reflexives come from the same source; their variant shapes are triggered by the additional feature [+REFL], and the fact that reflexives are one word is indicated by the transformationally added feature [+ATTACH] (all other derivatives of the are [-ATTACH]).

(h) him: [+PRO,+REFL,-PL,+ATTACH,+HUM,+MASC] etc. (see PRO)

(212) you singular and plural and its various forms are analogous to he, etc., above; the features are spelled out explicitly in the PRO report.

(213) I, we are similar; see PRO.

(214) the/a/∅ (generic)--whether GEN has underlying items is unknown.

We have not established the conditions for differentiating these surface variants of the [-PRO] generic article, except of course that a is [-PL,+COUNT] and ∅ is [+PL] or [-COUNT]. The [+PRO] forms are exactly the same as those for the (211) (e.g. They say porridge is good for you but I can't stand it, [Wolfe 45] i.e. "porridge".)

(215) this: [+DEF,-GEN,+DEM,-FAR,±N DEL,±PRO,-ATTACH,-WH,
-I,-II,+III]

(a) this: [.....,-PL,±COUNT]

(b) these: [.....,+PL,+COUNT]

(216)

(a) that: [.....,+FAR,.....,-PL,±COUNT]

(b) those: [.....,+FAR,.....,+PL,+COUNT]

These and those are not allowed to be [-N DEL] in those dialects which exclude these ones, those ones.

(217) which: [+DEF,-GEN,+DEM,+WH,-ATTACH,±N DEL,±PL,±COUNT,
±PRO,-I,-II,+III,±HUM]

no alternants.

(d) Justification of ART Analysis

(i) Justification and further description of this treatment of pronouns and of the features [N DEL] and [ATTACH] will be found in PRO.

(ii) The problems in analyzing generic articles are discussed above in Section II.A.4. From among the proposals considered there, we have incorporated Postal's (1967) suggestion that [+GEN] is a subclass of [+DEF], but this obviously leaves uncaptured a number of significant semantic and syntactic facts.

(iii) The which/what dichotomy for interrogative determiners is here regarded as one of [±DEF], following Katz and Postal (1964b) and Fillmore (1966d). However, since [-DEF] articles are subclassified as [±SPEC], that dichotomy might conceivably be a more appropriate basis for distinguishing which/what, particularly since the relative determiner-pronoun which is derived from a [-DEF,+SPEC] article, not from a [+DEF] one; the issue is complicated by the possibility of definitization in the relative clause.

In addition to the greater symmetry among the deep structure articles provided by maintaining that which is [+DEF], there is also a strong argument in favor of that analysis from the feature [\pm ATTACH]. (This is essentially Katz and Postal's argument.) The indefinite articles (in particular, the demonstratives as we argue later), both [\pm SPEC], occur in one-word compounds, someone, something, anyone, etc., while the definite demonstratives do not: *thisone, *thatthing, etc. The substantives what and who parallel someone and something as one-word forms, whereas there are no comparable combined forms for which.

However, it may be suggested that who is in fact ambiguous as to which/what, and that which as a substantive may derive from *whichthing as well as from which one(s). The possibility that where and when are ambiguous in this way seems even more likely. There seems to be a divergence of intuitions on this point, and we have not found any airtight arguments either way. We have provisionally accepted the [+DEF] analysis of which rather than the [-DEF,+SPEC] analysis.

(iv) Some and any

a. Following Fillmore (1966d) the some-any suppletion rule is made to depend on the feature [\pm SPEC(ific)] and is obligatory, rather than optional as in Klima (1964c). (See NEG.)

b. Two some's are distinguished. One is the non-demonstrative plural/mass indefinite article (i.e. the plural/mass form of a), which is pronounced with a reduced vowel (sm) when it is [-PRO] (i.e. when its head noun is not deleted) and has not received any contrastive stress. When it is [+PRO], or when it has received contrastive stress, it has the full-vowel pronunciation some; in corresponding environments a becomes one.

(218) He has { a book
sm books } and I have { a book
sm books } too.

(219) He has { a book
sm books } and I have { one
some } too.

(See PRO for the rules which accomplish this.)

The other some is distinguished by the fact that it can occur with singular count nouns.

(220) Some boy called while you were gone.

Note that the stress pattern is 2-1; the same stress pattern can be found with plurals:

- (221) Some idiots were giving out guns to anyone who came by.

Hence we conclude that the some which can occur with singular count nouns can also occur in the plural.

The feature specification of this second some is not obvious; we have called it an indefinite demonstrative, following a suggestion of Chomsky's (in a class at M.I.T.; he further suggested that some/certain was parallel to this/that, which we do not find plausible). We have no compelling arguments; the resulting symmetry of the article system compares favorably with an ad hoc feature coupled with an accidental gap, which would result if some other feature than [DEM] were used.

c. The some of some of the $\left\{ \begin{array}{l} \text{boys} \\ \text{butter} \end{array} \right\}$ is not a third some; it is simply the [-DEF,-DEM] article (a/sm) in its [+PRO] form, derived from some $\left\{ \begin{array}{l} \text{boys} \\ \text{butter} \end{array} \right\}$ of the $\left\{ \begin{array}{l} \text{boys} \\ \text{butter} \end{array} \right\}$.

See justification of the POST expansion rule (section III.B.2.d, below).

d. The combining form some- of someone, something, etc., can be seen to be the [-DEF,+DEM] article, since -one, -body, -thing, are singular. Further evidence is cocurrence with -or other:

- (222) Some boy or other called.

- (223) I saw somebody or other fooling with the lock.

e. Both some's and some occurrences of the singular a undergo any-suppletion (see NEG section) and hence can be [-SPEC].

- (i) a \Rightarrow any:

- (224) This house doesn't have any roof.
(*.....has some roof)

However, not all [-SPEC] a's can be replaced by any.

- (225) *I don't have any cigarette.

It would appear that a \Rightarrow any can take place after the have which indicates part/whole relations but not after possessional have.

(ii) sm \Rightarrow any

(226) I bought sm books today/I didn't buy any books today.

(227) John bought some, but Bill didn't buy any.

(227) exemplifies the [+PRO] form of a/sm; note that the demonstrative some does not have a [+PRO] form, as evidenced by the fact that the substantive some can never be understood as having a deleted singular count noun.)

(iii) Demonstrative some \Rightarrow any

(228) I didn't see anybody there.

Example (228) is weak evidence, in that it depends on the decision to analyze the combining form some- as the demonstrative. Examples parallel to (222) are harder to find. Perhaps the following is such a case.

(229) I don't believe any boy called.

Sentence (229) is certainly not a case of sm \Rightarrow any, since sm does not occur with singular count nouns. It differs from (222), however, in not allowing or other to be added. It could conceivably be a case of a \Rightarrow any.

f. That both some's can be [+SPEC] as well as [-SPEC] can be seen from the following:

(230) Some of the boys didn't go.

(231) Some boy didn't wipe his feet off.

(232) Someone isn't telling the truth.

g. The two some's can both occur with a following plural or mass noun. They are differentiated by stress pattern.

(233) sm boys [-DEM]
 4 1

(234) some boys [-DEM], with contrastive stress added,
 1 3 contrasting with others or all/none.

(235) some boys (-or other) [+DEM]
 2 1

h. Any is generated as a suppletive alternant of both [-SPEC] some's and a in the environment of NEG, WH, and [+AFFECT] -words (see NEG). The "generic" any of

(236) Any student can run for office.

is not generated by those rules. This any occurs in the same environments as either and shares a number of properties with every, each and all. It is therefore being classed with them as a [+DIST(ributive)] QUANT(ifier), rather than as an article. (It is conceivable that all of the [±DIST] QUANT's (see next section) are actually articles; treating them as such would appear to be compatible with the rest of our analysis, and would eliminate the need for special co-occurrence restrictions between these quantifiers and articles.)

2. POST → (ORD)(QUANT)(CHIEF)

ORD(inal) includes first, second, ..., last, next, perhaps only, and perhaps (presumably derivatively) superlatives. See note under Unexplored Areas and Unresolved Problems on complements with ORD.

QUANT(ifier) includes one, two, ..., several, many, a few, which have the feature [-DIST(ributive)], and all, each, every, either, any, which are [+DIST(ributive)]. See section on DISTributives below.

Only any and every occur in compounds with -one, -body, -thing, etc., and thus have the feature [+ATTACH]. All of the QUANT's except every have the feature [+N DEL], permitting them to stand as pronouns. This feature is optional for each and either, since they can occur with or without a following one.

CHIEF includes main, chief, principal, upper, inner, lower, outer, and perhaps poor in the sense of poor John and old in the sense of an old friend. This category has not begun to be explored here; Bolinger (1967) has some relevant comments. At the moment this is just a repository for adjectives which appear not to be derivable from reduced clauses.

(a) Order of POST Constituents

Among the constituents of POST, QUANT appears to follow ORD(inal) and precede CHIEF.

Examples having all three constituents follow.

- (237) (a) The last three poor men who tried that were eaten alive.
 (b) The next few principal speakers will be briefer.
 (c) The first three inner doors have combination locks.
 (d) *The first every main idea...
 (e) *The last all outer doors...

(The [+DIST] QUANTifiers appear to be excluded from occurring following ORDinals or following the definite article, so (d) and (e) should be ruled out on two counts; but see section (b) below for an alternative explanation.)

There are apparent exceptions to this order however.

- (238) All first children are spoiled. (Q-0)

This appears to be an adjective first (=firstborn) rather than a true ORDinal. Since ordinary adjectives follow CHIEF, this would then be the expected order.

- (239) Every second child was given a pencil. (Q-0)

This is ambiguous; on one reading second is an adjective (as in every second son is neglected), and hence not exceptional. On the other reading, where second = other (but third, etc., also occur) this does seem to be a real exception not accounted for.

- (240) All three boys hurried out. (Q-Q)

See the transformational rules, where this is derived from all of the three boys, hence not exceptional.

- (241) Every three days he calls his broker. (Q-Q)

This is a frequency adverbial, not an ordinary NP. Note the absence of *Every three children were sick.

(242) Three more people arrived yesterday. (Q-Q)

All determiners containing more, most, less, least, or comparatives such as fewer, etc., involve adverbs of degree modifying a quantifier, not two quantifiers. Details are not worked out here, however.

(b) Distributives

In most discussions of quantifier analyses and partitives, the plural cardinal numbers, e.g. three, have been taken as typical. Many items commonly regarded as quantifiers behave differently from the cardinal numbers in significant respects, however. Some of these differences are great enough to call into question the inclusion of all of these items under a single category QUANT. Note that we have included all instances of some under ART, not QUANT; this would suggest that some other quantifiers may be ART's, particularly those which cannot occur with (other) overt articles.

In earlier analyses which distinguished PRE- and POST-articles, both classes included quantifiers; the quantifiers in POST (which we refer to as DISTributive) were a subset of those in PRE, based on differences such as the following.

(243) (a) $\left\{ \begin{array}{l} \text{Three} \\ \text{Many} \\ \text{Few} \\ \text{Several} \end{array} \right\}$ of the boys were sick. (PRE)

(b) The $\left\{ \begin{array}{l} \text{three} \\ \text{many} \\ \text{few} \\ \text{several} \end{array} \right\}$ boys were sick. (POST)

(c) $\left\{ \begin{array}{l} \text{Three} \\ \text{Many} \\ \text{Few} \\ \text{Several} \end{array} \right\}$ boys were sick. (ambiguously generated as PRE or POST with [-DEF] article, though in fact apparently unambiguous.)

(d) $\left\{ \begin{array}{l} \text{Every one} \\ \text{Any (one)} \\ \text{Either (one)} \\ \text{Each} \\ \text{Some} \\ \text{None} \\ \text{All} \\ \text{Both} \end{array} \right\}$ of the boys may have done it. (PRE)

(e) *The $\left\{ \begin{array}{l} \text{every (one)} \\ \text{any} \\ \text{either} \\ \text{each} \\ \text{some} \\ \text{no} \\ \text{all} \\ \text{both} \end{array} \right\}$ boy(s) may have done it. (non-POST)

(f) $\left\{ \begin{array}{l} \text{Every} \\ \text{Any} \\ \text{Either} \\ \text{Each} \\ \text{Some} \\ \text{No} \\ \text{All} \\ \text{Both} \end{array} \right\}$ boy(s) may be investigated. (PRE with [-DEF] ART)

Within the partitive analysis, another basis for the distinction must obviously be found. There are basically two choices: either both types are QUANT, differing only in certain syntactic features, or the Distributives are of another category, with a likely candidate being ART.

Among the relevant considerations are the following:

(i) Some has been argued to be an article; in fact two distinct articles some have been defended. There seems to be no good defense for introducing a third some as a QUANT, but it certainly shares many properties with the Distributives. For instance, all of the forms which can combine with -one, -body, -thing, etc. are Distributives: every-, any- (both suppletive and "generic"), no- (suppletive form). Although this is a relatively superficial fact, it would be more reasonable for the feature [+ATTACH] marking such forms to be restricted to a single category.

(ii) The non-occurrence of (243.c) would be automatically accounted for if Distributives were articles; it requires otherwise an ad-hoc contextual feature limiting their occurrence to the environment of some one specific article, which is subsequently deleted. Arguments for the choice of article are not obvious; semantically (except for both, which always seems to be definite, and in the same way as all three--it is probably best regarded as derivative from all two, and therefore need not be treated as a Distributive at all) they seem distinct from ordinary cases of either definite or indefinite, and share many properties of generics. They all fail Postal's environmental tests for definiteness, but except for [-DEM] cases of some (and its suppletive any and no), they cannot occur in existential There is/are... sentences either.

(iii) It is the Distributives which cause serious problems in the formulation of identity conditions for pronominalization and EQUI-NP deletion (see PRO and NOM) as well as for the postulation of plausible constituent determiners for relativization (see REL). They are also the ones which seem least plausible as predicates in a Lakoff-type analysis. The fact that similar problems arise with \emptyset -article generics lends plausibility to the notion that the Distributives might be generic articles, but might simply mean that the deleted co-occurring article was generic.

- (244) (a) All philosophers respect themselves.
 (b) Every boy helped himself.
 (c) Masochists hate themselves.
- (d) All philosophers respect all philosophers.
 (e) Every boy helped every boy.
 (f) Masochists hate masochists.
- (g) (All) women expect (all) women to talk about babies at parties.
 (h) (All) women expect to talk about babies at parties.
- (i) $\left. \begin{array}{l} \text{No} \\ \text{Every} \end{array} \right\}$ linguist who understands Chomsky believes him.
 (j) Linguists who understand Chomsky believe him.

Further, presumably related, problems arise in the imperatives, where the combined forms somebody, everybody, nobody seem to be able to function as second person. Other quantifiers share the same

behavior to some extent, but in such cases seem more like vocatives, which nobody certainly cannot be. (Cf. IMP.)

- (245) (a) Nobody say a word (please).
 (b) Everybody cross yourself when you go up the aisle (Please).
 (c) ?Five boys go to the blackboard now (please).
 (d) *Many boys go to the blackboard now (please).
 (e) The few boys in the back row move up closer (please). (vocative?)

(iv) If the Distributives co-occur with the other quantifiers, their analysis as articles is further motivated. If they cannot, then the question is one of relative complexity of constraints, since the Distributive class must in any case be excluded from the environment of most articles. The facts are not altogether clear. Some combinations seem acceptable, others marginal or totally excluded. Further complications arise from the fact that some of the acceptable ones seem to have very special interpretations, and some of the unacceptability judgments may be due to semantic incompatibility.

- (246) (a) Any three boys can solve that problem.
 (ambiguously together vs separately)
 (b) Some few people listened to the closing speech.
 (c) No two snowflakes are exactly alike.
 (d) ?Every ten students { have } a separate squad.
 { form? }
 (e) *Each three students have a separate room.
 (f) *Either five carpenters could have built that house. [But every, each, either require singular nouns anyway]
 (g) { *Some }
 { *Any } many students came to the meeting.
 { *No }
 (h) All { three } babies started crying at once.
 { several }

Note that the treatment of some as an article accounts for all the clearly acceptable cases, namely (246.a-c), but also generates the unacceptable (246.g).

None of the arguments given above appears conclusive with respect to the basis for distinguishing the Distributives from the other quantifiers, and although the choice would have repercussions in several other areas of the grammar, part of the problem is that

no analysis has been found which will solve the problems raised by these quantifiers in those areas. Thus we have still an unsolved problem at this point which correlates with unsolved problems for EQUI-NP deletion, relativization, pronominalization, and imperatives. This is clearly a crucial area for further investigation.

In UESP 1967 the Distributives were analyzed as QUANT's having an ad hoc feature [+DIST]. We now regard the ART analysis as slightly more defensible, but not sufficiently so to carry out the revisions required, since either analysis would be extremely tentative.

(c) Lexical entries for QUANTifiers

1. many/much/few/little: [-DIST,-ATTACH,+N DEL]
(unmarked for [__[-COUNT]], [__[+PL]], [[+DEF]__],
[[-DEF]__].)
2. two, three,...: [-DIST,-ATTACH,+N DEL,+[__[+PL]],
-[__[-COUNT]]]
3. one: [-DIST,-[__[-COUNT]],-[__[+PL]],-ATTACH,+N DEL]
4. several: [-DIST,-ATTACH,+N DEL,-[__[-COUNT]],+[__[+PL]],
-[[-SPEC]__]]
5. a few/a little: [-DIST,-ATTACH,+N DEL]
6. every: [+DIST,-[__[-COUNT]],-[__[+PL]],-[[+DEF]__],
-[[+SPEC]__],+ATTACH,-N DEL]
7. any: [+DIST,+ATTACH,+N DEL,-[[+DEF]__],-[[+SPEC]__]]
8. either: [+DIST,-ATTACH,-[__[-COUNT]],-[__[+PL]],
-[[+DEF]__],-[[+SPEC]__]]
9. each: [+DIST,-ATTACH,-[__[-COUNT]],-[__[+PL]],-[[+DEF]__],
-[[-SPEC]__]]
10. all: [+^(±?)DIST,+N DEL,-ATTACH,-[[+DEF]__],-[[+SPEC]__]]

The numeral one which appears as a quantifier is distinguished in our analysis both from the pro-N one and from the one which occurs as a stressed variant of a. Discussion can be found above, II.A.2,

and in PRO, II.B.2. The following examples have similar surface structures but different deep structures for one:

- (247) (a) John has two cars but Mary has only one. (QUANT)
 (b) John has a car and Mary has one too. (ART)
 (c) John has a blue car and Mary has a red one.
 (N[+PRO])

3. PARTitives

All 'prearticles' are here analyzed as POST articles, and more specifically as QUANT's. The [-DIST(ributive)] QUANT's can occur with either a definite or an indefinite article:

- (248) (a) [+DEF] The three boys are here.
 (b) [-DEF] Three boys are here.

The [+DIST] QUANT's can occur only with one article, which is always deleted. What that article is was discussed under the Distributive section.

It has been claimed (Chomsky orally, Hall (1962a, 1962b, 1963a), Postal (1967) that the definite analog of (248.b) is (249):

- (249) Three of the boys are here.

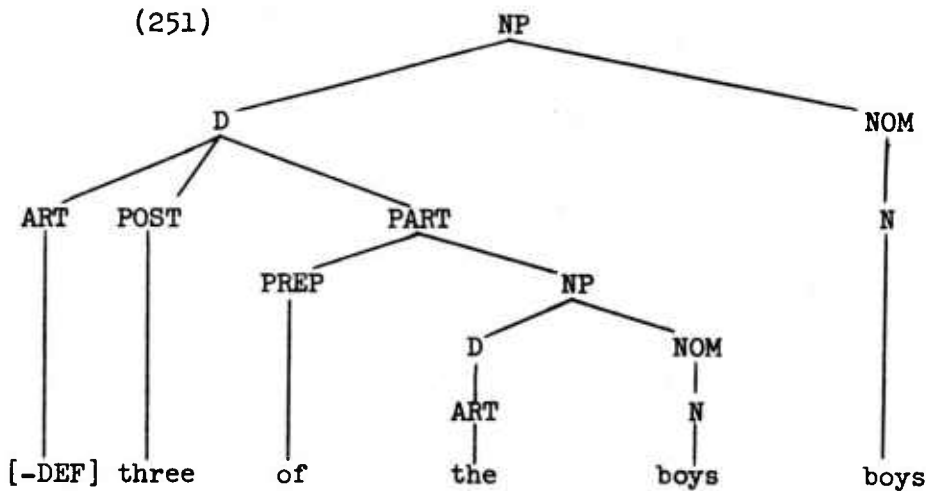
(Perhaps (247.b) is claimed to be ambiguously related to both (247.a) and (249); that has never been made clear in such a proposal.) We are rejecting that analysis and claiming rather that (249) is derived from (250).

- (250) Three boys of the boys are here.

Of the boys is considered a modifier of the first boys, which is the head N.

We thus posit a "partitive" construction as underlying what on the surface is a prearticle construction. The partitive is introduced by the rewrite rule: D → ART (POST(PART)).

Under this analysis, three of the boys has the deep structure of (251):



Transformations operate on (251) giving the derivation of (252).

- (252) (a) Three [of the boys] boys -->
 (b) Three boys [of the boys] -->
 (c) Three ones of the boys -->
 (d) Three of the boys

Once three of the boys is analyzed as deriving from three boys of the boys, there is no longer any justification for a PRE-article position. Since the indefinite article is always deleted with QUANT, only the three boys is left to offer information about the position of QUANT, namely that it follows ART. (All the boys is not an exception, since it is an optional variant of All of the boys.)

In the present treatment, therefore, all quantifiers are post-articles. Those which cannot occur with a preceding definite article (*the all boys, *the every boy, etc.) are required by a contextual feature to occur with a particular article which is later deleted; see discussion of DIST above.

The arguments for and against a partitive analysis have been presented in II.B.2. Let us note here some motivations for the particular partitive analysis we have chosen.

Partitives have not been considered a case on N for several reasons. Foremost among them is the fact that there are no nouns having idiosyncratic constraints on PART as they do on all other cases. I.e., PART apparently is a live option for every noun. Second, if PART is considered one of a string of cases following N, it would

be difficult (impossible?) to state identity conditions for deletion of items preceding PART. Third, it would be necessary to block all trees having PART where other cases preceding PART were not identical to those under PART. I.e., phrases like (253) would have to be blocked.

(253) *three from John of the six gifts to Mary

Fourthly, PART has no counterpart within PROP.

One way to avoid some of these problems would be to postulate PART as an alternative to the cases on N, i.e. by a rule like (254):

$$(254) \text{ NOM} \rightarrow \left\{ \begin{array}{l} \text{NOM} \quad \text{S} \\ \text{N} \left\{ \begin{array}{l} (\text{ESS}) (\text{NEUT}) (\text{DAT}) (\text{LOC}) (\text{INS}) (\text{AGT}) \\ (\text{PART}) \end{array} \right\} \end{array} \right\}$$

However, this distinction is rather ad hoc and still has the disadvantage of reducing the parallelism between NOM and PROP. Furthermore, neither this nor a true case analysis of PART permits the necessary statements of the restrictions between PART and other parts of the determiner.

Any POST permits the occurrence of a PART, and this generalization is captured in our analysis by the nesting of the options (POST (PART)). However, the given rule does not account for the fact that in some instances a PART may appear without a POST, as in the examples below.

(255) (a) The ones of the boys who you met are here
(perhaps the ones \Rightarrow those obligatorily;
the REL is essential in any case)

(b) Some of the boys are here (some is ART)

(c) ?The boys $\left\{ \begin{array}{l} \text{of} \\ \text{among} \end{array} \right\}$ the group protested.

The issue is complicated by the fact that it is not clear whether among-phrases should be included in PART; their occurrence is certainly much less restricted than that of of-phrases. Clearly if the Distributives were all analyzed as ART, the rule would best be changed to

D \rightarrow ART (POST) (PART)

with the remaining restrictions on PART represented as contextual features on ART wherever possible. The combination of the and PART, whether without POST as in (255.a) or with it as in (256) below, always requires a restrictive REL.

(256) The three of the boys who disagreed left.

The fact is not easily stated if the REL is derived from NOM S, but is even harder to state if PART is not part of DET.

There are a few other special restrictions which the PART construction entails. Among them are the following.

(a) Indefinites

It has been suggested that indefinites do not appear on the article of the PART NP. Perhaps there is a dialect difference here, for some speakers accept the following sentences.

(257) One of some boys who were playing in the alley got arrested.

(258) He ate three of some apples he found on the ground.

(b) Singular

The possibility of singular N's appearing in the PART appears doubtful. The use of fractions is only an apparent counter-example. Cf.

(259) One-half of the broom is red.

Such constructions fail the topicalization test (260), the paraphrase test (261), and the non-generic test (262).

(260) *Of the broom one-half is red.

(261) *One half broom of the broom is red.

(262) One-half of a broom is not very useful.

(c) Generic

It has been generally agreed that a special restriction must be placed on the PART article to disallow generics. Cf.

(263) *One of boys/a boy should emulate great heros.

(264) *One of the lion is a fierce animal.

It also seems true that a generic head N can not have a PART on it.

(265) *The short-tailed (dog) of the dog is quite unattractive.

(266) *The miniature (greyhound) of the American greyhound(s) is a popular dog.

(d) ORD and CHIEF

ORD's and some CHIEF's may be used on the head N with a PART.

(267) The second of the five cooks is dishonest.

(268) The last of the James brothers was shot 15 times.

(269) The lower of the supporting beams is cracked.

(270) ?The inner one of the locked doors has a very heavy iron bolt.

(271) *The main (one) of the speakers couldn't make it.

All ORD's and CHIEF's occur happily in the PART NP.

(272) The second of the first five cooks is dishonest.

(273) One of the next batters will bunt.

(274) Two of the lower beams are cracking.

(275) Two of the inner doors are locked.

(276) Two of the main speakers couldn't make it.

In sum, with the exception of the idiosyncratic restrictions on CHIEF's on head N's, no new restrictions seem to be required for ORD and CHIEF in partitive constructions.

(e) Person and Number Agreement

Partitives raise some problems in pronominalization and other anaphoric processes which depend on identity of person and number features. Apparently the identity can always be on the N of the final partitive but it sometimes can also be on preceding N's. It seems that only in forms which overtly allow one to remain as a pro-N for a pre-partitive N can the identity be on that N.

(277) All (*ones) of us { like our milk cold, don't we?
*like their milk cold, don't they? }

(278) Each (one) of us { like our milk cold, don't we?
likes his milk cold, doesn't he? }

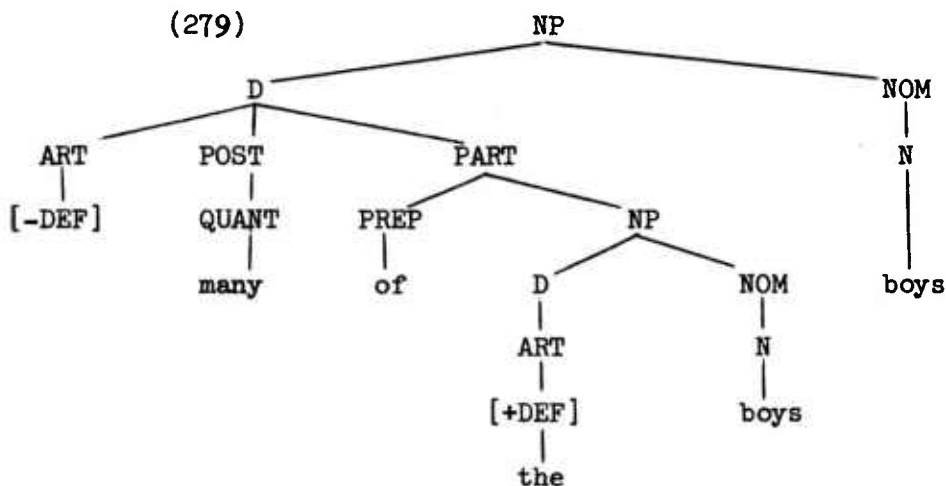
None, few, some, several, many, most seem to work like all; no, every, either, any seem to work like each.

C. Transformations

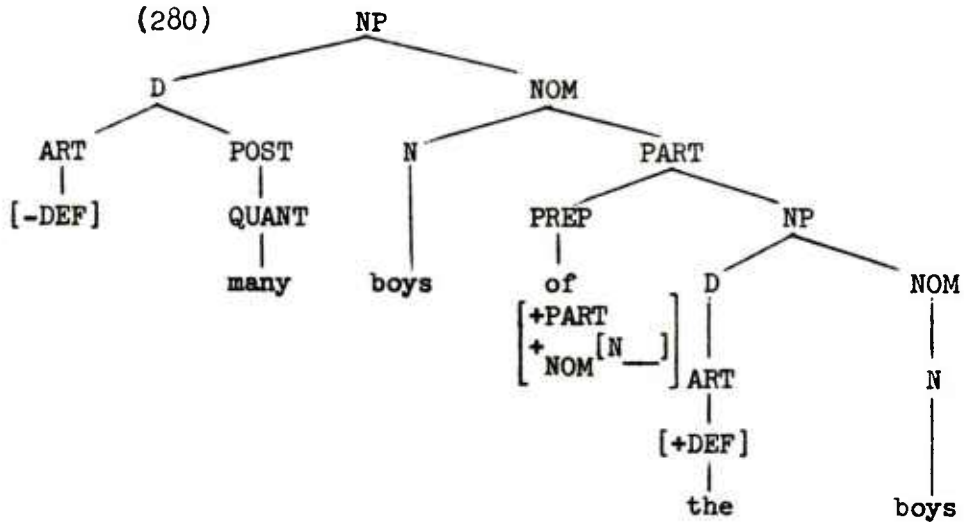
1. Derivation of many of the boys

One of the attractive features of the proposed analysis for quantifier constructions is that almost no transformations are used which are not needed elsewhere anyway. A special reordering rule is required to move the PART to post-N position; and pronominalization of the repeated N to one has to apply backwards in these cases (see PRO). (It would be tempting to try to have the pronominalization rule apply forward before PART is moved, but it is not clear whether the PART-movement rule can be ordered that late in the grammar; we therefore assume here that PART-movement precedes PRO-ing.) The PART-postposing rule is stated below in section C.2.

(a) Base: many [of the boys] boys

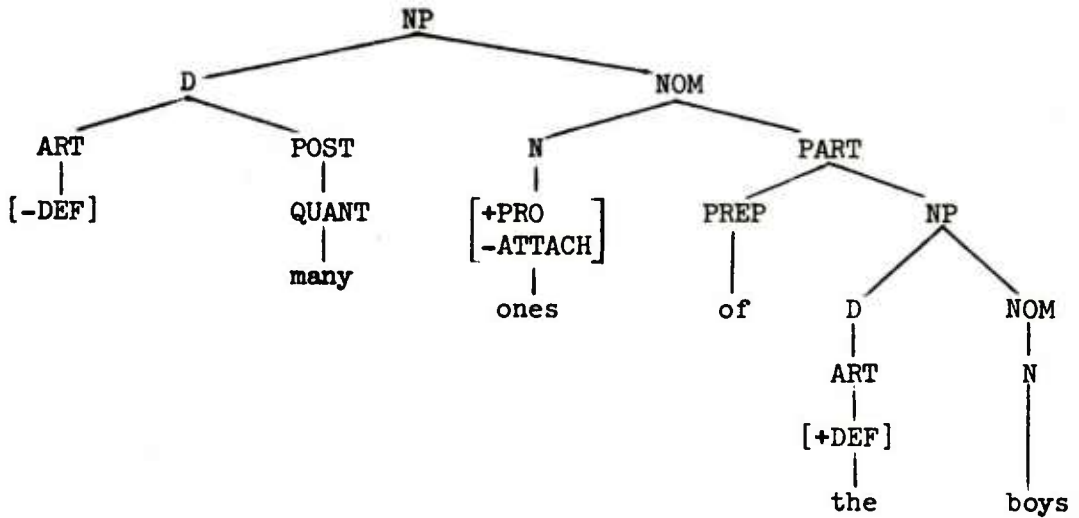


(b) PART - postposing \Rightarrow many boys of the boys



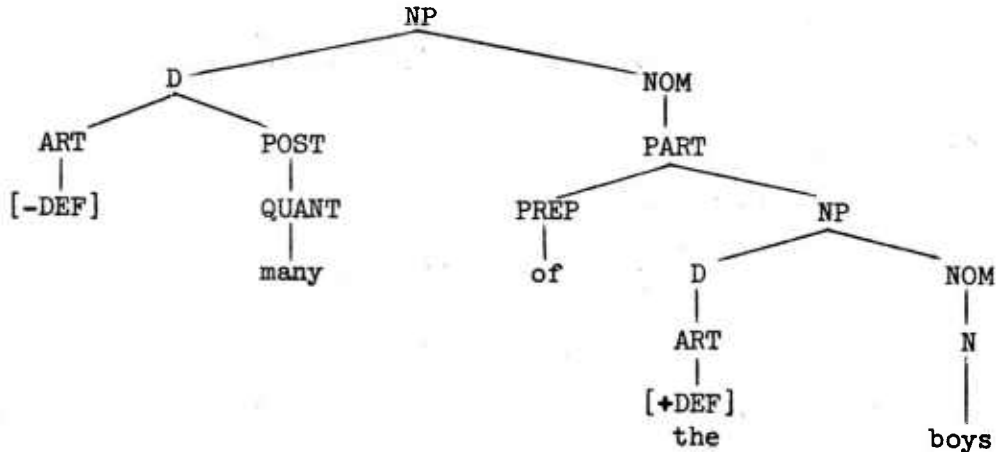
(c) Reduction of boys to ones, yielding many ones of the boys (See PRO)

(281) PART N-Node Reduction \Rightarrow



(d) Deletion of one(s) after any item marked [+N DEL] (see PRO), yielding many of the boys, the final form.

(282) DELETION OF N-NODE ⇒



2. Idiosyncratic Determiner Transformations

(Note: These transformations are presented in an abbreviated format since they are all "minor" rules.)

(a) T PART-POSTPOSING

Structure Index:

X	D	[X PART]	NOM	[N]	X
1	2	3	4	5	

Condition:

Obligatory

Structure Change:

Attach 3 as right sister of 4
Erase (original) 3

Notes

1. The PART is adjoined to the head N of the NP; thus any relative clause on the PART precedes those on the head; cf. ex. (176) in Section II.B.2 above.

Examples

(283) Three (boys) of the boys left.

(284) One (boy) [of the boys who were singing] who was not watching the conductor lost his place.

(b) T ALL - THE

Structure Index:

X	-	{	all	}	-	of	-	ART	[+DEF]	-	X
1		2		3		4		5			

Condition:

Optional

Structure Change:

Erase 3

Examples

(285) All (of) the boys went home early.

(286) *Many the boys went home.

(c) T ALL-THREE

Structure Index:

X	-	all	-	ART	[	+DEF	]	-	QUANT	[+INTEGER]	-	X
1		2		3		4		5				

Condition:

Optional

Structure Change:

Erase 3

Notes

1. This rule can only apply after T ALL-THE, but its statement makes the ordering intrinsic.
2. Example (287) below has two successive QUANT's in its surface structure. However, the facts that (i) (287), (288), and (289) are synonymous and differ in meaning from (290), (ii) two successive QUANT's cannot normally occur, indicate that this transformation is correct and two successive QUANT's are to be excluded from the base (except possibly for certain Distributives, as discussed above).

Examples

- (287) All three boys left early.
- (288) All the three boys left early. (by non-application of this rule)
- (289) The three boys all left early.
- (290) (*)Three boys all left early.

Problems

1. Example (291) below is also synonymous with (287) and (288) above, but (291) is derived from (292), using both T ALL-THE and T ALL-THREE.

- (291) All three of the boys left early.
- (292) ?All of the three of the boys left early.

In addition to the fact that the synonymy of (291) with (287) and (288) is left unaccounted for, the source (292) contains as a subpart the NP (293), which in general obligatorily requires a restrictive relative clause, and yet (291) does not require a relative clause.

- (293) ...the three of the boys

If another rule were added to derive (291) from (294) (the source for (287-9)), (291) would be incorrectly predicted to be ambiguous.

- (294) All of the three boys left early.

2. The fact that (295) does not require a relative clause is probably significant but so far simply mysterious.

(295) ...the three of them...

(d) T QUANTIFIER MOVEMENT

Structure Index:

X -	QUANT	[+SHIFT]	- OF -	NP -	X -	TNS -	X
1	2		3	4	5	6	7

Condition:

Optional

Structure Change:

- (1) Attach 2 as left sister of 6
- (2) Erase (original) 2 and 3

Notes:

1. Number agreement applies after this rule:
 - (296) Each of the boys has examined the evidence.
 - (297) The boys each have examined the evidence.
2. Later positioning of these quantifiers appears to follow the rules for pre-verbal adverb placement (see NEG), so perhaps a node ADV should be inserted above these QUANT's when they are moved.
 - (298) The boys have each examined the evidence.
3. QUANTifiers marked [+SHIFT] are all, both, each, respectively.
4. These same items can appear in this derived position with conjoined NP's; see CONJ.

Examples:

- (299) The children were all playing outside.
- (300) The floor was all wet.
- (301) Those books were both delightful.

Problems:

The movement of the quantifier has repercussions not only for number agreement of the verb, but also for number agreement with other NP's in the sentence and even for grammaticality in some cases.

- (302) (a) Each of the boys examined himself for ticks.
 (b) The boys each examined themselves for ticks.
- (303) (a) Each of the mountains is taller than the one to its south.
 (b) *The mountains are each taller than the one to $\left\{ \begin{array}{l} \text{its} \\ \text{their} \end{array} \right\}$ south.

(e) T PROPER NOUN THE-DELETION

Structure Index:

$$X - NP \left[\begin{array}{l} [+DEF] \\ ART \quad [-DEM] \end{array} \right] N [-COMMON] - X$$

1 2 3 4

Condition:

Obligatory

Structure Change:

Erase 2

Notes:

1. This rule must follow pronominalization, since the personal pronouns are analyzed as articles--i.e., the article must still be present when pronominalization occurs.

2. Our analysis agrees essentially with that of Sloat (1968), in claiming that there are no special deep structure restrictions between DET and proper nouns, and that the non-occurrence of *the Alfred is due simply to a late deletion rule.
3. Proper names which occur with the definite article, such as The Hague, The Amazon, The Rockies, The Pacific, would have to be marked with an exception feature under this analysis. Perhaps a fuller treatment could make use of the deleted nouns River, Mountains, etc.
4. The analysis of ART + N as NP is meant to exclude relative clauses, to account for the grammaticality of (204.b). This analysis suffices for the NOM-S or ART-S analysis of relatives but would have to be modified for the NP-S treatment.
5. Some nouns written with a capital letter must nevertheless be regarded as common nouns, both because they do not obey this rule and because semantically they do not name particular individuals; examples include American (as designation of inhabitant), Texan, Catholic. The normalcy of such phrases as the Smiths, the Kennedys, etc., could mean either that surnames are common nouns or that the rule applies only to singular proper nouns. Contrasts such as Orion vs. the Pleiades, Bermuda vs. the Azores, give some slight support to the latter view.

Examples:

- (304) (a) There are lots of Tracy's and not many Barbara's in my son's generation.
 (b) The Peter Smith that I knew played the bagpipes.
 (c) Most Elizabeth's have nicknames.
 (d) Which Paul were you talking about?
- (305) (a) *We met the Susan at a cocktail party.
 (b) We met Susan at a cocktail party.

(f) T INDEF - BEFORE - QUANT DELETION

Structure Index:

X	-	ART	-	[	-DEF	]	-	QUANT	-	X
					-	DEM				
1					2			3		4

Condition:

Obligatory

Structure Change:

Erase 2

Notes:

1. The fact that the deleted article may be either [+SPECIFIC] or [-SPECIFIC] accounts for the ambiguity of examples like (306) below. Dialects which find (306) unambiguously [-SPECIFIC] are not accounted for; it is not clear what becomes of corresponding deep structures with [+SPECIFIC] in such a position in such dialects. Perhaps the THERE transformation is obligatory for that situation, yielding there were five questions that John couldn't answer.

The [[±]SPECIFIC] distinction in the deleted article also accounts for the distinction between (307.a) and (307.b) below, a distinction parallel to that between some ([+SPECIFIC]) and any ([-SPECIFIC]). (Some speakers dislike (307.b) and find (307.a) ambiguous.)

(306) John couldn't answer five questions.

(307) (a) Ten of the books weren't on the shelf.
([+SPECIFIC])

(b) Not ten of the books were on the shelf.
([-SPECIFIC])

2. The feature [-DEM] is included in the S.I. so that what will not be deleted. We have no strong intuitions about the demonstrative some with respect to deletion; we do not delete it because doing so would both complicate the rule and predict an added ambiguity which we do not feel to be present.

(308) (a) What three books would it be most valuable to read?

(b) What two American cars have rear-engine drive?

(309) (a) ?Some three students will surely volunteer to help.

(b) ?Some two of the problems must have had the same answer.

(310) * $\left\{ \begin{array}{l} \text{What} \\ \text{Some} \end{array} \right\} \left\{ \begin{array}{l} \text{every} \\ \text{each} \\ \text{all} \end{array} \right\}$ student(s) can solve all the problems.

Example (310) is currently generated, though it clearly should not be. However, extending the deletion rule to delete [+DEM] articles before [+DIST] quantifiers would unwarrantedly predict additional ambiguities. Hence the avoidance of (310) should be a matter of deep structure constraints, e.g., by analyzing all [+DIST] quantifiers as ART.

3. This rule must follow NEG ATTRACT (cf. NEG) so that the [+INDET] article which attracts NEG will still be present, accounting for the position of NEG in sentences like (307.b). On the other hand, it must precede ANY-NO SUPPLETION so that the sequence NEG-any-QUANT (i.e.

NEG - $\left[\begin{array}{l} -\text{DEF} \\ -\text{DEM} \\ \text{ART} \quad +\text{INDET} \end{array} \right]$ - QUANT) is realized as not-QUANT, not

as no-QUANT.

- (311) (a) *No many people arrived.
 (b) Not many people arrived.

Phrases such as any three, no three, etc. are not generated in our grammar and it is not clear how they should be analyzed. Since no three and not three have distinct meanings, optionality of the rule for certain QUANT's does not appear to be the answer.

4. This rule must precede QUANTIFIER MOVEMENT, so that we have a derivation such as an each of the boys \Rightarrow each of the boys \Rightarrow the boys each; the opposite order would give an each of the boys \Rightarrow *a the boys each, to which this rule could not apply.

D. Unresolved Problems and Unexplored Areas

1. There is an ADV of degree that can appear in the QUANT, probably originating modifying many/much. It includes nearly, almost, and may include the integers and such quantifiers as cupful, pound, but detailed treatment of it awaits general work on adverbs.

Hale (1964) has thoroughly explored the possibility of employing adverbials within the DET not only for measure phrases (Degree) but also for some comparative constructions; but no adverbs have been included in this grammar.

2. Fractions and words like majority have not been analyzed at all.

3. Superlatives, in the surface structure at least, seem to have a good bit in common with ORDinals. Note in particular the infinitival complement which can occur with superlatives and ORDinals but not with ordinary adjectives or other determiners:

- (312) (a) The first American to be killed in Vietnam was X.
 (b) The worst play to be produced on Broadway was X.
 (c) The oldest student to be admitted was X.
 (d) *The old student to pass the exam was X.
 (e) *These students to pass the exam were X.

In this respect only also seems to function as an ORDinal.

- (313) The only student to pass the exam was X.

Note that these infinitival complements are distinct from those apparently derived from ordinary relative reduction where there appears to be an underlying be to:

- (314) (a) The people to leave tomorrow should pack tonight.
 (b) That is not an idea to sneeze at. (from to be sneezed at?)

4. When there is a definite article preceding QUANT OF NP there must be at least one relative clause associated with that QUANT.

- (315) (a) *The one of the boys is talking.
 (b) The one of the boys who is interested is talking.
 (c) The one of the boys who is/are in the room who is interested is talking.
 (d) *The one of the boys who are in the room who are interested is talking.

It makes no difference how many, if any, relative clauses are associated with the inner NP as long as there is at least one associated with the outer one. There is no such restriction when the first the does not occur. This restriction is perfectly clearcut, and in fact lends support to the proposed analysis, but we do not see any natural way to state it.

5. In CONJ it is argued that number agreement between subject and AUX should be stated for surface structure (i.e., following AUX-inversion). We have not tried to work out such a rule; we have in fact argued that CONJ number agreement may be separate from ordinary number agreement, in which case ordinary (i.e. non-CONJ) number agreement for American English (i.e. *the family are) can be made to depend simply on the number of the head noun of the noun phrase.

Number agreement between noun and determiners is subsumed under the feature-copying rules in PRO.

Number agreement between noun phrases across the copula is assumed to be a matter of semantic, not syntactic, anomaly, so we are generating:

- (316) (a) His diets are a nuisance.
 (b) His diet is oranges.
 (c) Cinderella will be two pumpkins.
 (d) Two men are the horse.
 (e) Dogs are a good pet.
 (f) Mary is three people.
 (g) John is naughty boys.
 (h) Those children are a good girl.

etc.

6. This and that, these and those have some peculiarities.

a. This appears sometimes to be a kind of indefinite article in what may be a substandard dialect, or at least extremely colloquial:

- (317) (a) When I walked into the room, I saw this girl sleeping on the sofa, so I left.
 (b) There's this problem we keep running into about how to attach features to higher nodes.

This this appears to be slightly more specific than a, but not in any contrast with that. It is especially frequent in substandard narrative style:

- (318) There's this guy and he has this horse and this other guy tries to get it...

b. The following are not paraphrases.

- (319) (a) Get me that red pillow on the sofa.
 (b) Get me that red pillow on the sofa.

However, given sufficient preceding context, the difference might be representable as depending on repetition vs. contrast: in (319.a) the "red pillow" is the one already mentioned, so nothing is stressed, while in (319.b) the "red pillow" desired is being distinguished from some other red pillow on the sofa. Hopefully, then, these cases could be made to follow Gleitman's rules of stress for repeated and non-repeated material, extended to apply optionally on first occurrence to represent non-linguistic preceding context.

c. The pronominal forms have some peculiarities discussed in PRO.

7. What, which, and who have been treated, but the extension of this analysis to where, when, etc., is not worked out because ADverbs are not treated in this grammar.

8. Mass and plural nouns share some properties and should probably have a feature in common (opposed to count singular); we have not introduced any such feature. It does not seem advisable to represent them as any more closely related than singular and plural count nouns or than singular mass and count nouns, since the present [*PLural] distinction accounts for number agreement of this/these, that/those and of the verb phrase, while the present mass/count distinction accounts for replaceability by the reduced noun one(s) and co-occurrence with integers. A feature shared by mass and plural would account for the a/sm distinction.

9. There are some restrictions on the NP which follows a COP BE, and in this section we are concerned with those on the DET in particular.

First, we note that [+DIST] items can occur in this position only if the NP contains an S.

- (320) (a) *They are both/each/all/any/either of his daughters.
 (b) *They became both/each/all/any/either of his
 two/many cars.
 (c) *They are both/each/all the daughters.
- (321) (a) They are all the daughters he has.
 (b) That is every cent he has.
 (c) Those are all the lummoxes I know.

Apparent counterexamples to this generalization are the following:

- (322) (a) There/here are all/each/both of his (two) daughters.

But the NP of (322.a) is actually the subject in the deep structure, viz. All/each/both of his (two) daughters are there/here.

- (322) (b) They are all/each/both dancers.

Again the counterexample is only apparent since the deep structure is All/each/both of them are dancers. Note that All of them became dancers underlies They all became dancers just as All of them are dancers can optionally become They all are dancers.

Example (323) is interesting since its ambiguity is tied into an apparent counterexample. One source of the sentence is (321.a). The other is All of them are his daughters which is like (322.b) above.

- (323) They are all his daughters.

A possible feature specification for [+DIST] QUANTifiers is thus:

- [COP [ART ___N(ADV)]]
NP

A second restriction that apparently should be made on predicate NP's is that they should not contain a [+SPECifical] indefinite article. In simple sentences we have no clear test for determining whether the article a in a predicate nominal is [-SPECifical] or possibly generic, as in John is a pacifist, John is a boy I met at a demonstration last year, etc. However, since relativization hinges on the [+SPECifical] indefinite article, that article must be excluded from predicate nominal position to prevent deriving *the teacher that John is, etc.

10. Since we do not in general assign features to the node NP, we have not made any serious attempt to describe the role of the partitive in determining certain properties of the NP in which it occurs. There are a number of examples where the partitive has significant effects for pronominalization and for the formation of imperatives, but we have no way to account for the relevant distinctions.

- (324) (a) All of you have incriminated yourselves
(*ourselves, *themselves).
(b) All of us have incriminated ourselves (*your-
selves, *themselves).

- (325) (a) One of you please come to the blackboard.
(b) One of the boys near John please tell me what he wants.
(c) *One of them please come to the blackboard.
(d) *One of the boys near you please tell me what John wants.
- (326) (a) Every one of you has betrayed your country.
(b) *Every one of you has betrayed your wife.
(c) Every one of you has betrayed his wife.

July 1969

PRONOMINALIZATION

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PRONOMINALIZATION

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II. INTRODUCTION

A. General Framework

We are concerned here with the phenomenon of pronominalization, understood roughly as the use of reduced or suppletive forms "in place of" part or all of a noun phrase (we will not be dealing with the often similar pro-ing of other constituents such as PROP or S). We are concerned primarily with the relationship between various aspects of pronominalization which previously have been treated more or less separately. In particular, we try to show that the reduction of a repeated N to one(s) in either a definite or an indefinite NP is independent of reference and can be stated in purely formal terms, and that the same is true of deletion of the resulting pro-form one(s) immediately following certain determiners. Anaphoric personal pronouns are argued to arise through this process when N-reduction to one and subsequent deletion of one leaves an NP consisting only of a definite article; thus it is claimed that the has suppletive variants he, she, it, they. Under such an analysis, coreferentiality plays no direct role in any of the processes subsumed under pronominalization: its role is rather in the process (if it is a process) of definitization. The general analysis is that proposed in Wolfe (1967), which in turn draws heavily on the work of Gleitman (1961), Postal (1966b), and Fillmore (1966d). We believe that Kuroda (1966b) was the first to suggest the possibility and utility of regarding pronominalization and definitization as two independent processes instead of regarding the formation of personal (i.e. definite) pronouns as a unitary process distinct from other types of pronominalization.

A caveat is necessary at the outset. As is clear from the bibliography, pronominalization is a topic which is currently receiving intensive scrutiny, and new insights and proposals are appearing at an ever-accelerating rate. Furthermore, much of the most interesting of this research is concerned with elucidation of the relation between semantics and syntax, and serious doubt has been cast by it on the possibility of constructing an "autonomous syntax." It is obviously impossible to take full account of everything written right up to the present; what is more unfortunate is that the framework of this project does not readily permit inclusion of some of the available insights that seem in large measure correct. In particular, for example, Lakoff has recently suggested (La Jolla Conference 1969) an important general distinction between pro-ing by identity of sense vs. pro-ing by identity of reference which appears at first sight to avoid the major problems discussed in II.C. below. And Postal's crossover constraints cannot be invoked at all in our grammar even where we might want to agree with them, since our case grammar framework reverses many

of the crossover properties of standard grammars by starting out with typical objects (neutral case) preceding typical subjects (agent case).

It is hoped that the observations made in this report will be useful despite such shortcomings, since (a) we have included much that is common to many treatments of pronominalization; (b) the formal aspects of the relation between anaphoric and non-anaphoric pronominalization are dealt more with here than in most other treatments; and (c) the impossibility of dealing adequately with certain types of phenomena purely syntactically is here demonstrated quite impartially.

One of the central aims of our analysis is to show a close relationship between the apparently distinct phenomena illustrated below.

(a) One (s) apparently can replace a repeated noun when that noun is the only element in common in a pair of non-coreferential noun-phrases.

(1) John bought a red pencil and Bill bought a blue pencil. ⇒
John bought a red pencil and Bill bought a blue one.

(b) One (s) apparently can also replace an entire indefinite NP which is non-coreferential with some identical NP in the sentence.

(2) John bought a red pencil because Bill had a red pencil. ⇒
John bought a red pencil because Bill had one.

(c) One (s) also seems to replace structures which are neither just nouns nor whole NP's.

(3) John likes long round pencils and Bill likes short round pencils. ⇒ John likes long round pencils and Bill likes short ones.

(d) Sometimes a repeated noun or noun plus some modifiers is deleted instead of being replaced by one (s).

(4) John bought three (red) pencils and Bill bought four (red) pencils. ⇒ John bought three (red) pencils and Bill bought four.

(e) A whole NP is replaced by a personal pronoun when it is coreferential with its antecedent.

(5) John caught a fish and cooked the fish. ⇒ John caught a fish and cooked it.

The core of our proposed analysis is as follows:

- (i) The replacement of a repeated noun together with certain of its repeated modifiers by one(s) is a process independent of coreferentiality and common to all of the sorts of pronominalization illustrated above.
- (ii) Definitization, if it is a rule at all, precedes pronominalization and is crucially bound up with coreference. Coreference can almost (though not completely) be ignored in pronominalization without creating semantically undesirable results.
- (iii) After certain determiners, pronominal one(s) is deleted. In some cases, e.g. three, four, no further changes occur (ex. (4)). In other cases there are morphophonemic changes in the determiner, e.g. my ⇒ mine, no ⇒ none, etc.
- (iv) It is argued (following Postal (1966b) on definites and reversing Perlmutter (1968) on indefinites) that one of the environments in which one(s) is deleted is following an article, and that analogous to the my-mine alternation is a more radical suppletion, namely between a and one and between the and all the personal pronouns.

This analysis applies to the above examples roughly as follows (leaving details to be discussed later):

Sentence (1) illustrates only repeated noun replacement by one. Sentence (3) illustrates the same, with deletion of a repeated modifier as well. Sentence (2) would have the following stages:

- (2a) ...because Bill had a red pencil ⇒ [by reduction of noun and modifier to one]
- (2b) ...because Bill had a one ⇒ [by deletion of one after article]
- (2c) ...because Bill had a ⇒ [by suppletion of article in stressed position]
- (2d) ...because Bill had one

Notice particularly that the one which appears in (2) is a suppletive form of a, whereas the one in (1) and (3) is the replacement for a repeated noun. Sentence (4) also illustrates noun (plus modifier) reduction to one followed by one-deletion. Sentence (5) has the same stages as sentence (2), namely:

- (5a) ...cooked the fish ⇒ [by noun reduction to one]
- (5b) ...cooked the one ⇒ [by deletion of one after article]
- (5c) ...cooked the ⇒ [by suppletion of article in stressed position]
- (5d) ...cooked it.

(The (c) stages of (2) and (5) are fictitious: the suppletion is actually a matter of second lexical look-up at the surface structure level, and no phonological shape is supplied until then.)

In what follows, we first describe the proposed analysis, incorporating some of the discussion of other proposals where directly relevant. Further annotation is included in the subsequent sections which discuss problems with our analysis and problems in pronominalization in general.

B. Processes Involved

In discussing our analysis of pronominalization, we first treat four phenomena which precede "pronominalization proper", namely definitization, reflexivization, feature transfer from noun to determiner, and surface case marking. Section 2 describes pronominalization proper, i.e. noun reduction to one, modifier deletion, and one-deletion. The third section discusses the source of pronouns which have no antecedent within the same sentence.

1. Processes Preceding Pronominalization

a. Definitization. It has been argued (Kuroda, 1965, 1966b, and Postal, 1966b) that the first step in pronominalization to personal pronouns is definitization. Thus while Gleitman (1961) derives both (6.b) and (6.c) from (6.a), Kuroda and Postal derive (6.c) from (6.a) only through the intermediate stage of (6.d).

- (6) (a) I saw a man and you saw a man. [Gleitman 28.a]
 (b) I saw a man and you saw one.
 (c) I saw a man and you saw him.
 (d) I saw a man and you saw the man.

Gleitman also allows (6.c) to be derived from (6.d), but does not require (6.d) to be a prior stage of (6.c) as Kuroda and Postal do. All are agreed that (6.c) and (6.d) carry an interpretation of coreferentiality while (6.b) does not. The advantage of deriving (6.c) only via (6.d) is that such a derivation captures the close relation between definitization and coreferentiality. Further justification of this claim will appear below (II.C.3) when we discuss the problem of whether definitization should be a rule or not. For the time being, we assume only that definite articles are introduced at some stage prior to pronominalization proper (possibly at the deep structure level), so that we can follow Kuroda and Postal in deriving personal pronouns only from definite NP's.

b. Reflexivization. We agree with Postal (1966b) in considering reflexivization a separate process from pronominalization, in

contrast with Fillmore (1966a), who unites reflexivization and pronominalization into one rule. Lakoff and Ross (1966b) have reflexivization as rule #40, whereas pronominalization is #52; some of the rules intervening are It-replacement, Question, Topicalization, Subject Inversion, Extraposition and Adverb Preposing. Lakoff (1968b) claims that in fact pronominalization must be post-cyclic, and Postal (1968) has a still later second reflexivization rule.

As was pointed out by Lees and Klima (1963), for reflexivization to occur the two NP's must be within the same simplex sentence. In this analysis

(7) He wrote a book about himself.

is considered to be derived from one sentence, whereas

(8) He kept the book near him.

would be derived from two sentences. (Lees and Klima noted, however, that reciprocals do not have the restriction of occurrence within the same sentence, since we have:

(9) They placed their guns in front of them. vs.

(10) They placed their guns in front of one another.

However, reciprocals may not occur freely in subordinate clauses. Lees and Klima note this problem, but have no solution.)

Postal (1968) has stated that the constraint on reflexivization that the two NP's must be within the same simplex is not applicable at the level of Deep Structure but rather at some point between there and Surface Structure. That it is not relevant at the level of Deep Structure is demonstrated by

(11) (a) I believe myself to be correct about that. [2(4)a]
 (b) Margaret found herself unable to move. [2(4)b]

Postal wished to relate these to:

(12) (a) I believe that I am correct about that. [2(5)a]
 (b) Margaret found that she was unable to move. [2(5)b]

in which the coreferential NP's are in different clauses. He proposed no derivation demonstrating this relationship, but presumably had in mind something like our rule of Subject-to Object raising (see NOM section).

Within the lexicalist framework adopted by this project, the notion of 'simplex S' must be extended to have an analogue in 'simplex NP'. Examples of reflexivization within the NP include:

- (13) (a) John's indictment of himself astonished everyone.
 (b) Rembrandt's portraits of himself are very famous.

A further point to be noted about reflexivization as defined by Lees and Klima is that it can only occur forwards, or left-to-right. i.e. we cannot get:

- (14) *Himself killed John.

If, however, as seems probable, anaphoric definitization is a necessary prerequisite for reflexivization, then reflexivization would naturally be excluded from this environment (since definitization cannot work backwards) (cf. D.1.).

A further constraint on reflexivization is that in general passives cannot be reflexivized, as in:

- (15) *She was admired by herself.

Postal (1968) deals with this constraint as one example of restrictions on the crossing by transformational rule of two coreferential NP's. Although Postal has many important insights in connection with his crossover principle, we do not discuss them here partly because the work appeared too recently to be adequately dealt with and partly because the case grammar framework makes a great deal of difference in which NP's are crossed by which rules. In particular, in our grammar active subject placement crosses the subject over the object, but passive subject placement does not. Thus in our grammar an ad hoc restriction must be placed on the reflexive rule to exclude (15). There would not be any "crossover" involved in the derivation of such phrases within our case grammar approach; see discussion of passivization in the Case Placement Rules section.

c. Feature Transfer and Surface Case Marking. We follow Fillmore in transferring from the noun to the determiner all features relevant for pronominalization, i.e. gender, number, animacy, etc. We differ from Postal (1966b) in that we have a separate determiner node, rather than using a rule of segmentalization to separate out the determiner at a later stage (cf. DET for full discussion). We also follow Fillmore in assigning surface case directly to the determiner. We realize that since many languages require surface case endings on the noun also it would in principle be better to

assign surface case to the head noun and then spread it onto the determiner with other features. This rule, is, however, simpler for English, since the head noun is somewhat awkward to specify. (Note that many languages require case endings to be assigned to modifiers also, which would suggest case is a property of the whole NP. However, there is considerable divergence between languages as to whether all modifiers require endings, depending on such matters as pre- vs. post-nominal position, etc. Since this is not relevant to the grammar of Modern English we leave the matter to others to investigate.) We take the nominative case as the basic form, and assign objective case, which seems simplest for the standard dialect. Klima (1964d) has arguments for choosing objective case as the base form for advanced colloquial English, and also discusses the effects of ordering the rules in different ways to relate different dialects. Our concern is however solely with the standard dialect, so we have made no attempt to incorporate these variations.

Although we follow Postal (1966b) in analyzing reflexive pronouns as D + N, we do not (as he does) assign a feature [+Genitive] as a consequence of reflexivization. This seems to be redundant, since it is completely predictable from the feature [+Reflexive]. Further, it seems of dubious accuracy; only myself, ourselves, yourself, and yourselves are unambiguously genitive, whereas himself and themselves are unambiguously accusative.

These processes, definitization, reflexivization, feature transfer and case marking, are in a sense peripheral prerequisites to the transformational rules which actually perform the work of pronominalization. (This is not to suggest that they are unimportant, or that they do not raise many difficult problems.)

2. Pronominalization Proper

Let us now examine the process of pronominalization itself in more detail. An early proposal for the reduction of the noun node to one was that of Gleitman (1961), who observed that under conjunction repeated material loses stress, whereas non-repeated material gains stress, as in:

(16) Í saw a man and yóu saw one. [9]

(17) Í saw tóo men and yóu saw óne. [10]

She further claimed that pronominalization and deletion were related to stress reduction, in that in the second conjunct everything after the last-stressed morpheme (i.e. everything which is a repetition of material in the first conjunct, and therefore unstressed) can be pronominalized, as in:

- (18) (a) I saw a house and you saw one. [20]
 (b) I saw a big house and you saw a small one. [21]
 (c) I saw a big brown house and you saw a small one. [22]
 (d) I saw a big brown brick house and you saw a small one. [23]
 (e) I saw a dilapidated big brown brick house and you saw a fine one. [24]

in which one replaces a house (18.a), house (b), brown house (c), brown brick house (d), and big brown brick house (e).

Note that in (18.b-e), i.e. in all the cases where there are distinct modifiers on the nouns, the indefinite articles could be replaced by definite articles with no change in the behavior of one (s). Thus at least in the presence of appropriate modifiers, noun reduction to one is independent of the definite/indefinite distinction. Gleitman and others did not go on, as we do, to claim that essentially all pronominalization has reduction to one as one step, perhaps because cases which result either in personal pronouns or in deletion of the noun altogether show no traces in their surface form of having undergone noun reduction to one. Gleitman did notice that one is deleted if it immediately follows one of a large number of determiners. The data can be summarized as follows:

(i) One (s) is never deleted after ordinary adjectives, nor after every:

(19) After looking at some modern sculptures, John bought---

- (a) an ancient {one
* \emptyset }
- (b) every {one
* \emptyset }
- (c) a particularly striking {one
* \emptyset }

(ii) One (s) is optionally deleted after either, neither, each, another, and some other determiners.

- (20) (a) Both forms are acceptable; neither (one) is ungrammatical.
 (b) Among currently considered proposals, each (one) has serious flaws.
 (c) If you don't like that course, sign up for another (one).

(iii) One (s) is obligatorily deleted after certain determiners, which then may have alternate surface forms.

- (21) I looked at all the books and eventually bought {some
a few
many
several
three
his} (*ones).

Among the suppletions accompanying one-deletion are my/mine, your/yours, our/ours, her/hers, no/none, other/others.

It might be argued that sentence (21) does not show deletion of ones, but that rather the noun books was simply deleted direct instead of being first replaced by ones. There are at least two moderately strong arguments against such a claim, neither overwhelming. (i) A single rule which sometimes replaced nouns by one (s) and sometimes deleted them would be fairly complex; it would have to indicate that the choice of structural changes depended on the determiner immediately preceding the part to be replaced (identical noun plus contiguous identical modifiers) and that in the case of deletion the remaining determiner is to be assigned a feature triggering the suppletive alternation. Since there must be two structural changes in any case, it seems formally simpler to state two separate rules.

(ii) A sentence grammar must somehow derive sentences such as (22.a-c):

- (22) (a) The brown ones are clean.
 (b) Some were broken in transit.
 (c) Mine are over here.

Without a mechanism for pronominalization on the basis of extra-sentential antecedents, noun phrases such as those underlined above must be somehow derivable from appropriately unspecified deep structure NP's. (22.a) can be generated simply by allowing in deep structure a noun one which has all the features which the pronominal one receives transformationally. (See below for further discussion of the underlying one.) But for (22.b) and (22.c), if we had no rule deleting one (s) after determiners like some and my, we would have to say there was no head noun in the underlying NP, thus radically changing the PS rules, the selectional restrictions on some, and the derivation of possessives like my. But if we need a rule deleting one (s) for these cases, we can use exactly the same rule for sentences like (21). Therefore within a sentence grammar there is quite substantive evidence in favor of splitting up the noun-deletion in (21) into noun-reduction to one and one-deletion.

Perlmutter (1968) argues that a and one are suppletive variants, a being the unstressed form of the numeral one. A critical discussion of his proposal can be found in DET. We agree that a and one are alternants, but consider them to be an indefinite article, not a cardinal number. We can therefore regard their suppletion as perfectly parallel to no/none, my/mine, etc., i.e. the indefinite article is one of those determiners after which the reduced noun one is deleted, and its suppletive form in derived head position

is one. Thus the derivation a one = one proceeds not as Gleitman suggests by deleting a, but by deleting the pronoun one and then introducing a different one as suppletive variant of a. Thus the case where an entire noun phrase ends up replaced by one is subsumed under the same processes of noun-reduction to one plus one-deletion.

The personal pronouns were considered by most authors before Postal (1966b) to arise from a process quite distinct from those discussed so far. It would appear on the surface that personal pronouns directly replace an entire NP, whereas one(s) replaces just a noun plus perhaps some of its modifiers. But the treatment argued for by Postal fits the personal pronouns into the same system (and in fact partly suggested this system). Postal argues that the personal pronouns are suppletive forms of the definite article, arising through derivations roughly as in (23).

- (23)boy_i....the boy_i....⇒ [by Noun-reduction to one]
boy_i....the one_i....⇒ [by one-deletion]
boy_i....the ∅.....⇒ [by suppletion the/he]
boy_i....he.....

If we can account for the many-one correspondence between the personal pronouns and the, and if we can account for the necessary coreferentiality in the case of the personal pronouns as opposed to one(s), then the derivation (23) would proceed automatically by the rules already required for other types of pronominalization.

The first problem, that of the many-one suppletion between the personal pronouns and the, can be readily accounted for, as Postal and Fillmore both suggest, by a prior agreement rule which transfers certain features of the noun to the determiner: this rule has already been discussed. As a result of it, the definite article can have a number of feature combinations in its surface structure; these complex symbols are all realized as the when one of their features is [-PRO], and as the various pronouns if [+PRO] is included. Postal's claim is that it is purely a surface fact of English that distinct forms indicating gender, case, and number are to some extent preserved in the third person pronominal forms, and are collapsed in the definite the. He notes that such distinctions must be present in the deep structure to allow us to get:

- (24) (a) the one who I saw behaved himself [32a]
 (b) the one who I saw behaved herself [32b]
 (c) the one who I saw behaved itself [32c]

The second problem, coreferentiality, is discussed in sections II.C.1 and II.D.2. It comes surprisingly close to being possible to simply ignore reference in these rules, regarding it as relevant only for definitization. This approach is not entirely satisfactory, however, and its problems are discussed in the sections mentioned above.

The arguments by which Postal supports the identification of the definite article and the third person pronouns are:

(i) that personal pronouns function as definite NP's, for which he provides several diagnostic tests

(ii) that self/selves in reflexive pronouns is a noun stem, preceded by a determiner, and that one (s) parallels this in non-reflexive cases

(iii) that we and you [+Plural] function as articles, as in:

(25) you men here

(26) we Americans who have been struggling here

(27) you lucky ones

(iv) that this analysis allows for third person pronouns also to have restrictive modifiers, as in:

(28) the one who Lucille divorced

(29) the small one

Third person pronouns are idiosyncratic in that one is retained when either a pre- or post-nominal modifier is present. With other determiners, only the presence (or not) of a pre-nominal modifier intervening between the determiner and the noun is crucial in determining whether or not one is deleted, as illustrated by:

(30) we $\left\{ \begin{array}{l} \emptyset \\ *ones \end{array} \right\}$ (on the right side)

(31) we lucky $\left\{ \begin{array}{l} * \emptyset \\ ones \end{array} \right\}$ (on the right side)

(32) $\left\{ \begin{array}{l} *they \emptyset \\ the ones \end{array} \right\}$ (on the right side)

Postal's rule of Pronoun deletion will delete one only when there is no restrictive modifier at all. Since Postal is considering only the process which will lead to personal pronouns, i.e. the cases where one is preceded by a definite determiner, this is sufficient for his purpose; however, it is in fact only a special case of the

rule which deletes one when it immediately follows some, many, the [-Count], etc. In our analysis therefore we wish to capture this generalization. Note also that Postal considers only identity of noun stems when reducing the NP to one; he does not consider deletion of modifiers in the second NP. This is an important point since, as will be discussed below, deletion of modifiers is one area in which there are important differences between pronominalization resulting in a surface structure one and that resulting in a personal pronoun.

In summary, the pronominalization processes cited at the outset are seen to be closely related primarily by virtue of two rules: noun-reduction to one (s) with concomitant modifier deletion, and deletion of one (s) after certain determiners, with concomitant suppletion for some such determiners. The first rule is extremely general; the second reflects the idiosyncracies of various determiners, both in whether they require, permit, or disallow one-deletion and in their suppletive alternations. Further details are discussed with the rules, in section III.C below.

3. The Derivation of Deep Structure Pronouns

In order to account for pronouns which have not been pronominalized within the sentence, and to account for the ambiguity in his example:

(33) Schwartz claims he is sick. [6]

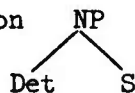
Postal wished to derive pronouns in the deep structure as well as from underlying NP's. We differ slightly in the details of our analysis, in that we would rather offer a derivation from a deep structure determiner the and one(s). We need to derive the one(s) in deep structure anyway, to get such sentences as:

(34) The one over there is my sister.

If we generate the one (s) without any pre- or post-nominal modifiers, then the noun node will be deleted and the personal pronouns result by the rules we have already postulated. Thus we can derive these forms without any extra apparatus at all. In this respect we differ very much from Fillmore, who has three possible configurations resulting from his PS rule:

NP → Det (N(S))

In Fillmore's analysis the configuration $\begin{array}{c} \text{NP} \\ \swarrow \quad \searrow \\ \text{Det} \quad \text{S} \end{array}$ uniquely



selects the pronoun it which is used for the it-S analysis of

complement structures. Ignoring here the question of the validity of the it-S analysis, we note merely that if it were required, we still would wish to have a uniform derivation for it and to integrate it into our general process of pronominalization, if possible. (Some questions raised by the analysis proposed in "Fact", by Kiparsky and Kiparsky, seem to suggest that it is not possible to integrate the expletive it into the general process of pronominalization; cf. NOM.) If it were to be integrated, then this would require generating a determiner with a dummy noun rather than having no noun. Fillmore's rule will also give:



The determiner will result in a personal pronoun when the N is "lexically empty" and there is no S. This corresponds to the claim that "personal pronouns do not accept relative clause modification". (Fillmore, p.11). However, it is possible to analyze the one plus a relative clause as filling the gap, by restricting the rule deleting one after the so that it does not apply if there is a post nominal modifier. Otherwise two separate restrictions would be necessary to account for the following asymmetry:

- (35) (a) The man with a hat came in/The man came in
 (b) The one with a hat came in/*The one came in
 (c) *He with a hat came in/He came in.

That is, by deriving he from the one, we can avoid having any special restrictions on the occurrence of relative clauses either with personal pronouns or with one.

A detailed presentation of the features for these pronouns and determiners will be found in the sample lexicon. We note here only that we follow Postal in using the features [_I], [_{II}], [_{III}] to derive the various forms, rather than using Fillmore's hierarchical features of [_I Participant], [+Participant] ⇒ [_I Speaker]. Our motivation for this is that we cannot be simply considered as [+Speaker], [+Plural]. Instead, we need to derive:

- (36) You and I can't perjure ourselves.
 (II + I = 1st. plural inclusive)
- (37) John and I can't perjure ourselves.
 (III + I = 1st. plural exclusive)
- (38) You and John can't perjure yourselves.
 (II + III = 2nd. plural exclusive)

- (39) You two boys can't perjure yourselves.
 (2nd. person plural inclusive)
- (40) You and John and I can't perjure ourselves.
 (II + III + I = 1st. person plural)

Indefinite pronouns are derived from deep structure dummy nouns one and thing with various determiners. We note here in passing that we adopt Postal's rule of Article Attachment to join these forms and also the determiners and stems of the reflexive pronouns.

C. Problems with the Analysis

1. Reference and N Reduction to One

In the treatments of pronominalization of Gleitman and of Lees and Klima, reflexivization and pronominalization proper are given as optional rules for third person, obligatory for first and second. Thus (42) would be an optional transform of (41):

(41) The man talked to the man.

(42) The man talked to himself.

Since in (41) the NP's can only be interpreted as non-coreferential and in (42) only as coreferential, it is suggested that the application of reflexivization amounts to a judgment of coreferentiality between antecedent and pronominalized NP. The fact that the rule is obligatory for first and (disputedly) for second persons reflects the fact that two occurrences of first or of second person pronouns in the same sentence can only be interpreted as coreferential.

Let us call the above approach to coreferentiality the LK approach.

Another approach is mentioned in Chomsky (1965, p. 146) and has been followed at least implicitly in most recent transformational work, in particular by all linguists who accept the Katz-Postal hypothesis. Let us call it the Index approach.

The Index approach is that reference (or at least sameness of reference) is to be marked in some way in deep structure, e.g. by indices on NP's. Then the relevant T-rules can be made obligatory (for all persons, not just third) and dependent upon coreferentiality as well as (or instead of?) formal identity.

In this project (cf. UESP 1967), the LK approach has been used, for a number of reasons.

(1) The primary reason was that pronominalization was found to be analyzable as a sequence of relatively independent steps, of which the most central ones do not depend on coreferentiality at all. Thus, if we put aside temporarily the question of the origin of definite articles, it appeared that none of the steps in non-reflexive pronominalization, namely reduction of a lexical N to one and deletion of one in certain environments, required mention of referential identity.

- (43) (a) When John's yellow shirt tore, he had to buy a new one.
 (b) When John's yellow shirt tore, he had to wear the brown one.
 (c) When John tore his yellow and his green shirt, his mother mended the yellow one.
 (d) *When John's yellow shirt tore, he tried to mend the one.
 (e) When John's yellow shirt tore, he tried to mend it.
 (f) John has three books and I have four. (ones ⇒ ∅)
 (g) John bought three books and I read them. (ones ⇒ ∅)

Thus the only rules which would seem to be dependent on coreferentiality would be reflexivization (which in our system is just a marking of the head noun as [+Refl], the rest of the process being subsumed under the ordinary pronominalization rules) and definitization, which very few transformationalists have ever tried to formulate explicitly.

It therefore seemed possible to present a consistent system of rules without deep structure reference marking, with the understanding that if a reference marking system should be devised by someone else, it could be incorporated into our system just by making the reflexivization rule (and the definitization rule if there should be one) obligatory and dependent on the reference marking. The other rules would not be affected.

(2) One negative reason for taking the LK approach was that the Index approach runs into very complex problems with plural and quantified NP's. Thus for example no simple unitary referential index feature will account properly for the following:

- (44) (a) Every philosopher argues with himself.
 (b) Every philosopher argues with every philosopher.
 (45) (a) Only Lucifer pities himself.
 (b) Only Lucifer pities Lucifer.
 (46) (a) Most of the boys expect most of the boys to pass.
 (b) Most of the boys expect the boys to pass.
 (c) Most of the boys expect to pass.

- (47) (a) Three of the four boys were students and the other one was a cowboy.
 (b) *Three of the seven boys were students and the other one was a cowboy.

Thus we have the strong positive argument that, except for definitization, the rules involved in ordinary non-reflexive pronominalization do not appear to depend on reference anyway, combined with the negative argument that no one has been able to work out an adequate system of representing reference.

The consistency of our version of the LK approach depends on the claim that whenever we derive a pronoun transformationally, it can indeed be interpreted as anaphoric with respect to the noun or noun phrase which conditions the application of the rule. This follows from the fact that there must be some pronouns which are derived from the base (e.g. from underlying the one) to account for sentences which contain a pronoun but no possible antecedent ("he is sick"), and the fact that these pronouns should not have multiple derivations. That is, we must account for the following difference in possibility of anaphoric interpretation:

- (48) He is sick. (unambig. non-anaphoric)
 (49) When the boy came in, he didn't say a word. (ambiguous)
 (50) The boy saw himself in the mirror. (unambig. anaphoric)

With respect to the above examples, our rules have made the right predictions; the he of (48) could come only from deep structure the one, whereas the he of (49) had both that source and the boy as source; himself of (50) could come only from the boy.

However, there are other examples of the same sorts of judgments which cannot be handled by the system, as presented in the UESP (1967), PRO section. These examples and a discussion of their problems follow:

- (51) The boy saw him. (unambig. non-coref.)
 (52) When three tall men came in Mary walked over to him.
 (unambig. non-coref.)
 (53) When he stood up, we all looked at another boy.
 (unambig. non-coref.)

All of our problematical cases have in common the fact that sentences which involve unambiguously non-coreferential pronouns can be derived by our system in two ways, predicting the kind of ambiguity found in (49) above. The particular examples shown above have

undesired derivations from:

- (54) The boy saw the boy.
- (55) When three tall men came in Mary walked over to the man.
- (56) When the boy stood up, we all looked at another boy.

An obviously relevant fact is that in all such cases, we have an occurrence of the N in the same sentence with another noun phrase containing the same N but not to be taken as coreferential with it. If (contrary to fact) it were the case that non-coreferential noun phrases always had to have some formally different modifiers accompanying them, there would be no problem, because then non-coreferential NP's would never end up as personal pronouns. And (54) - (56) would probably be avoided in careful style in favor of something like:

- (57) This boy saw that boy. (or The former boy saw the latter boy; or any of a number of other circumlocutions)
- (58) When three tall men came in, Mary walked over to the man who was pretending to be asleep on the sofa.
- (59) When the first boy stood up, we all looked at a second boy.

Unfortunately, this is not an obligatory requirement. Not only do sentences like (54) - (56) occur quite commonly in a non-coreferential interpretation, but there is not even a unique "careful" form akin to (57) - (59); the language has a multiplicity of devices for indicating non-coreferentiality, but no single one which could be taken as basic and therefore used as formal basis for the appropriate rules.

The reason that occurrences of the N which are formally identical but not coreferential cause such problems for our analysis is that in our system, noun reduction to one depends only on noun identity, (which is basically correct - cf. (43.a-c)) but if there was nothing in the NP with the reduced noun except a definite article, the derivation will automatically continue and turn *the one into him, it, etc. Thus, if the man occurs in the same sentence with another occurrence of man preceding it at the right point in the derivation, the grammar will always have the option of turning the man into him, thus implying coreferentiality with the preceding noun phrase containing man, even where this is in reality impossible as in (51) - (53).

On the one hand, these problems suggest that referential indexing might be necessary, and that semantically consistent pronominalization rules cannot be based on formal linguistic

structure (not including indices) alone. On the other hand, any system of referential indexing would itself have to be severely constrained by purely formal properties. Discussions of referential indexing in the literature have almost exclusively used in their examples proper nouns and NP's of the form the N. Typical examples would include (49), (50), (54), where the selection of same or different referent is indeed free. However, it is not clear what kind of system would indicate that the two NP's with men in (55) and the two with boy in (56) cannot be coreferential. It is clearly not simply the fact that they are formally distinct, since the underlined NP's can be coreferential in the following examples:

- (60) When the 5-year-old boy in a sailor suit had finished reciting his piece, everyone applauded loudly, and the naive little fellow really thought they meant it.

In addition to the problem of indicating when two NP's can be coreferential, there is a further problem in that in some cases, unlike (41), two formally identical definite NP's can only be understood as coreferential. (*in the examples below means impossible if the references are distinct)

- (61) (a) *John saw the man₁ but Bill didn't see the man₂.
 (b) *The man₁ came in, but the man₂ left 5 minutes later.
 (c) *Everyone likes the new novel₁, but no one has read the new novel₂.

The following makes an interesting contrast:

- (62) [Preceding discourse: A man₁ and a woman₁ walked into a restaurant and noticed a man₂ and a woman₂ seated at a nearby table.]
- (a) The man₁ recognized the man₂ but the woman₁ didn't recognize the woman₂.
 (b) The man₁ recognized the woman₂, but the woman₁ didn't recognize the man₂.
 (c) *The man₁ recognized the woman₂, but the man₂ didn't recognize the woman₁.

It would appear that certain linguistic environments require a formal contrast between noncoreferential items while others do not. A case of the former, for instance, is "John saw ___ but Bill didn't see ___." Note that this is separate from the fact that but always requires some kind of contrast, since each of (61.a,b,c) becomes grammatical when the formally identical NP's are also coreferential and hence pronominalized. Other environments, such as "___ recognized ___" do not require formal contrast between noncoreferential items.

The formal contrast required in the cases described above must be more than simple non-identity: each NP must in fact contain a modifier not present in the other.

- (63) (a) *I liked the cat₁, but John didn't like the fluffy cat₂.
 (b) *Mary can solve the easy problems₁, but John can't solve the problems₂.

[NB the interesting locution "Mary can solve the easy problems, but John can't solve the problems period"]

- (c) *John saw the program₁ that was on TV last Saturday and Bill saw the TV program₂.

We see no obvious way of stating these constraints within any known syntactic framework. Within our system, the deletion of identical modifiers and reduction of the noun to one would have to be made obligatory for the starred examples of (61); within a reference-indexing system, the referential indices would have to be forced to be identical in just those cases. And in any system, the sentences of (63) must be excluded, since they cannot be interpreted either coreferentially or non-coreferentially. In any case, the conditioning environments do not appear to be syntactically characterizable.

The problems discussed so far amount to the following: English tolerates discrepancies between formal and referential identity of certain sorts in certain environments, not easily describable at all and particularly not describable in simple syntactic terms. Some of these discrepancies are not accounted for so far within any known framework, e.g. why the formally identical NP's of (62.a,b) can be non-coreferential while those of (61) cannot be, and why the sentences of (63) are impossible on any interpretation. But other discrepancies between formal and referential identity cause problems only for our analysis, and thus constitute a particularly serious challenge to the consistency of (our version, at least, of) the LK approach. The latter cases are all ones in which reduction of a repeated noun to one leads to false implications of coreferentiality, always because the reduced noun had a definite article and no remaining modifiers to prevent that NP from reducing all the way to a personal pronoun. There are several places one might try to pin the blame. (i) It might be an error to have noun-reduction to one as a step in the derivation of personal pronouns, i.e. the basic thesis of our treatment might be wrong. Certainly a retreat to the weaker position that there are entirely different rules involved in the derivation of personal pronouns, rules crucially referring to referential indices, would offer a solution. (ii) Perhaps the trouble lies with definitization, and what is needed is a formal distinction between deep structure definite articles and those derived transformationally, so that a noun immediately following a deep structure the could be disallowed from reducing to one. (iii) It could be that our rules are basically correct but that reference-marking is necessary in addition, so that a condition on noun-reduction to one might be either formal distinctness or coreference. This would of course destroy at least part of our main claim, namely the idea that only

definitization needs to refer explicitly to reference, the rest of pronominalization being purely formal.

However, there is a further problem which appears to be closely connected with those just discussed but which does not involve coreferentiality or the lack of it, as all the earlier problematical examples do. This would presumably be a problem in any analysis. Namely, in all of the following examples, the two NP's are interpretable in their non-reduced forms as non-coreferential, and yet reduction of the noun in the second to one is impossible even though it would not lead to a personal pronoun and hence would not lead to a false prediction of coreference.

- (64) (a) The man hit the man (~~⇒~~ one) wearing an overcoat.
 (b) A man hit a man (~~⇒~~ one) wearing an overcoat.
 (c) A man wearing an overcoat hit a man (~~⇒~~ one).

This is a problem in stating the environment for noun-reduction to one which is totally independent of coreferentiality, yet it is closely related to the coreferentiality problem because in the parallel example (65), allowing man ⇒ one would lead to an erroneous prediction of coreferentiality.

- (65) The man wearing an overcoat hit the man (⇒ one).

It would obviously be desirable to relate the two conditions under which $N \Rightarrow \underline{one}$, namely the case of contrast and the case of full identity (where the NP eventually ends up as a personal pronoun). This was in fact one of the most attractive features of our approach, which postulated that in fact $N \Rightarrow \underline{one}$ was always permitted under conditions of formal noun identity: the problem now is to exclude just those cases where the NP's are noncoreferential but are not formally distinguished by having at least one non-shared modifier apiece.

An intuitive notion which would appear to capture the desired generalization is that of two NP's belonging to the same set in some "relevant" sense: e.g. "the man in shirt sleeves" and "the man wearing an overcoat"; "a blue pencil" and "a red pencil"; and as a special case, "John₁" and "John₁" - i.e., identical NP's are always in the same relevant set no matter how that set may be described.

Thus the environments discussed above which require non-coreferential NP's to be formally distinct (but which allow coreferential NP's to occur) might best be characterized as those which require NP's in them to belong to the "same 'relevant' set" in this informal sense. This seems in fact to be the same concept

that is involved in the odd cases of conjunction discussed in CONJ, such as:

- (66) (a) ? The men and tables were in the room.
 (b) ? John walks to school, but Bill brings his lunch.
 (c) ? Mary has a red dress, but Susan is afraid
 of spiders.
 (d) ? Mary has a long black skirt and two new ones.

(Note that the notion of 'relevant set' is not confined to NP's in these examples.) There seems little likelihood of finding any syntactic characterization of what 'same relevant set' might mean.

It seems, then, that our attempt to push the LK approach to pronominalization to its limits, while not entirely successful, has uncovered some interesting and non-trivial problems which have counterparts in the referential indexing approach. Solution to these problems does not appear imminent, since the conditions do not appear to be syntactic in any familiar sense of the word. The rules presented in part III reflect the inadequacies of the LK approach as described above, but make the right predictions in enough cases that we considered it worthwhile to include them.

The following discussion of problems of modifier deletion and of definitization overlap in part with what immediately precedes, but contains more detailed observations on a number of points.

2. Modifier Deletion

Gleitman appeared to assume that only modifiers contiguous to the head noun could be deleted, but this is not a matter of general agreement. It appears to be the case that pronominalization resulting in a surface structure one can lead to considerable ambiguity. With one, the noun identity is usually clear:

- (67) I have a little red pencil and he has a blue one.

Ambiguity usually arises as to how complete identity is; that is, since the second NP may have modifiers which are not present in the first NP, and since these non-identical modifiers will remain after identical modifiers have been deleted and the noun node reduced to one it is not always (if ever) completely clear what modifiers are understood to have been present in the underlying structure before pronominalization operated. A modifier present in the first occurrence of the NP may be missing from the pronominalization of the second occurrence for either of two reasons: (i) it never was present (ii) it was present in the underlying structure and has been deleted under pronominalization. In (67) even though

little is not contiguous with pencil, it is to many people ambiguous as to whether one has deleted little ... pencil or just pencil. If the adjectives are moved out of their normal order, the resulting sentence is not so ambiguous:

(68) I have a red little pencil and he has a blue one.

Here most people feel that one replaces little pencil, but the interpretation that one replaces only pencil is still a possibility, though a less likely one. It is not at all clear whether this is because little and pencil are contiguous, or whether the change of order suggests that the modifiers are stacked or that little pencil is a compound. Any one of these explanations seems possible, and perhaps all these factors affect the interpretation. For instance, given:

(69) I have a little red pencil and he has a big one.

most people interpret one as replacing red pencil. Here, only contiguity can be a factor, since the order of the adjectives is normal. For most people, there seems to be degrees of ambiguity. Given the sequence:

(70) I saw a little [/]fat man and you saw a [/]thin one.

(71) I saw a [/]little fat man and you saw a [/]tall one.

(72) I saw a [/]fat little man and you saw a [/]thin one.

(73) ?I saw a fat [/]little man and you saw a [/]tall one.

(70) is considered the most ambiguous and (72) the least, with (71) in between. (73) is just considered peculiar, as perhaps a rather odd variant of (71). Here, the presence and absence of strong contrastive stress, the contiguity on non-contiguity of deleted modifiers in the NP and the order of modifiers all play a part. With stress, the listener is more likely to assume that, in (70), one = little ... man, but the possibility that one = man only is not excluded. When the modifiers are relative clauses, the question becomes even more difficult and the reactions of informants more diverse. There seems to be great disagreement as to the data:

(74) He read a book by James which was long, and I read one too.

(75) He read a book by James which was long and I read one which was short.

(76) He read a book by James that was long, and I read another.

(77) He read a book by James that was long, and I read one by Melville.

(78) He read a book by James which was long, and I read one by him too.

The general interpretation seems to be that when one is followed by a relative clause, one replaces the first occurrence of the noun and any relative clause except the last, which is understood to be in contrast with the new relative clause following one. That is, in (75) above, one replaces a book by James; in (74) and (76) where one is not followed by a relative clause, it is for most people ambiguous as to whether one replaces just a book by James or whether it replaces a book by James which was long. Here again, as in little ... pencil, contiguity of noun and modifier seems to play a role in interpretation.

If some people can delete non-contiguous modifiers, (and the reaction of some informants seems to indicate that this is indeed so), then the deletion transformation will be very hard to state. Further, there is the problem of where to draw the line. Consider:

(79) She brought a short thin red hexagonal pencil and I bought a long blue one.

(80) She bought a short thin red hexagonal pencil and I bought a fat round one.

It seems highly improbable that one could get the interpretation that one = thin ... hexagonal pencil in (79) and that in (80) one = short ... red ... pencil.

The whole matter is bound up with questions of contrastive stress, stacked vs. non-stacked restrictive modifiers, and also with conjunction, since many occurrences of one (as noted by Gleitman) occur with conjunction, and conjunction, which we assume precedes pronominalization, can also delete identical elements. To a sentence of this kind without conjunction, the reaction of some informants is that one deleted only the noun dress.

(81) After looking at several red woolen dresses with long sleeves my aunt decided that she would buy a nylon one.

We are restricting deletion to contiguous modifiers; however, we realize that there is disagreement as to the actual data here. This may be because in pronominalization with one enough of the structure is deleted that the derived tree is the same whether

identical modifiers have been deleted from the second occurrence of the NP, or were never there in the underlying structure. Since complete identity of the NP is not required, and since one may pronominalize varying amounts of the NP with one, in fact any amount up to but not including the article, this is perhaps not surprising. It may be the case that reordering of modifiers after deletion is permitted, and that the kind and extent of reordering varies with different grammars.

Ross (1967c) has also commented on the ambiguity resulting from pronominalization with one, noting that in some cases the ambiguity requires that, if pronominalization is restricted to constituents, then the order of adjectives in one of the input strings must be one which would be unacceptable in surface structure, as in:

- (82) (a) *James bought a brick wonderful old house and
I bought a wooden wonderful old house.
(b) James bought a wonderful old brick house and
I bought a wooden one.

where one replaces wonderful old house. Ross notes that this seems to require some sort of stylistic component, since the present theory will not handle this kind of problem. If we assume that deletion is restricted to constituents, then the deletion transformation is easier to state--but we have merely shifted the problem into other areas: (a) are there any restraints on the order in which modifiers are generated, or is this completely free? (b) what are the surface constraints on reordering after deletion? (c) how do we state the reordering transformation, particularly if underlying order is completely free?

There is a further problem when the total NP is reduced to one, in that to many people the resulting sentence has no ambiguity, and one is considered an NP containing all the modifiers present in the first occurrence of the NP, as in:

- (83) Tim bought a green 1967 R69-S with an Avon fairing
and aluminum saddle-bags, and I want one too.

This interpretation agrees with Poutsma's, who notes that when not a prop-word, one "represents a preceding noun with all its modifiers, and may be considered as the absolute form of the indefinite article." Under our analysis, a sentence such as (83) would be multiply ambiguous, but it is by no means clear that this is indeed so. However, as noted above most people find (74) and (76) ambiguous.

However, far more serious problems exist with the deletion of modifiers in definite noun phrases. Where the pronominalized NP has a modifier not present in the pronominalizing NP, so that one is not deleted, the same ambiguity is present as noted above, as, for example, in:

- (84) After getting reacquainted with all the men in her distant past she finally decided to marry the one with the black patch (anyway).

Here, one = man or man in her distant past. However, when the pronominalization of a definite NP results in a personal pronoun, then there is no ambiguity at all; the pronoun is understood to replace a noun with all the modifiers present in the pronominalizing NP, as in: (and note the similarity with some people's reaction to one with no modifiers, as noted above):

- (85) (a) When a tall, thin, ugly man wearing a brown suit and a blue shirt and leading three Irish wolfhounds on a red leash walked into the restaurant, we all looked at him.

Here, if him and man are coreferential, then we understand the NP underlying him to have all the modifiers preceding man. Yet our rule would also reduce the underlying deep structure NP \Rightarrow the one \Rightarrow him, if instead the second NP had as its input to the pronominalization rules:

- (b) ...the tall man...
 (c) ...the tall thin man...
 (d) ...the thin man...
 (e) ...the thin ugly man...

or any NP with a subset of the modifiers in the first NP. In each case, the modifier(s) and man would be deleted, and replaced by one. This would predict a multiply ambiguous derivation for him, which is clearly wrong. We cannot restrict deletion of modifiers with definite NP's to the case when both NP's are completely identical (except for the determiner), since we want an ambiguous derivation for (84) and similar examples.

An alternate solution might seem to lie in the fact that there exists a synonymous variant of (85.a), namely:

- (85) (f) When a tall thin, ugly man wearing a brown suit and a blue shirt and leading three Irish wolfhounds on a red leash walked into the restaurant, we all looked at the man.

That is, the anaphoric replacement for the first NP can be either the N or a personal pronoun. In either case the interpretation is

one of complete identity, and there is no ambiguity. We could therefore consider deriving anaphoric third person pronouns only from the N, and not allow deletion of modifiers in definite NP's. The assumption would then be that identical modifiers had been deleted under definitization; (discussion of the deep structure of the man will be deferred until later). But this would again prevent us from deriving (84). It seems clear that we must allow noun node reduction to delete identical modifiers in definite NP's, but that we must allow it only when this will result in a surface structure with one, not in a personal pronoun. One suggestion therefore is to state a condition on noun node reduction to the effect that if the determiner in the second NP is definite, then pre- or post-nominal modifiers can be deleted only if the second NP contains at least one modifier not present in the first NP. The ad hoc nature of this condition, and the difficulty of stating it formally, are sufficiently obvious not to need further comment. We may note in passing that although we will thus block ambiguous derivations for personal pronouns, we will also derive some rather peculiar sentences, such as:

- (86) When a tall thin ugly man walked into the restaurant we all looked at the tall thin man.

Here, the second NP cannot be coreferential, since otherwise the second occurrence of man would need the modifier ugly also. (It is possible to repeat the second of two coreferential NP's with a subset of the modifiers present in the first occurrence, but only when there is an intervening non-coreferential NP, as in:

- (87) When a tall thin ugly man and a short plump attractive one walked into the restaurant, we all looked at the tall thin man.)

It would seem that the oddness of (86) is caused not by any constraint of pronominalization, but that it is semantically anomalous, or at least unlikely. But there seems no obvious syntactic fault in it.

An obvious advantage of deriving third person pronouns from the N with no modifiers is that by so doing we avoid the problem of an infinite deep structure for such sentences (attributed to Bach, though we have not found a written source) as:

- (88) The boy who loved her kissed the girl who hated him.

The suggested analysis would simply require the girl underlying her and the boy underlying him.

But such a solution would leave unsolved many of the related problems of reduction to one discussed in the preceding section, particularly those connected with examples (54) - (56).

3. Problems of Definitization

Before discussing the problems connected with viewing definitization as a rule, we must distinguish three types of occurrences of the definite article: (1) sententially anaphoric, (2) definite description with restrictive modifier, and (3) extra-sententially or extra-linguistically uniquely specified. (See DET for some further discussion.) A few typical examples of each type are:

- Type (1) (89) (a) Once there was a king and the king had a daughter.
 (b) Some boys and girls came in, and the boys were all drunk.
- Type (2) (c) The boy you met is a botanist.
 (d) I didn't see the book I needed.
- Type (3) (e) The telephone is ringing.
 (f) The world is round.
 (g) The boy sat down.

We are concerned here with type (1), but will need to mention the others occasionally.

It was stated above that we could assume personal pronouns to be derived from NP's of the form the N, and discussion of the deep structure of the N was deferred. In these cases, the is clearly anaphoric, and the assumption was, except for the tentative hypothesis advanced at the end of the preceding section, that the deep structure of the second NP had all the modifiers present in the first NP, but that these had been deleted under definitization. At first glance it would seem possible to write a rule for this process, and in fact Kuroda (1966b) has a rule for definitization (the process is also suggested by Postal, (1966b), who, however, has no rule, and who notes that the conditions under which it would operate are as yet not fully understood). Kuroda's rule is:

$$(90) \quad N_1 \text{ X Det } N_2 \Rightarrow N_1 \text{ X THAT } N_2 \quad [25]$$

If $N_1 = N_2$

Kuroda does not discuss modifier deletion, and if the NP's are not fully identical, then definitization will not occur and the modifiers will not be deleted. If we incorporate this rule, then we will obviate the need for these NP's to be definite in the deep structure, and, as stated above, we would prefer that determiners be indefinite in the deep structure and that definite articles be derived transformationally. However, there are a great many NP's which cannot be definitized this way. First, there are e.g. the sun, the moon, which are usually definite, and such sentences as:

(91) Where's the dog?

(92) Did the plumber come?

which are anaphoric but in which the definitization is extra-linguistic, i.e. type (3) above. Secondly, we have the very large class of definite NP's with restrictive modifiers, i.e. type (2), such as:

(93) The book he bought yesterday was damaged.

Vendler would consider this related to anaphoric definitization, both instances being examples of the definition of singular terms. In the case of (93), the restrictive modifier is not redundant (since it occurs nowhere else in the linguistic context) and cannot be omitted. In (85.f) (repeated below) the modifiers on the man are omitted precisely because they have occurred already and are redundant. However, in Vendler's analysis the deep structure of the second NP would be as in (85.g).

(85) (f) When a tall, thin, ugly man wearing a brown suit and a blue shirt and leading three Irish wolf-hounds on a red leash walked into the restaurant, we all looked at the man.

(85) (g) ..., we all looked at the man who walked into the restaurant.

which would pose further problems of derivation, i.e. the second NP of two coreferential NP's necessarily has one modifier not present in the first, namely, a repeat of the proposition in which the NP initially occurred. Robbins (1962, 1963) proposed to derive NP's as in (93) by an optional definitization rule triggered by the configuration Det N S; since she was not working within a Katz-Postal framework, this was sufficient for her purpose. We would not wish to adopt this, since there is clearly a difference in meaning between:

(94) (a) She showed me some puppies and I bought the long-haired one.

(b) She showed me some puppies and I bought the long-haired ones.

and

(94) (c) She showed me some puppies and I bought a long-haired one.

(d) She showed me some puppies and I bought some long-haired ones.

In (94.a) the implication is clearly that there was only one long-haired puppy shown, or, rather, in the relevant set; it is really

irrelevant whether or not the puppy bought is from the set shown or is in fact a puppy seen somewhere else; in either case, there is only one of this kind. Similarly, in (94.b) the claim is that the total set of long-haired puppies was bought. In these sentences, definitization seems to be a matter not of anaphora or of uniqueness, but of co-extensiveness with a set which is specified nowhere in the surface structure, i.e. in this case, the set of long-haired puppies. In (94.c) it may or may not be the case that only one puppy has long hair; in (94.d) the number of long-haired puppies bought could be less than the total set or equal to it. The indefinite article simply indicates that the property of coextensiveness is unspecified. It is difficult to suggest different deep structures for these sentences which would offer any explanation for the interpretation. Presumably one could make use of a feature such as [⁺ Totality], but this would appear to be a device rather than an explanation.

As a further problem, we note that, unlike pronominalization, definitization would have to be constrained to work left-to-right only, since:

(95) (a) When the boy₁ came in I spoke to a boy₂.

is anomalous if boy₁ is coreferential with boy₂. A further complication is that for some people, if the indefinite NP has a restrictive modifier, then definitization can go backwards, as in:

(95) (b) When the boy₁ came in I spoke to a boy₁ who had won the prize.

A problem within the referential index framework is that if any definite articles at all are generated in deep structure (as they appear to have to be for type 2 and 3 cases), then sentences like (96) will be generated unless some constraint can be found which will block them.

(96) When a tall thin boy₁ came in I spoke to the little fat boy₁.

In our grammar, we have had to assume that the definite/indefinite choice is made entirely at the deep structure level, since the problems connected with definitization by rule are so complex. This way out obviously just pushes the problems onto the semantic component, and may in fact be contributing to some of the syntactic problems of section II.C.1. This area is one which obviously needs (and is now beginning to receive) drastic rethinking of the whole semantic-syntactic framework.

D. General Problems of Pronominalization (i.e. not specifically of this analysis)

1. Backwards Pronominalization

Kuroda (1966b) seems to have been the first to note that under certain circumstances pronominalization can work backwards, as in:

(97) (a) When he came in the boy kissed Mary.

He also noted that pronominalization cannot work backwards when the (following) antecedent is indefinite, as in:

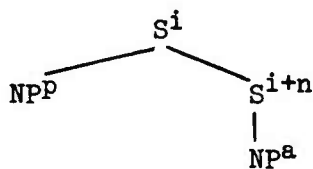
(97) (b) When he came in a boy kissed Mary.

(97.b) is grammatical providing that he and a boy are not coreferential. [This constraint would appear to be explained by the fact that (noted above) definitization cannot occur backwards (cf. (95.a)). If the NP can be definitized, then it can be pronominalized. This connection was not noticed by Kuroda.] The phenomenon of backwards pronominalization of definite NP's was further explored by Langacker, who formulated the constraint as follows:

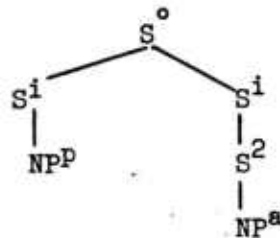
NP^a may be used to pronominalize NP^D unless (1) NP^D precedes NP^a ; and (2) either (a) NP^D commands NP^a , or (b) NP^a and NP^D are elements of separate conjoined structures.

The notion of command was defined as follows:

...a node A "commands" another node B if (1) A does not dominate B; (2) B does not dominate A; (3) A is in structure S^i ; and (4) node S^i dominates B.



PM 8



PM 9

In PM8, NP^D is in the structure S^i and S^i dominates NP^a ; therefore NP^D commands NP^a . In PM9, the leftmost node S^i does not dominate NP^a , therefore NP^D does not command NP^a .

Langacker further noted that passivization must precede pronominalization; otherwise, one could not derive:

(98) The mosquito which bit Algernon was killed by him. [52]

without also deriving:

(99) *He killed the mosquito which bit Algernon. [50]

Similarly, adverb preposing must precede pronominalization, in order to allow:

(100) While Algernon wasn't looking, Penelope bit him in the leg.

and yet disallow:

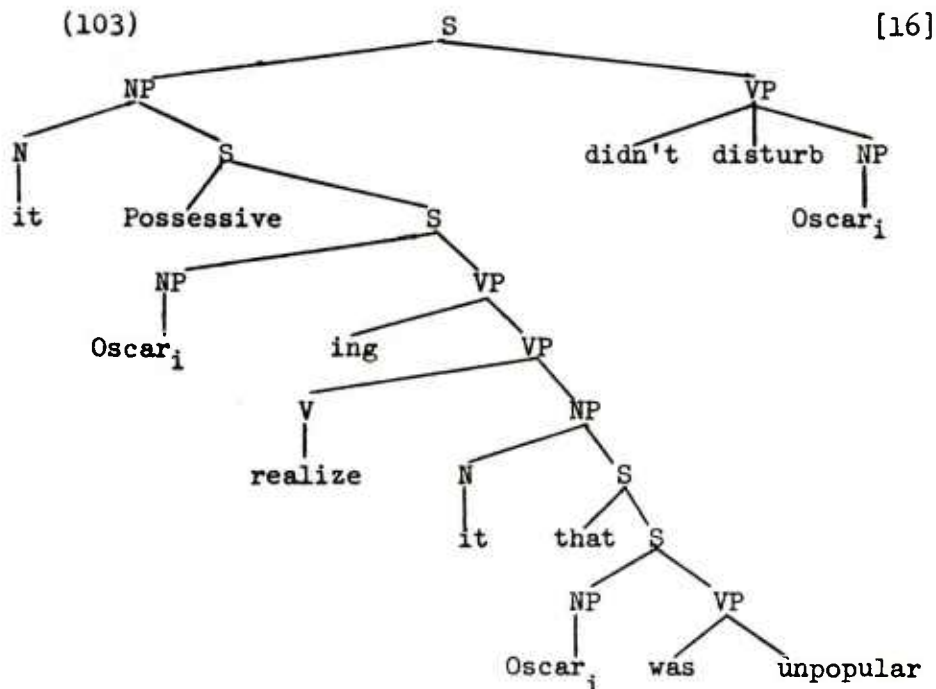
(101) *Penelope bit him in the leg while Algernon wasn't looking.

with him and Algernon coreferential.

Ross (1969) further developed this concept, and found in it support for the notion of the cycle in transformational theory. There are certain surface structures in which forwards pronominalization seems not to be allowed, as in:

(102) *Realizing that Oscar_i was unpopular didn't disturb him_i. [14b]

Ross assigns to this the (simplified) intermediate structure:



Pronominalization will of course not apply on the first cycle, since the structure being operated on is Oscar_i was unpopular, which does not contain two coreferential NP's. However, later pronominalization will apply to:

(104) (a) Oscar_i realized that Oscar_i was unpopular. [19]

and this must operate forwards to produce:

(104) (b) Oscar_i realized that he_i was unpopular. [20.a]

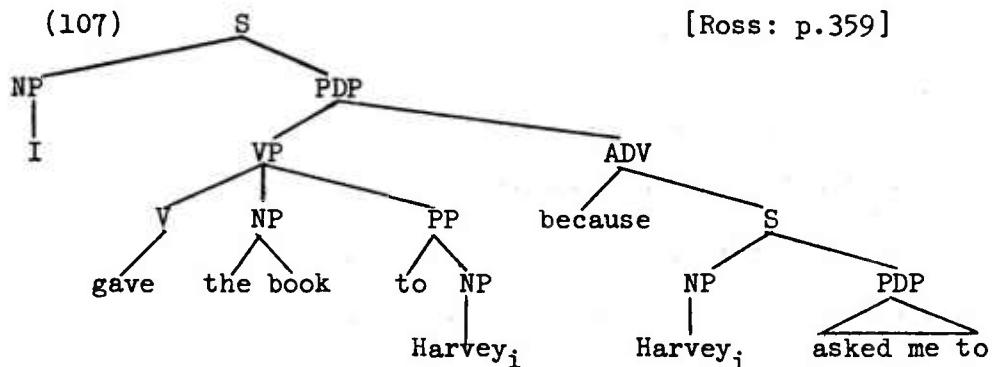
Backwards pronominalization cannot apply here, since the first occurrence of Oscar is not in a subordinate clause. When the highest cycle is reached, the structure is:

(105) Oscar's_i realizing that he_i was unpopular didn't disturb_i Oscar_i. [21]

and the first occurrence of Oscar will be deleted by Equi-NP deletion. (102) could be derived only by allowing backwards pronominalization to apply to (104.a), but, as noted above, this is excluded by the condition on backwards pronominalization. Thus a surface structure which seems to be an ungrammatical instance of forwards pronominalization is shown to be excluded by the interaction between the constraints on backwards pronominalization and the transformational cycle. However, Ross (1967c) gives some reasons why the constraint on backwards pronominalization cannot be stated in terms of the notion of "command": (1) Langacker is forced to derive:

(106) I gave the book to Harvey_i because he_i asked me to. [R:5.154a; L:72]

from the counter-intuitive intermediate structure:



in order to block:

(108) *I gave the book to him_i because Harvey_i asked me to. [R:5.154b; L:73]

(2) because of the nature of the underlying configuration he has to assume, Langacker is further forced to formulate a rule to extrapose around the VP rather than round a variable to the end of the sentence. Because of this, he prevents himself from deriving:

- (109) (a) I figured it out that she was lying. [5.159a]
 (b) I took it for granted that she was lying. [5.159c]

without a special rule for such sentences. Ross wishes to formulate the constraint as follows:

If one element precedes another, the second can only pronominalize the first if the first is dominated by a subordinate clause which does not dominate the second.

Ross notes that the notion "subordinate clause" needs further definition, and that it is possible that this may be language-specific rather than universal.

More recently, Lakoff (1968b) has seriously questioned both the data and the theory of backwards pronominalization. First, he claims that there are constraints on forwards pronominalization which cannot be explained by allowing all forwards pronominalization at a deeper level and constraining only backwards pronominalization. He suggests that some constraints must be stated as output conditions, and also that pronominalization is not cyclic (and further, that there is no evidence, once pronominalization is shown not to be cyclic, for a cycle at all). He concludes that there are two types of constraints on pronominalization, transformational conditions and output conditions. He cites Postal as claiming two rules of Adverb Preposing, one of which, Adverb Preposing₂, follows pronominalization to derive:

- (110) (a) Near him, John saw a snake. [9]

from:

- (b) John saw a snake near him. [7]

while blocking (as coreferential)

- (c)*Near John, he saw a snake. [10]

However, Lakoff gives sentences which cannot be derived by either Adverb Preposing₁, or Adverb Preposing₂, such as:

- (111) In his apartment, where Mary stays, John gives her pot to smoke. [24]

If (111) is derived by Adverb Preposing₁, then her cannot be derived by forwards pronominalization; if (111) is derived by Adverb Preposing₂, then her still can't be accounted for since to get it backwards pronominalization would have to apply incorrectly, as in:

(112) *John gives her pot to smoke, in his apartment,
where Mary stays. [20]

Further, if (111) is derived by Adverb Preposing₁, then his can't be accounted for, since again backwards pronominalization would have had to apply incorrectly. He concludes on the basis of other sentences that there is only one rule of Adverb Preposing, that it should precede pronominalization, that the scope of backwards pronominalization should be extended to allow:

(113) In his apartment, John smokes pot. [13]

and that forwards pronominalization must be restricted. He further notes that there appears to be a subject/non-subject division in pronominalization; specifically, pronominalization can go forwards from a non-clausal preposed adverb to a non-subject, but not to a subject, and pronominalization can go backwards from a subject into a non-clausal preposed adverb but not from a non-subject. Also, pronominalization can go backwards out of a subordinate clause to non-subjects of main clauses but not to subjects of main clauses. Therefore, he concludes that regardless of rule ordering, forwards pronominalization must be blocked in some environments, and that the subject/non-subject division must be taken into account when stating the conditions under which pronominalization can occur. He also investigates Topicalization and Cleft sentences with similar results; namely that there is no simple rule-ordered solution, and that pronominalization must follow rather than be both preceded and followed by Adverb Preposing, Topicalization, and Cleft sentence formation. He claims that no rules can follow pronominalization, and that this "... is a necessary fact ... about the nature of anaphoric processes in language, not a fact about one rule in English". He notes that "possible pronoun-antecedent relations are in part determined by a phonetic stress rule" which is itself determined by such factors as the length of the sentence and in particular of the VP, and that such a rule would apply after all syntactic and phonological rules had applied. For this reason, some constraints on pronoun/antecedent pairs must, he feels, be stated as output conditions. He concludes that the theory of output conditions will have to include: (i) variables, (ii) a definition of main clause and subordinate clause (iii) a definition of subject and non-subject (iv) a specification of phonetic stress level (v) a means of indicating identity of intended reference (vi) the notion of command (vii) a limited use of quantifiers. He suggests the following output condition for sentences with preposed adverbs

or topicalization:

- | | | |
|-------|-------------------------------|-------|
| (114) | Structural description | [116] |
| | X - NP - X - NP - X | |
| | 1 2 3 4 5 | |

The sentence is unacceptable if:

- (a) 2 has the same reference as 4 and
- (b) 2 commands 4 and
- (c) 4 = [+PRO] and [-REL] and
- (d) 2 is above the appropriate stress level and
- (e) 4 is a subject and
- (f) there is at most one S node which dominates 4 but does not dominate 2.

He investigates the possibility of formulating a notion of prominence, since preposed adverbs, topicalization and clefted elements are all being given focus, but concludes that this would merely add a new device without getting rid of any old ones.

Lakoff extends his discussion of pronominalization constraints to suggest a hierarchy of anaphoric expressions:

- | | | |
|-------|--------------------------|-------|
| (115) | 1. proper names | [134] |
| | 2. definite descriptions | |
| | 3. epithets | |
| | 4. pronouns | |

and claims that an NP with a lower number can be an antecedent of an NP with a higher number, but not vice versa.

Lakoff seems to have shown quite convincingly that constraints on the direction of pronominalization cannot be formulated as proposed by Ross and Langacker. We have therefore not attempted to incorporate Ross's conditions into our pronominalization rule.

It should be noted that pronominalization with one can apply backwards, as in:

- (116) After everyone else had seen one John finally caught sight of a nightingale.
- (117) Because I prefer the new one John always drives the old car.

This fact fits in with our treatment of pronominalization: since our derivation of personal pronouns includes reduction to one, the possibility of backwards pronominalization with personal pronouns follows from the possibility of backwards reduction to one. Ross (1967c) has pointed out that many kinds of Pro-ing other than of NP's can occur backwards, as in:

- (118) Although no one else believes it, Harry believes that Sally is innocent. [S Deletion: 6.167d]
- (119) After Henry had done it, Webster touched a sword. [S Deletion: 5.167d]
- (120) Although no one else thinks so, Harry thinks that Sally is innocent. [So Insertion: 5.169d]
- (121) After Henry had done so, Webster touched a sword. [do so as a special case of So Insertion: 5.170d]

Since we are restricting our analysis of pronominalization to NP's, we will not discuss this further than to agree with Ross that a fairly wide generalization seems to be involved here, which deserves further investigation.

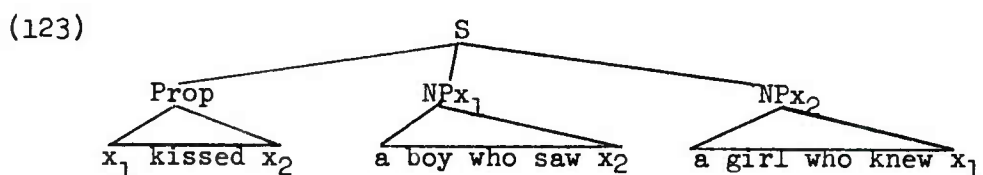
2. Problems of Identity

(a) Formal

It was suggested above that the problem of specifying an infinite deep structure for (88) could be avoided by deriving personal pronouns from an underlying the N with no modifiers. McCawley (1967c) has suggested that a modified form of symbolic logic provides an appropriate deep structure for transformational grammars, and that one advantage of this system would be a solution to sentences such as (88) and (122):

- (122) A boy who saw her kissed a girl who knew him. [32]

McCawley would derive this from:



Under this theory, pronominalization would not be a matter of replacing repeated NP's with pronouns but rather of determining which occurrence of an index will have a fully-specified NP

substituted for it. Other occurrences of indices will be filled with pronouns. Using the constraints suggested by Ross (1968), given (123) one can get:

(124) A boy who saw x_2 kissed x_2 .

(125) x_1 kissed a girl who knew x_1 .

In (124) a full NP can be substituted for x_2 in either position; in (125) the first occurrence of x_1 must be replaced by a full NP. McCawley notes that one result is that this will allow two ways of deriving (122) from (123). A further disadvantage (from our point of view) is that this theory of pronominalization does not seem to allow for integrating the derivation of personal pronouns with pronominalization with one. Further, it seems possible that the problem of identity requiring an infinite deep structure might also crop up in deriving the relative clauses in NPx_1 and NPx_2 ; however, this is not clear, since McCawley does not touch on this point.

Jackendoff (1968a) has proposed solving this problem with an interpretive theory of pronominalization, in which pronouns are generated at random in the deep structure like any other NP, and coreferentiality is assigned by rules in the semantic component. His proposal seems to miss some generalizations, i.e. that only [+Pro] NP's have antecedents, and that whereas two pronouns can have the same antecedent, one pronoun cannot have two antecedents (except of course plural pronouns). It is not clear how Jackendoff would handle derivative they, we, as in:

(126) After John talked to $\left\{ \begin{array}{l} \text{Mary,} \\ \text{me} \end{array} \right\}$ $\left\{ \begin{array}{l} \text{they} \\ \text{we} \end{array} \right\}$ decided to go.

Further, in a derivational scheme of pronominalization the hierarchy of person can be clearly indicated: all feature complexes which include [+I] → 1st person, then complexes with [+II] → 2nd person, then [+III] → 3rd person. Apparently, Jackendoff's theory would not reveal this in any way. There is one advantage to Jackendoff's theory, in that he suggests it can be developed to include the anaphoric use of epithets, as in:

(127) Irving was besieged by a horde of bills that the poor guy couldn't pay. [86]

In our analysis of pronominalization, we have no proposal for handling anaphora of this kind, though it is possible that an

interpretive theory of definitization could perhaps be extended to cover this. It is not confined to epithets, as illustrated by:

- (128) When a little blond-haired boy ran into the room
we all smiled at the child.

There appears to be no requirement of formal identity for anaphoric definitization. It does seem, however, that one must proceed from a more to a less specific NP:

- (129) *When a little blond-haired child ran into the
room we all smiled at the boy.

(with child and boy coreferential) is not so acceptable. This would seem to support Lakoff's idea of a hierarchy of anaphora.

Jackendoff makes the counterintuitive claim that sentences containing reflexive pronouns in impossible positions, e.g. as subject, count as syntactically well-formed and only semantically deviant. This is perhaps a special case of a more general problem with his approach, namely that deep structure lexical insertion and early transformations would somehow have to be constrained to apply as if the PRO element had all the features which will later be assigned to it by the interpretive rules. For example, if a certain occurrence of they is eventually going to be marked as coreferential with tables, it should be constrained all along to occur in an environment which would allow tables and to behave in all the T-rules just as tables would have behaved. It is not at all clear how this could be done without a great amount of blocking apparatus.

A proposal having some similarities both to McCawley (1967c) and to Jackendoff (1968a) is made in Karttunen (1967), although he was concerned with rather different problems, namely with the do-so type of sentence reduction across conjunction. In this proposal, NP's are marked in the deep structure for coreference. Only one of a set of coreferential NP's is fully-specified, the others being unexpanded terminal symbols. The semantic component then assigns all the features of the full NP's to the coreferential dummy symbols (and, presumably, a rule somewhere would insert a pronominal form). One obvious defect of the proposal is that it is always the topmost NP in a tree which is fully-specified; there is no allowance for backwards pronominalization or for any optionality. In this respect, therefore, it is less adequate than either of the two preceding proposals.

In general, any proposal which postulates a deep-structure

difference between an eventual antecedent NP and its eventual anaphoric replacements encounters the serious problem that it is impossible to specify in the deep structure which occurrence(s) can in fact serve as antecedent in the final sentence.

(b) Questions of Real-Word Reference

It has been proposed (e.g. Chomsky (1965)) that coreferentiality can be indicated by assigning indices to NP's. However, Postal (1967b) has pointed out that it is by no means clear what we mean by coreferentiality, since in many cases the two coreferential NP's do not refer to the same physical object, as in:

(130) The alligator's tail fell off but it grew back. [1]

and in:

(131) My home used to be in Baltimore but now it's
in Los Angeles.

Karttunen (1968) has also noted that although one can perfectly well pronominalize fictitious objects, as in:

(132) I saw a unicorn. It had a gold mane. [4]

under certain conditions, such as when the first proposition is negated, then the NP cannot be pronominalized:

(133) I didn't see a unicorn. *It had a gold mane. [4]

Similarly, he notes that one can say:

(134) I wish she had a car. She would give me a
ride in it. [13]

but not:

(135) I wish she had a car. *I will drive it. [9]

We have in our analysis assumed that an indefinite [+Specific] NP can be the antecedent, but not a [-Specific] indefinite NP (cf. DET for discussion of [-Specific]). However, a car in (134) certainly seems to be [-Specific]. The counterfactual mood appears to make the pronominalization acceptable. Lakoff (1968c) discusses this problem, extending it to include reference within a dream world or different worlds of belief. Karttunen and Lakoff suggest ways of representing their examples by means of (different) logical systems. However Lakoff himself points out that he has "no clear idea at present how to integrate such a notion into syntax."

3. Emphatic and "Picture" Reflexives

There are some exceptions to the rule that reflexivization occurs within a simple S. Hall (1965) noted the following exceptions:

- (136) (a) The only thing John talks to Mary about is himself. [3-10]
 (b) The only thing John talks to Mary about is herself. [3-11]
 (c) John's favorite topic of conversation is himself. [3-12]
 (d) Many of John's pictures are of himself.

She noted that the reflexive in these cases, unlike the typical reflexives, has main stress; in this respect it is like the appositive reflexives:

- (137) (a) John will wash the car himself. [3-14]
 (b) They took their petition to the President himself. [3-15]
 (c) I would stay away from them, myself. [3-16]
 (d) Oh, you've been to Tokyo? I've been there myself. [3-17]

She notes that, although all these uses are appositive, they cannot be paraphrased in the same way. Further, although it is usually true that an appositive -self pronoun can appear either immediately following the noun it repeats or at the end of the sentence, there are exceptions to this:

- (138) *With proper tools, one oneself can assemble a bicycle. [3-24]
 (139) *The President was implicated in the scandal himself. [3-25]

Her proposal (for which no exact rules are specified) is that these reflexives be derived as appositives, and that the preceding NP to which they are in apposition be deleted in certain cases. Ross (1968b) apparently assumes a similar derivation distinct from the conditions governing normal reflexivization. He also discusses the reflexive forms found after such nouns as picture, story, etc., as in:

- (140) Tad knew that it would be a story about himself.
 [33a]

but suggests no rule for deriving them, observing only that there may in fact be three distinct rules for reflexive pronouns. Jackendoff (1968a) noted that not only is "picture" reflexivization not restricted to occurring within a simple S, but that, contrary to normal reflexivization, it can occur backwards and even backwards in a higher S (contrary to the

normal constraints on backwards pronominalization).

- (141) The picture of himself that John saw hanging
in the post office was ugly. [15]

However, instead of assuming that these reflexive pronouns perhaps require different rules from those discussed by Lees and Klima, Jackendoff proposes to develop his interpretive theory of reflexivization to include them (but not the emphatic appositive reflexives, which he does not discuss). To do this he incorporates Ross's constraints on backwards pronominalization into his interpretive theory, cycling on both NP's and S's (as we do). Some objections to Jackendoff's proposal in general have already been discussed. Note also that, although he intends to block sentences such as:

- (142) *Himself saw John.

under his proposal this would merely be semantically anomalous.

Jackendoff also discusses the acceptability of reflexives in NP's with relative clauses, as in:

- (143) I hate the story about $\left. \begin{array}{l} *him \\ *himself \\ me \\ *myself \end{array} \right\}$ that John
always tells. [74]

- (144) I told the story about $\left. \begin{array}{l} *him \\ *himself \\ *me \\ myself \end{array} \right\}$ that John
likes to hear. [75]

He argues that there is an optional semantic rule preceding reflexivization which duplicates the subject of a sentence in the determiner of the object when the verb of the sentence is such that the subject is performing a direct action on the object. As supporting evidence he adduces:

- (145) (a) Today I shot my first lion. }
(b) *Today I was scared of my first lion. } [77]

But (145.a,b) support his paradigm only because of the particular properties of such phrases as my first N. True possessives indicating ownership do not behave in this way, as shown by:

- (146) (a) Yesterday I shot my dog.
(b) Yesterday I was scared of my dog (but today he's scared of me).

Further, it is difficult to see how such a rule could be optional, or what the deep structure before insertion of the subject into the determiner of the object would be, since (146.a) clearly makes a different claim from either:

(146) (c) Yesterday I shot a dog.

or

(146) (d) Yesterday I shot the dog.

It would seem therefore that Jackendoff's rule (as stated) is not sufficiently accurate, and cannot be used as a basis for explaining (143) and (144).

Note that in (144) the replacement of the story by my story does not change the meaning. This suggests that perhaps the deep structure contained two occurrences of I, one of which has been deleted. If both occurrences could be analyzed as cases on a noun, then the operation of reflexivization on the NP cycle would account for these reflexives, as it does for those in the examples below:

- (147) (a) John's picture of himself
- (b) John's story about himself
- (c) The machine's destruction of itself

If more of the problematical cases could be analyzed as having the reflexives on a case phrase rather than a reduced relative, some of these problems might be on their way to a solution. However, many of them still appear intractable at this point.

We are restricting our analysis to reflexive pronouns within a simplex S or NP; we have at present no derivation for the other -self pronouns.

4. The Pronominalization of Conjoined NP's

It was stated above that if an NP can be definitized, then it can be pronominalized. However, this statement does not always hold. The following sentence:

- (148) A woman walked into a restaurant carrying a little girl in one arm and a parcel in the other.

can be followed by:

- (149) (a) Suddenly she stumbled and dropped them.
- (b) Suddenly she stumbled and dropped both of them.
- (c) Suddenly she stumbled and dropped one of them.
- (d) Suddenly she stumbled and dropped the little girl.
- (e) Suddenly she stumbled and dropped the parcel.

However, it is ungrammatical to follow (148) with any of the following:

- (149) (f) *Suddenly she stumbled and dropped her.
- (g) *Suddenly she stumbled and dropped it.
- (h) *Suddenly she stumbled and dropped both her
 and it.

although in all cases the pronominal form makes the reference perfectly clear. Yet, as shown by (149.d,e), the NP's can be definitized separately. We have no explanation to offer of this curious fact.

5. Pronominalization in Manner and Time Adverbials

Kuroda (1967) cites the following as examples of sentences in which an NP can be definitized but not pronominalized by either a personal pronoun or one:

- (150) That was the manner of disappearing John described to Mary, and he actually disappeared in that manner. [95]
- (151) That was the day John told Mary he would disappear, and he actually disappeared on that day. [96]
- (152) *That was the manner of disappearing John described to Mary, and he actually disappeared in it. [97]
- (153) *That was the day John told Mary he would disappear, and he actually disappeared on it. [98]
- (154) *That was the manner of disappearing John described to Mary, but he actually disappeared in some other one. [101]
- (155) *That was the day John told Mary he would disappear, but he actually disappeared on some other one. [102]

However, it would seem that in these sentences the NP's are not definitized anaphorically, but, instead, that the definite determiner is dependent on the presence of a restrictive relative clause. Note that, in contrast with (150) and (151), we cannot have:

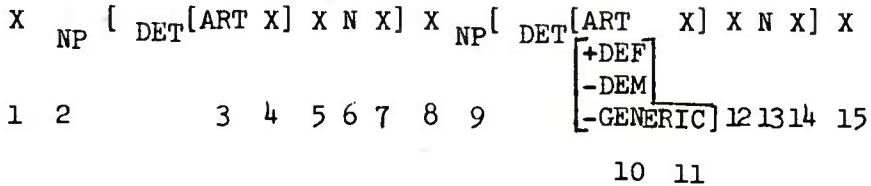
- (156) *That was the manner of disappearing John described to Mary, and he actually disappeared in the manner.
- (157) *That was the day John told Mary he would disappear, and he actually disappeared on the day.

A plausible derivation for that manner in (150) and that day in (151) is from an underlying structure such as the N S as suggested in Klima (1964). Sentences (156-7) seem to indicate that anaphoric definitization cannot occur in these adverbials, while sentences (154-5) indicate that pronominalization (specifically, reduction of the noun node to one) is blocked independently of definitization. Again, we have no explanation to offer for this constraint.

III. THE DERIVATION OF PRONOMINAL FORMS

A. Reflexives (partly optional)

Structure Index:



Conditions:

1. 2 immed. dom. by lowest S or NP that dom. 9
2. 6 immed. dom. by NOM, has no sister NOM, no right sister N (i.e. 6 is head N of its NP)
3. 13 is head N of its NP (as above)
4. 567 = 12 13 14
5. if 3 = [+DEF, -GENERIC], then 3 = 10 and 4 = 11
if 3 ≠ 10, then 11 is null and 10 is [-I, -II]

Optionality: If 3 is [+I] or [+II], OBLIGATORY: otherwise OPTIONAL

Structure Change:

Add

+	Refl
+	Attach

 to 13 and to 10

Notes and Justification:

1. The rule is optional for all third person nouns and pronouns, reflecting the decision not to treat reference. Thus he saw him and he saw himself are generated as optional variants. The fact that a special condition is needed to make reflexivization obligatory for first and second persons is not simply a result of this decision, since *we saw us is ungrammatical even when the reference is non-identical. See II.C.1 for a more detailed discussion.
2. Reflexivization must precede deletion of definite articles with proper nouns to get John saw himself, since the second NP must have a definite article at the time of reflexivization.

3. The feature [+Attach] is used in the article attachment rule (§ D); the same feature is used for someone, etc.

4. The identity condition is not on the total NP because of such sentences as:

- (158) (a) Every philosopher contradicts himself.
- (b) Three boys hurt themselves.
- (c) Each of the boys helped himself.
- (d) No one contradicted himself.

Recoverability (non-ambiguity) is assured, however, since if the subject is definite the entire NP's must be identical, and if the subject is indefinite, the determiner of the second NP must consist only of a definite article and the rest of the NP must be identical. Thus (158.a-d) are derived from:

- (159) (a) Every philosopher contradicts the philosopher.
- (b) Three boys hurt the boys.
- (c) Each boy of the boys helped the boy of the boys.
- (d) No one contradicted the (=he) one.

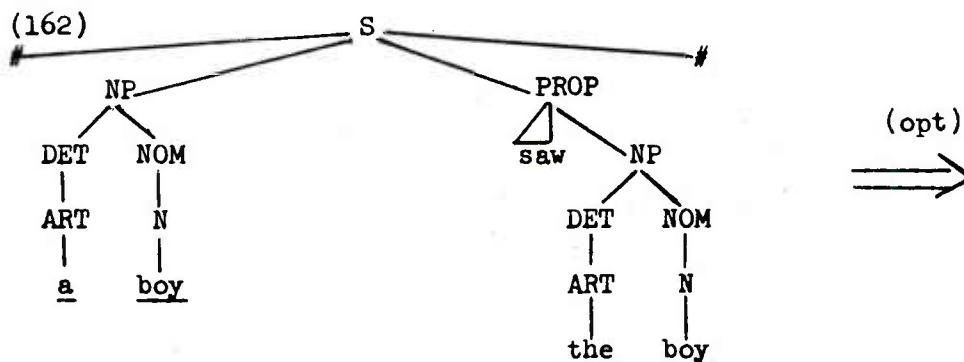
5. Reflexivization precedes conjunction. For justification of this claim and derivation of plural reflexives from conjoined reflexives, see the pronoun conjunction rule in D.4 below. This rule will generate:

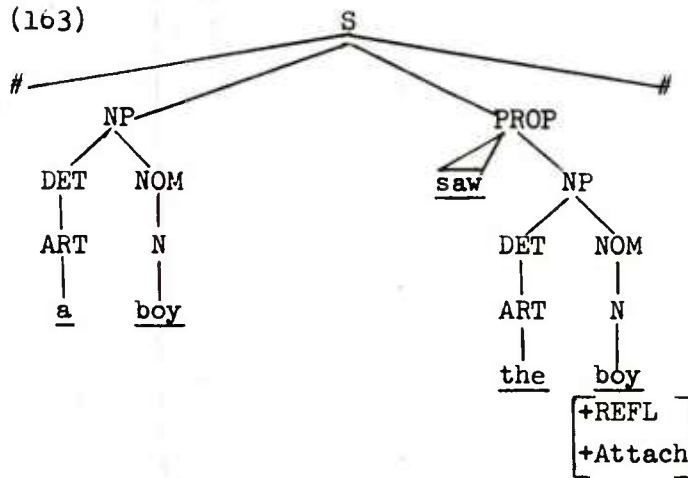
- (160) *John and Mary bought a house for himself and herself.

which will obligatorily become, by the pronoun conjunction rule,

- (161) John and Mary bought a house for themselves.

Example in Tree Form:





Examples

(a) Grammatical and generated

(164) The boy saw himself. (from The boy saw the boy.)

(165) A boy saw himself. (from A boy saw the boy.)

(166) A boy in a blue suit saw himself. (from A boy in a blue suit saw the boy in a blue suit.)

(167) John helped himself and I helped myself. (later becomes *John and I helped himself and myself respectively. by the conjunction schema, then obligatorily by PRO-conjunction becomes John and I helped ourselves.)

(168) John prefers himself to me and I prefer him to myself. (⇒ *John and I prefer himself and him to me and myself respectively. ⇒ John and I prefer him to me. by PRO-conjunction)

(169) *John and Mary jointly bought a house for himself and herself (⇒ ...for themselves, by PRO-conjunction)

(170) Everyone helped himself.

(171) He has a picture of himself.

(b) Ungrammatical and disallowed

(172) *The boy saw herself. (The reflexivization rule does not itself delete the original noun stem; hence the feature copying rule, which comes later,

will copy the gender features from the noun onto the definite article, which later becomes him, her, etc.)

(173) *You saw you, *I saw me.

(174) *Everyone helped themselves. (but see Dialect Variant below, examples (181-2).)

(c) Grammatical but not generated by this rule

(175) He pushed the pillow behind him. (unresolved problem)
(Here, him = he, and both NP's are dominated by the same S, but for some reason we cannot explain REFLEXIVIZATION does not take place. This has also been noted by Chomsky (1965) pp. 146-7.)

(176) I myself saw him do it. (We have not handled intensifying reflexives.)

(177) He likes { his own self
his pretty little self
his own sweet self } best.

These cannot be generated by our rule since our rule requires identical modifiers between subject NP and the NP to be reflexivized, and all such modifiers are deleted by the rule. We have not tried to handle own.

These examples do not seem to involve simply a separate lexical item self, since they show the same restrictions on number and gender agreement with the subject as do ordinary reflexives.

(178) Everyone helped everyone. (the rule does not apply, since the second NP does not have a definite article)

(179) Politicians distrust politicians. (same comment)

(d) Ungrammatical but not excluded

- (180) (a) *We saw me.
(b) *I saw us.
(c) *You (sg) saw you (pl).
(d) *We (incl) saw us (excl).

The rule is obligatory for first and second persons, but it will fail to apply when they are non-identical, and no provision has been made for blocking these cases.

Unresolved problems:

1. The one of One should never offer a Tiparillo to a lady will be discussed below; but we do not have any proposal for deriving the reflexive form oneself from it -- only himself.
2. Other unresolved problems are exemplified by examples (175-7) and (180) above.

Reflexivization: Dialect Variant

Same structure index and condition; but:

If 4 contains [+DIST(ributive)], replace [⁺ Plural] in
 QUANT
 13 by [+Plural].

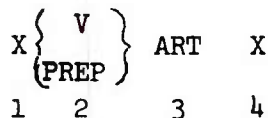
Examples:

- (181) Everyone saw themselves on TV.
- (182) No one watched themselves for very long.

B. Rules Which Add Features to ART

1. ACCUSATIVE MARKING

Structure Index:



Structure Change:

Add [+Accus] to 3.

Examples:

(a) Grammatical and generated

- (183) She gave the apple to him (to the one = to him) [+Accus]
- (184) He saw them.

(b) Ungrammatical and excluded

- (185) *Him and her gave the apple to John and I.

(c) Grammatical, generated by other rules

(186) John saw himself. (by Reflexivization in addition to this rule)

(d) Grammatical, not generated

(187) Give me them.

Notes

1. This rule is a slightly modified version of Fillmore's T12 Case. Its order with respect to the following rule appears to be immaterial.

2. Sentence (187) is a problem because the second NP directly follows neither a V nor a PREP. The obvious solution of having this rule precede indirect-object movement wouldn't work in our grammar, since that rule is just part of object placement, which precedes subject placement, which clearly must precede ACCUSATIVE MARKING.

2. TRANSFER OF NOUN FEATURES TO ARTICLE

Structure Index:

X	NP	[	ART	X	N	X]	X
1	2	3	4	6	7		

α Count (β Human) (γ Masc) (δ Plural)
--

5

Condition:

4 immed. dom. by NOM, has no sister NOM, and no right sister N (i.e. is head N of NP)

Structure Change:

Add the features 5 to 2

Notes

1. Parentheses on features mean they may not appear on all nouns. However, in this case if they are present they must be transferred.

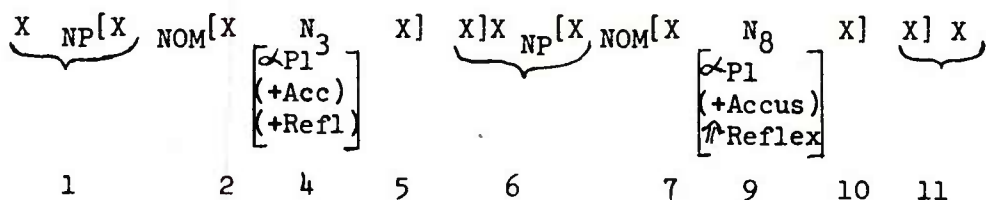
2. The listed features are those required to correctly distinguish who/which and the third person pronouns (articles). Note that person is an inherent feature of the determiner (we Americans - you Americans - the Americans) but gender and humanness inhere in the noun.

3. This rule is a modified version of Fillmore's T11 Feature Transfer.

C. Pronominalization Proper

1. REDUCTION OF NOUN NODE TO ONE

Structure Index:



Conditions:

2 = 7, 3 = 8, 5 = 10

OBLIG if $\uparrow = +$, OPT if $\uparrow = -$.

Structure Change:

(1) Add [+PRO] to 9 and substitute the result for 8.

(2) Delete 7 and 10

Notes:

1. For this rule to operate, it is necessary only for the phonological matrices and inherent features of the two nouns to be the same. Number, case, and the presence or absence of reflexivization are irrelevant.

2. The rule (1) inserts [+Pro] into the feature matrix specified at 9, deleting the phonological matrix of the noun and all of its syntactic features not specified in 9.

3. The rule (2) deletes all identical modifiers contiguous to the noun.

4. This rule will leave a prop-noun which, when $\begin{bmatrix} +\text{Count} \\ -\text{Reflexive} \end{bmatrix}$ will rewrite as one (s), and when $\begin{bmatrix} +\text{Count} \\ +\text{Reflexive} \end{bmatrix}$ as self/-ves; $\begin{bmatrix} -\text{Count} \\ -\text{Plural} \end{bmatrix}$ will have a zero phonological form, and $\begin{bmatrix} -\text{Count} \\ +\text{Plural} \end{bmatrix}$ cannot occur.

5. This rule does not allow for backwards pronominalization, which is possible even in indefinite NP's.

Examples

(a) Allowed

- (188) Last week I made myself a dress with a long skirt for the Chancellor's party, and a woolen one for work. (one = dress)
- (189) Last week I made 2 dresses with long skirts and three with short ones. (ones = skirts)
- (190) Many students of the ones at UCLA have cars.
- (191) I thought of a bird and a one flew by (\Rightarrow and a flew by \Rightarrow and one flew by). One is a stressed variant of a, among other things.

(b) Ungrammatical but not disallowed by this rule as stated

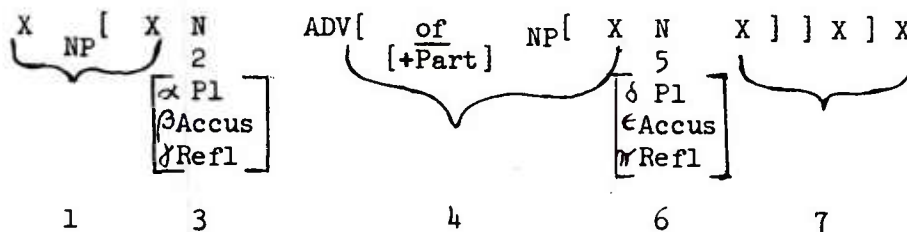
- (192) *Last week I made myself a dress with a long skirt for the Chancellor's party, and I made a woolen one for work. (one = skirt)

(c) Grammatical, but not generated by this rule

- (193) I looked for a pen and found one in the desk. (one is not a rewrite on the N $\begin{bmatrix} +\text{Pro} \end{bmatrix}$, but is a stressed variant form of the indefinite article a; after the application of this rule, we would have ... found a one in the desk)
- (194) Because the red one was damaged, I bought the blue dress. (see Note 5)
- (195) After everyone else had seen one, John finally saw a Western tanager too.

2. REDUCTION OF NOUN NODE WITH PARTITIVES (obligatory)

Structure Index:



Conditions:

2 = 5 (i.e., identical in all features except number, case, and reflexive)

Structure Change:

Add [+PRO] to 3 and substitute the result for 2.

Notes

1. There does not seem to be any reasonable way of combining the backward noun reduction of many of the boys with the usual forward noun reduction, unfortunately.

Example in Tree Form: See DET, derivation of many of the boys.

Examples:

(a) Allowed

(196) John met many ones of the boys. (ones will be deleted by the following rule)

(197) John met many tall ones of the boys. (ones will not be deleted)

(198) John met many ones of the tall ones of the boys.

(b) Grammatical, but not generated by this rule:

(199) John met one of the boys. (This rule gives one one of the boys, next rule deletes prop-noun)

(c) Ungrammatical, excluded by this rule.

(200) John met many boys of the boys.

Justification: see DET report

Unresolved Problems:

1. If "many tall boys of the boys" is as acceptable as "many tall ones of the boys", then the rule should be made optional in case there is a modifier on the first N; this has not been done.

3. DELETION OF NOUN NODE (obligatory)

Structure Index:

X	NP[	DET[	X	[+N DEL]	[	α Pl	]	X	]	X
						β Count +Pro -Refl				
1			2	3	N	4		5		6

Condition:

If α is - and β is + and 3 is $\left[\begin{array}{l} +Def \\ -Dem \end{array} \right]$, then 5 is null.

(I.e. a singular count noun immediately preceded by a definite article may not be deleted if there is a following modifier.)

Structure Change:

(1) Add [+PRO] to 3

(2) Delete 4

Notes

1. This T-rule deletes the prop-noun one, after certain determiners when there is no intervening modifier.

2. In the case of the non-demonstrative definite article, which is always [+N DEL], the resulting forms are that, those, and the third person pronouns. That and those occur when there is a post-nominal modifier, with mass and plural nouns respectively:

(201) He preferred the wheat from Canada to that from Nebraska.

- (202) The arguments presented today are stronger than those presented last week.

The noun node may not be deleted at all, however, if there is a postnominal modifier with a singular count noun:

- (203) He preferred the book he bought to $\left. \begin{array}{l} *that \\ *it \\ the\ one \end{array} \right\}$ from the library.

When there is no postnominal modifier, the noun node is always deleted, (N.B. This in fact appears to be optional after the copula, e.g.

- (204) You remember the girl I told you about? Well, that's the one;

we have not allowed this special option here). In these cases, the article is the only constituent remaining in the NP, and it takes the form of a personal pronoun. The entries in the surface lexicon for the forms of the definite article therefore include the environmental feature $\pm_{NP}[_]$ with the value + for personal pronouns and - for that and those. See DET for all the surface lexical entries for the definite article.

3. Since generic NP's are subject to PERSONAL PRONOUN REDUCTION, we have followed Postal in claiming that all generics are definite in the deep structure.

- (205) (a) They say porridge is good for you, but I can't stand it, [Wolfe 45] must come from
 (b) They say porridge is good for you, but I can't stand porridge.

Note that

- (c) *They say porridge is good for you, but I can't stand the porridge.

is anomalous as a variant of (a) or (b).

4. Operation of this rule seems to be idiosyncratic to certain determiners which do not seem to form any kind of a natural class. They are marked in the lexicon with the feature [+N DEL]. The determiners to which this must apply include a/some/any, many, several, plenty of, a lot of, lots of, more, no, cardinal numbers, possessives, and all definite articles. (See DET)

5. This feature i.e. [+N DEL] is apparently optional with some determiners, such as (n)either, this [-Pl], that [-Pl], other,

and any [-Pl]. For these determiners, the value of the feature is chosen before lexical insertion into the base. (See DET)

6. The situation with regard to the demonstratives is more complicated. When reducing a repeated NP Fillmore obligatorily supplies one after [+Dem]. But it would seem that this is, in some dialects at least, optional in the singular:

(206) She likes this dress and I like that dress.

(207) (a) She likes this dress and I like that one.
 (b) She likes this dress and I like that.

Further, in the plural *those ones, *these ones are, I think, of at least doubtful grammaticality for everyone. Poutsma notes:

"after the single demonstrative the anaphoric one is frequent enough, its application not being determined, however, by any principal of syntax.... Notwithstanding its distinctly antithetic force, the demonstrative mostly stands without one, probably owing to its being apprehended as a substantive word...

The plural demonstratives are but rarely found with anaphoric one."

Since the singular/plural distinction seems to affect the rule, the solution cannot be in the inherent features of this/that. Fillmore does derive this/that without one, but only as a deictic, never in the anaphoric sense as in (207.b). This is clearly not sufficient. Further, since he can get one only in anaphoric uses, he cannot derive:

(208) {This} one is my favorite.
 {That}

Further, one would presume that he would be forced to derive:

(209) (a) *You go this way and I'll go that one.

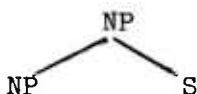
rather than

(b) You go this way and I'll go that.

This particular case may however be related rather to the question of whether certain adverbials can be pronominalized at all (cf. II. D.5.). Clearly, Fillmore's solution is oversimplified; we have, however, no alternative to offer other than that of always making deletion of one optional after singular this/that, and obligatory following these/those, which is clearly cumbersome and ad hoc.

7. Some of these determiners have variant phonological forms when the noun node is deleted. These include no/none, a/one, my/mine, your/yours, her/hers, our/ours, their/theirs, other [+Pl]/others, the [-Count]/that. This is a matter of second lexical lookup, and the forms are easily distinguished by the feature [-Pro].

8. Since personal pronouns can have non-restrictive relatives but no other postnominal modifiers, it must be seen to that non-restrictive relatives fall outside the lowest NP. Perhaps the derived structure should be:

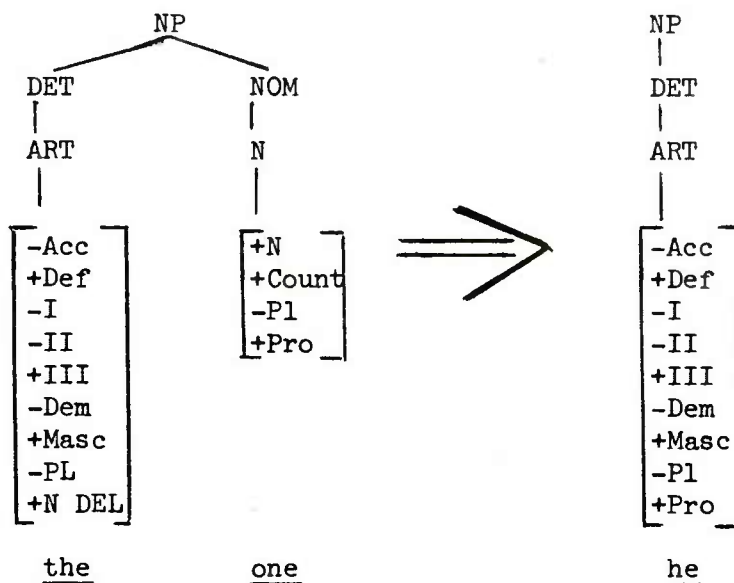


(Non-restrictive relatives are not being treated.)

Example in Tree Form:

(210)

(211)



Examples:

(a) Allowed

(212) I thought of a bird and one flew by.

(213) I looked at the books and decided to buy some.

- (214) (N)either (one) is ungrammatical.
- (215) I liked the books so much she lent me some more.
- (216) He likes the wheat from Canada; and I like it too.
- (217) He likes the wheat from Canada and I like that from Nebraska.

(b) Disallowed and ungrammatical

- (218) *When a man came in, we all looked at the one.
- (219) *We ones are collecting a lot of papers on syntax.
- (220) *When the girls came in I looked at the with red hair.
- (221) *He liked the wheat from Chicago but I preferred the from Nebraska.
- (222) *I thought of a bird and a flew by.
- (223) *He left his book at home but I brought my.
- (224) *He wrote some short papers but I wrote no.

Justification: See II.A., II.B.2., and II.C.

D. Special Low-Level Rules

1. ELSE (oblig)

Structure Index:

X	[+Attach]	<u>other</u>	[+Attach]	X
1	2	3	4	5

Structure Change:

- (1) Attach else as right sister of 4
- (2) Delete 3

Examples:

- (225) *Some other body ⇒ some body else (≠somebody else by next rule)
- (226) *Every other -thing ⇒ every -thing else
- (227) *No other where ⇒ no where else

Justification:

Else cannot occur except with compounds formed by the article attachment rule. These compounds do not allow post-nominal modifiers to be preposed, e.g. someone nice, *nice someone, but other is not derived from a postnominal modifier, so if we did not have this rule there would presumably have to be an explicit blocking rule to prevent the ungrammatical examples above. The rule is also semantically impeccable.

2. ARTICLE ATTACHMENT (oblig)

Structure Index:

X	D[[+Attach]]	N[[+Attach]]	X
1	2	3	4

Structure Change:

1 - \emptyset - \S + 2 + 3 + \S - 4

Notes:

1. N stems marked [+Attach] include -one (only the one of someone, everyone, etc.), thing, body, place, time, times, and self (self is not in the base, but acquires the feature [+Attach] as part of the reflexivization transformation.) D stems marked [+Attach] include some (any, no), every, and the definite article which has gotten the feature [+Reflexive].

2. The added \S 's are an ad hoc device to signal "word-formation", about-the exact mechanism of which no claim is being made.

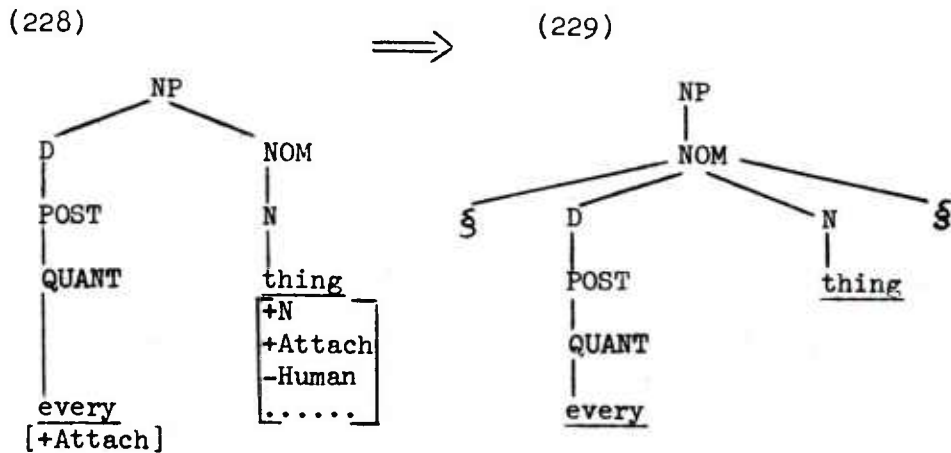
3. There are two reasons for repositioning D (see following tree), neither of them crucial:

- a. as a further signal of "word-formation"
- b. to facilitate the blocking transformation which follows.

Since this is a late rule, the repositioning of D is not expected to have many repercussions. Virtually any alternative which gave a derived structure recognizably different from the original structure would be acceptable from our point of view, including simply a more sophisticated second lexical lookup along the lines being advocated by Gruber, which would obviate the need for the following blocking transformation.

4. The rule mentions D rather than ART because it must apply to the QUANT's every and any.

Tree example:



Examples:

(a) Grammatical, generated

(230) everything, anyone, no one, someplace, himself, yourselves and derivatively somewhere, ever, what, etc.

(b) Grammatical, not generated by this rule

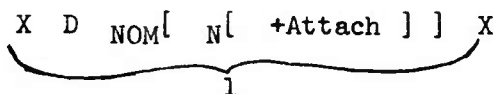
- (231) (a) Every one had been broken in shipment. (same every, different one)
 (b) I expect to have some time next week. (different time)
 (c) He loves his own sweet self best. (whether or not this is the same self, the rule would not apply because of the intervening modifiers)

(c) Ungrammatical, not generated

- (232) (a) *eachone (each is not [+Attach])
 (b) *everyman (man is not [+Attach])

3. ATTACHMENT BLOCK (oblig)

Structure Index:



Structure Change:

\emptyset (i.e. throw away the whole tree)

Notes:

1. This rule is necessary because there is no obvious way to constrain attachable noun stems and attachable determiners to occur only with each other, and if we allow them to go unattached we will be predicting a false ambiguity in such forms as each one (i.e. as either the 'anaphoric', [-Attach] one or the human singular [+Attach] one of someone).
2. The previous rule attaches D under NOM; a D which is not [+Attach] will thus still be to the left of NOM.

Examples:

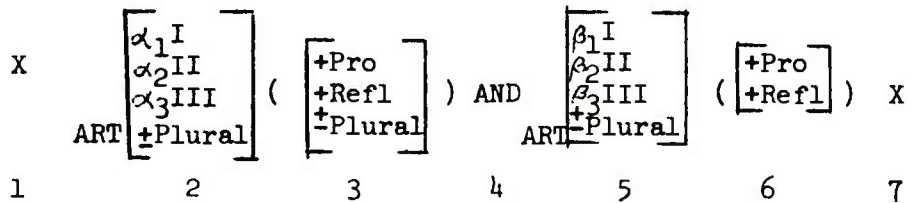
Ungrammatical and excluded: *eachbody, *onething, etc.

Justification:

None. We feel no fondness for this rule and would be happy to see it replaced by something like phonological blocking or a more sophisticated second lexical lookup. We would like to avoid explicit blocking rules wherever possible, since they obviously always represent weaknesses in the analysis.

4. PRONOUN CONJUNCTION (partly optional)

Structure Index:



Conditions:

1. Either α_1 or β_1 is -.
2. If any of $\alpha_1, \alpha_2, \beta_1, \beta_2, = +$, then 2 and 5 are both [+Hum]

Structure Change:

- (1) If 3 and 6 both = \emptyset , optional
 If 3 and 6 both $\neq \emptyset$, obligatory
 Otherwise go to (2)

$$1 - \left[\begin{array}{c} 2 \\ \gamma_1 I \\ \gamma_2 II \\ \gamma_3 III \\ +Plural \end{array} \right] - \left(\left[\begin{array}{c} 3 \\ +Plural \end{array} \right] \right) - \emptyset - \emptyset - \emptyset - 7$$

where: $\gamma_1 = +$ if α_1 or $\beta_1 = +$; $\gamma_1 = -$ otherwise.

- (2) If 3 = \emptyset and 6 $\neq \emptyset$ or vice versa, and 2 \neq 5, the rule does not apply.
 If 3 = \emptyset and 6 $\neq \emptyset$ or vice versa, and 2 = 5, obligatory:
 1 - 2 - \emptyset - \emptyset - \emptyset - \emptyset - 7

Notes:

1. This rule optionally changes you and he to you, obligatorily changes yourself and himself to yourselves, and obligatorily changes him and himself to him. Her and himself is not changed.
2. Morphophonemically, [+I, +Plural] becomes we (us), then [+II, +Pl] becomes you, and lastly [+III, +Pl] becomes they, (them). This ordering prevents combinations such as [+I, +II] from rewriting as you, etc.
3. We allow you and you \Rightarrow you, he and he \Rightarrow they, as well as all non-identical combinations, but not I and I \Rightarrow we.
4. If the first condition is not met, the string should block, since I and I itself is not grammatical. This should probably be taken care of along with blocking *a man and the man.
5. The second condition prevents deriving us from it and me, you from you and it, etc.

Examples:

(a) Grammatical, generated

- (233) (a) John and I helped ourselves (from himself and myself.)
 (b) You and Bill shouldn't strain yourselves. (from yourself and himself)
 (c) When John and Mary studied harder, they did better. (from he and she)
 (d) John and Mary washed him. (from himself and him)
 (e) The girl didn't like it when John shot himself

- and her. (no change)
- (f) John and Mary both prefer him to her.
(from himself and him to her and herself
(respectively))
- (g) John and Mary each bought houses for themselves.
(from himself and herself)

(b) Ungrammatical, not generated

- (234) *John and I helped ~~himself~~ and myself.
- (235) *You and Bill shouldn't strain yourself and himself.
- (236) *You and Bill shouldn't strain yourself.
- (237) *I and I helped ourselves.
- (238) *John and I helped themselves.
- (239) *John and Mary prefer himself and him to her and herself respectively.

(c) Grammatical but not generated by this rule

- (240) John and Bill each promised himself a vacation.
(will obligatorily become themselves, which is correct only when vacations is plural. This is an unresolved problem.)

E. Lexical Entries (Approximate)

1. INDEFINITE PRONOUNS

The one of someone, everyone, anyone, no one must be distinguished from the one of every one, any (one), each one, etc., for a number of reasons:

1. the former is always [+Human], the latter indifferently [-Human] depending on its expressed or understood antecedent (the former does not have an antecedent but is always general)
2. only the former has a synonymous variant -body
3. everyone and every one must be kept distinct, and each one is not ambiguous
4. only the latter has plural forms any ones, etc.

The thing of something must similarly be distinguished from the thing of some thing:

1. only the latter has plural forms some things, etc.

2. the latter is always a count noun, but the compound form can be mass:

- (241) (a) *They were gathering some thing.
 (b) They were gathering something.

Similar distinctions can be seen between the combining forms -time, -times, -place and the homophonous separate words. The combining forms one, body, thing, time, place, times, etc. are related to one another by a number of further peculiarities:

1. restriction to compounds with some, (any, no), every, wh, and possibly this/that

2. else

3. possibility of -or other with some form

4. allowing postposed but not preposed modifiers:

someplace interesting/*interesting some place
*some interesting place (except
 as ordinary noun)

We will distinguish the forms in the base by the feature [±Attach] used in the article attachment rule. Since we see no feasible way of marking either the determiners or the nouns with contextual features to allow only the right combinations, the combining determiners will also be given a feature [+Attach], and if a [+Attach] noun happens to occur with a [-Attach] determiner, the Article Attachment rule will fail to apply and the Attachment Block rule will apply. The lexical items will therefore have approximately the following features:

one as in He ate every one¹, I took the blue one, He (from the one) left:

[+Pro, -Attach, {+Human, ±Masc}, ±P1, +Count]
 [-Human]

one/body [+Pro, +Attach, +Human, +Masc, +Count, -P1]

¹This one will have the same features whether it is introduced in the deep structure (thus implying an antecedent known either from discourse or extra-linguistic context) or by the operation of pronominalization. Thus the he in He is sick and the he in Schwartz says he is sick have exactly the same representations, although the second one can get that way either from the base or by pronominalizing Schwartz.

(This is probably correct for the dialects that get only

everyone helped himself; in girls' schools where one gets everyone helped herself the entry is presumably changed to [-MASC].

We do not know what to do about everyone helped themselves; should we try to get everyone was or were...for such dialects? If it is was, as we believe, then even a [+Set] feature will not help, since that is supposed to work for verb number agreement and anaphora alike.)

thing in everything, etc.:

[+Pro, +Attach, -Human, +Count, -Pl]

(Here it is certainly [-Pl] in all dialects: *Everything will take care of themselves.)

2. PERSONAL PRONOUNS

$\left\{ \begin{array}{l} \text{the} \\ \text{he} \\ \text{she} \\ \text{it} \\ \text{they} \end{array} \right\} [+\text{Def}] \left[\begin{array}{l} -\text{I} \\ -\text{II} \\ +\text{III} \end{array} \right] [+ _N] [-\text{Dem}] \quad (\text{See DET})$

you [-Pl]: [+Def] $\left[\begin{array}{l} -\text{I} \\ +\text{II} \\ -\text{III} \end{array} \right] [+ _N] [-\text{Dem}]$
 $\left[\begin{array}{l} +\text{Pro} \\ +\text{Human} \\ -\text{PL} \\ -\text{Attach} \end{array} \right]$

you [+Pl] [+Def] $\left\{ \begin{array}{l} \left[\begin{array}{l} -\text{I} \\ +\text{II} \\ +\text{III} \end{array} \right] \\ \left[\begin{array}{l} -\text{I} \\ +\text{II} \\ -\text{III} \end{array} \right] \end{array} \right\} [+ _N] [-\text{Dem}]$
 $\left[\begin{array}{l} +\text{Human} \\ +\text{PL} \end{array} \right]$

we [+Def] $\left\{ \begin{array}{l} \left[\begin{array}{l} +\text{I} \\ +\text{II} \\ -\text{III} \end{array} \right] \\ \left[\begin{array}{l} +\text{I} \\ -\text{II} \\ +\text{III} \end{array} \right] \\ \left[\begin{array}{l} +\text{I} \\ +\text{II} \\ +\text{III} \end{array} \right] \end{array} \right\} [+ _N] [-\text{Dem}]$
 $\left[\begin{array}{l} +\text{Human} \\ +\text{Pl} \end{array} \right]$

I [[+Def] [+I] [+ N] [-Dem]]

+Pro
+Human
-Pl
-Attach

Sentences such as I am the one who has to ..., in which the verb in the embedded S is in the 3rd person, seem to present no problem, since it agrees with the subject underlying who, which must be identical with the one, which is [+III]. There is no requirement for agreement of person across the copula.

Once the determiner and one are inserted, DELETION OF NOUN NODE will operate if applicable, and no new rules are needed to produce pronouns directly in the base.

F. Unresolved Problems and Unexplored Areas

1. We have not handled sentence PRO-ing or the PRO-ing of any constituents other than nominals.

2. The analysis of the one of

(241) One should look out for oneself (himself).

remains a mystery. However, at least for those dialects which have the reflexive form oneself, the one is clearly an article, since that is what the first part of every reflexive is. It would appear to be a genderless human article; we have not provided in the features heretofore considered for any [-Gender] human nouns (and hence, derivatively, articles), so introducing Gender as a non-redundant feature distinct from Human would open up a position this one could fill. But it would be an article of very limited occurrence, namely, only before a noun that was [+Human, -Gender, +Pro]; and conversely, the noun with those features could only occur with that article. This solution might work, but it is certainly not attractive.

3. We have not come across any obvious candidate for the deletable unspecified subject in such nominalizations as Skiing is fun. See discussion in NOM.

4. Without underlying "performatives" (Ross 1968b), we will not generate (*?) this book was written by John and myself; in fact we won't anyway because we are only handling reflexives within the same simple sentence as their antecedents.

5. Pronominalization must follow conjunction, as is clear from the conjoined-pronoun rules in III.D.4. We hope some consistent ordering can be found but are not prepared to make any claims about it. It is conceivable that conjunction has a cycle of its own.

May 1969

NEGATION

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NEGATION

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II. INTRODUCTION

Klima's article on negation (1964c) stands as one of the major works in the field of transformational studies of English, and one of the major treatises on negation within any framework. Although particular points have been improved upon by subsequent authors, and although some fundamental objections have been made (e.g. by Lakoff (1965, 1966b) and by Jackendoff (1968e), from quite different points of view), no basic alternatives thus far proposed seem capable of accounting for such a wide range of facts. The analysis embodied in our rules is therefore basically Klima's, with some modifications proposed by Fillmore (1966d) and some of our own. In section A of the introduction we describe the fundamental features of Klima's analysis; in section B, we discuss some special problems of the rule for some-any suppletion and a number of proposals for their solution. Section C is devoted to problems that arise from the notion that all sentential negation is due to a single NEG morpheme per S. In section D we discuss a radically different alternative treatment of

negation, that of Jackendoff (1968e). Section E is concerned with where the constituent NEG should be introduced in deep structure within a Klima-type approach, and with related questions about the deep structure of "preverbs", such as seldom, hardly, etc. Finally in section F we consider some special problems concerning conjunction with too, either, and neither.

A. Sentential Negation: Klima's Analysis

The basic thesis of Klima (1964c) is that a wide variety of sentences containing superficially quite distinct "negative" words such as not, none, never can all be analyzed as containing a constituent NEG with a single underlying deep structure position in the sentence. This sentential NEG plays a role in deep structure constraints (e.g. in the occurrences of until-phrases, modal need, and a number of idiomatic expressions such as sleep a wink, give a damn, bat an eye); it also conditions certain transformational changes within the sentence, such as some-any suppletion and Aux-attraction. It may itself be transformationally incorporated into other words (nothing, never, none, etc.); otherwise it is eventually spelled out as not.

Central to Klima's position is the convergence of several criteria for distinguishing a class of "negative sentences".

(i) Tag questions: Under a falling intonation on the tag, positive sentences take negative tags and vice versa.

- (1)(a) John has left, hasn't he?
- (b) He's unhappy about something, isn't he?
- (c) John hasn't left yet, has he?
- (d) You've never seen any of them, have you?
- (e) None of those boxes are empty, are they?

(ii) Not-even tags: Only negative sentences allow not-even tags.

- (2)(a) John doesn't like smart girls, not even pretty ones.
- (b) No one showed up, not even the leader.
- (c) *The girls all like him, not even Mary.
- (d) *Some of those boys dislike fish, not even perch.

(iii) Either-conjoining: In order for two conjoined sentences to have the form S_1 -and S_2 -either, the second sentence must be negative:

- (3)(a) John stayed at home all day, and Mary didn't go anywhere either.
- (b) *John didn't go any where all day, and Mary stayed at home either.
- (c) John couldn't solve the problem, and none of his friends could either.
- (d) *John isn't happy, and Mary is unhappy either.

(iv) Neither-tags: In order for the second of two either- conjoined sentences to be truncated into a neither- tag, the first sentence (as well as the second) must be negative.

- (4)(a) John couldn't go, and neither could Mary.
- (b) None of the girls liked it, and neither did any of the boys.
- (c) *John was unhappy, and neither was Mary.

All of the above examples show that words with negative prefixes, such as unhappy and displeased, and words which are in some sense semantically negative, such as doubt or refuse, do not yield negative sentences in this sense; cf. particularly (1.b), (2.d), (3.d), (4.c).

The sentences which count as negative with respect to the above criteria all contain either not (or contracted n't) or one of the negative words no, none, nothing, never, nowhere, etc. The "pre-verbs" hardly, scarcely, rarely, seldom, barely are called "incomplete negatives" in that they make a sentence negative with respect to some but not all of the criteria; there is considerable dialect difference as to details. Few and little also appear to share many but not quite all properties of negative words.

Further evidence of a syntactic relation between not (n't) and the other negative words is provided by examples of alternations such as the following:

- (5)(a) He saw nothing of interest in it.
- (b) He didn't see anything of interest in it.
- (6)(a) He has never been on time to a meeting.
- (b) He hasn't ever been on time to a meeting.
- (7)(a) No one read the book.
- (b) The book was not read by anyone.

Similar examples suggest further relations between the negative words, any and any-compounds (including ever and at all), and some and some-compounds.

- (8)(a) No one said anything to anyone.
 (b) Nothing was said to anyone by anyone.
 (c) *Anyone said anything to anyone.
 (d) Someone said something to someone.
- (9)(a) I'm getting {somewhere } with this.
 }*anywhere}
 (b) I'm not getting {anywhere } with this.
 }*somewhere}
 (c) I'm getting nowhere with this.

To explicate these relationships, Klima postulates a deep-structure morpheme NEG, introduced optionally as a constituent of S in sentence-initial position. This NEG conditions the change of some into any, which Klima represents as the addition of a feature "INDEF(inite)", into a constituent already marked as "INDET(erminate)", (Klima calls the rule "Indef-incorporation"; we have used a different feature analysis and simply call the corresponding rule "some-any suppletion".) Klima notes that NEG is in these respects quite similar to the interrogative morpheme WH, which he also introduces as an optional constituent of S, and which also permits some-any suppletion. He suggests that WH and NEG might be given a syntactic feature analysis, so that they might be represented as having a feature in common (which he calls [+AFFECT], since it is also shared by the so-called "affective words" (cf. Kiparsky's non-factives) doubt, surprised, afraid, unwilling, etc.)

Klima considers the some-any suppletion rule to be optional in most environments (but cf. (9.a,b) above), to account for such contrasts as:

- (10)(a) Some of the students didn't understand.
 (b) None of the students understood.

both of which would be analyzed as

- (c) NEG some of the students understood.

Treating this rule as optional would, of course, be inconsistent with the Katz-Postal hypothesis that T-rules are meaning-reserving; an alternative treatment of the rule suggested by Fillmore and adopted in our rules is discussed in B.1 below; see also DET.

A later rule may incorporate NEG into the indefinites, obligatorily if any indefinite is in pre-Aux position (where 'indefinite' is here taken to mean 'output of the some-any suppletion rule'). This rule relates the (a)-(b) pairs of (5)-(8) above, and (9.b-c). Note that the rule is optional for the any-words following Aux, but that it is limited in any case to only the leftmost of a sequence of any-words in a sentence.

- (11)(a) I didn't show { anyone anything
 anything to anyone } .
 (b) I showed { no one anything
 nothing to anyone } .
 (c) *I showed { anyone nothing
 anything to no one } .

With a few additional restrictions, the same rule is intended to relate the following:

- (12)(a) Not many of the books had been looked at by
 the students.
 (b) The students had not looked at many of the
 books.
 (13)(a) Not everyone understood it.
 (b) It was not understood by everyone.

We have chosen to break this one rule of Klima's into two rules, one (NEG Attraction) to move the NEG morpheme into certain constituents containing an indefinite, and another (ANY-NO Suppletion) which deletes the NEG morpheme and adds a feature [+NEG], in the cases where the indefinites have suppletive forms.

The rules discussed so far form the core of Klima's analysis. Klima discusses and formulates rules for many other phenomena connected with negation, most of which are discussed at various points below. For Klima's treatment of the "incomplete negatives" seldom, hardly, etc., as well as some alternative treatments, see section E below. Double negatives, also treated by Klima, are discussed in D.1. The "Scope" of negation, an important question treated by Klima, Langacker, Ross, the Kiparskys, and Jackendoff, is discussed in various connections in section B.2, C.2-C.5, and D below.

B. SOME-ANY Suppletion

1. Optional vs. governed by [-SPECIFIC]

Fillmore (1966d) points out that Klima's rules generate the following non-synonymous pairs as optional variants of each other.

- (14)(a) Some of us didn't go to the picnic. [38]
 (b) None of us went to the picnic. [37]
- (15)(a) Sometimes I don't know what to do. [30]
 (b) I don't ever know what to do. [31]
- (16)(a) Many of us didn't go to the picnic. [41]
 (b) Not many of us went to the picnic. [40]
- (17)(a) I didn't see some of them. [45]
 (b) I didn't see any of them. [44]

Because of the last pair, he rejects the possible suggestion that the differences in (14)-(16) are due to a distinction between "predicate negation" and "sentence negation". He suggests instead that the difference resides in the indefinite quantifiers, which may be either [+SPECIFIC] or [-SPECIFIC], where the feature [+SPECIFIC] is the same one that accounts for the ambiguity of

(18) I told her to do something. [49]

or

(19) I'm looking for some girls with red hair.

We have adopted this use of the feature [+SPECIFIC]; we treat it as a feature of the indefinite article; quantifiers like many are assumed to co-occur in the deep structure with an indefinite article which is later deleted (see DET for lexical entries for a, some.)

This explanation depends in part for its justification on the matching of ambiguities in positive sentences like (18) and (19) with the different forms of negation as in (14)-(17). Unfortunately, these two functions of the feature [+SPECIFIC] do not always seem to be in harmony. For instance, (20) seems at best highly awkward in the sense "there are some (specific) girls with red hair that I'm not looking for."

(20) *? I'm not looking for some girls with red hair.

And the ambiguity of (21), if there is any, is certainly much less obvious than the difference between (15.a) and (15.b).

(21) Sometimes I know what to do.

Correspondingly, the difference between (17.a-b) does not seem intuitively to be matched by an ambiguity in (17.c):

(17)(c) I saw some of them.

Thus although such facts as the difference between (17.a) and (17.b) and the ambiguity of (18) and (19) all seem plausibly to have to do with some notion of [+SPECIFIC], it does not appear at this stage to be the same notion of [+SPECIFIC] that is involved in all these instances.

Part of the problem may lie in the fact that the [-SPECIFIC] interpretation is possible only in certain limited contexts, e.g. not in:

(22) Some little boys came in the door. (only [+SPECIFIC])

(23) They were staring at some gorgeous secretaries.
(only [+SPECIFIC])

and it may well be that a NEG in the deep structure is one of the conditioning factors allowing the possibility of a [-SPECIFIC] article; thus some unambiguous positive sentences could nevertheless correspond superficially to two distinct negative ones.

Another problem for this analysis (i.e. for both Fillmore's and ours) appears when instead of the simple negative NEG (or not), a "partial" negation such as hardly or almost not is involved. For some speakers at least, the following sentences are not full paraphrases:

(24)(a) Hardly ever was any beer spilt.
(b) Hardly any beer was ever spilt.

For some speakers, sentence (24.a) but not (24.b) would be true if only once a year or so, someone spilled a whole keg of beer; (24.b), on the other hand, would be more appropriate if a few drops of beer were spilled on more numerous occasions. A similar distinction appears in (25.a-b):

(25)(a) Almost no one ever uses the auditorium.
(b) Almost never does anyone use the auditorium.

In this case it is perhaps clearer that only (25.b) and not (25.a) allows the possibility of large numbers of people using the auditorium on those few occasions when it is used at all.

The problem raised by (24) and (25), for those speakers who recognize such a distinction, casts doubt on the proposed analysis if the Katz-Postal hypothesis is to be maintained. Some other conflicts

with the Katz-Postal hypothesis are discussed in C.4 and in DET.

2. Scope of the rule: Klima, Langacker and Ross.

In all the examples presented so far, some-any suppletion has been in the same simplex S with NEG. However, as Klima has pointed out, it can also take place in certain embedded S's, though not all.

- (26)(a) John wasn't sure that anyone would believe him.
- (b) None of them want anybody to try to force John to divulge any of the information.
- (c) *The well-known fact that the comet will ever approach the earth again is not relevant to this argument.

Some-any suppletion also takes place in sentences subordinate to [+AFFECT] words such as dislike, doubt, unhappy, amaze, before, although not in the same simplex S with such words:

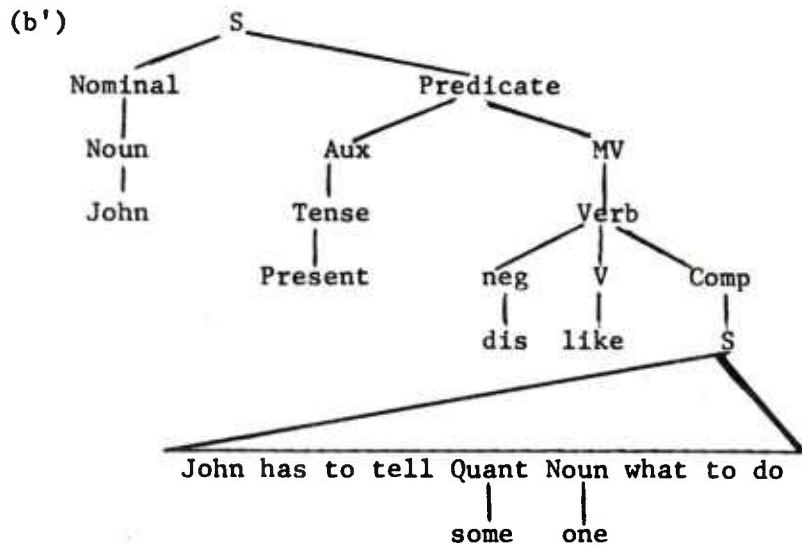
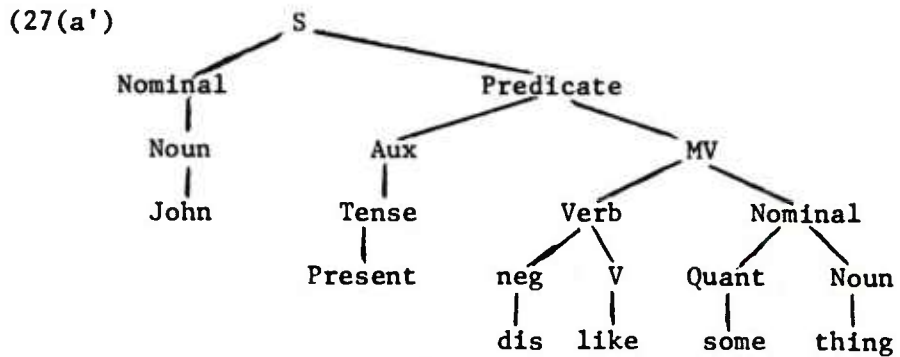
- (27)(a) *John dislikes anyone.
- (b) John dislikes having to tell anyone what to do.
- (28)(a) *John doubted anything.
- (b) John doubted that they would ever persuade Bill to do anything about it.

(In examples such as (27.a) and (28.a), we are here excluding possible generic any from discussion.)

Klima (1964c, p. 297-8) has described the scope as follows:

'A constituent is "in construction with" another constituent if the former is dominated by the first branching node that dominates the latter. ... The rule of Indef- incorporation can now be generalized to cover both the pre-verbal particle neg and the affix neg by restricting the application of the rule specifically to Quant(ifiers) "in construction with" neg.'

The utility of this notion for Klima's analysis depends in part on his expansion of verb phrases, which assign very different structural positions to noun phrase objects and sentential complements. Thus (27.a-b) would be assigned roughly the trees (27.a'-b') below:



By Klima's definition, the only elements in construction with neg in these two trees are those dominated by the first branching node above neg, i.e. those dominated by Verb. This includes the Quant in the Comp in (27.b'), but not the Quant in the Nominal in (27.a), thus accounting for the difference in grammaticality between (27.a) and (27.b). (In an ordinary negative sentence, neg is immediately dominated by S, so everything dominated by that S is in construction with the neg.)

However, Rosenbaum (1967a) argued that at least some "complements" are in fact nominalizations in direct object position. The UESP analysis (see NOM) goes further and claims that virtually all complements are nominalizations in neutral case, but the extent

to which our analysis diverges from Rosenbaum's is not relevant to the present argument. The crucial point is that in both the UESP analysis and Rosenbaum's, the (a) and (b) sentences of both (27) and (28) have direct objects (all derived, in this instance, from NEUTral case), so that Klima's notion of "in construction with", dependent on the difference between trees (27.a') and (27.b'), does not any longer distinguish between them.

The only major distinction between the trees that we would draw for (27.a-b) is one between sentential and non-sentential object. We do not see any obvious way of relating this environment to the sentential NEG environment in such a way as to make a single condition governing the suppletion rule.

Langacker (1966) suggests that the notion of "command" is more general than Klima's notion "in construction with" but at the same time accounts for all the relevant data of negation, and therefore is to be preferred. The notion "command" is defined as follows:

A node A "commands" another node B if (1) A does not dominate B; (2) B does not dominate A; (3) A is in structure S^1 ; and (4) node S^1 dominates B.

Langacker shows that this notion is superior to "in construction with" for pronominalization. Since in Klima's analysis the node NEG is immediately dominated by S, it will ordinarily be the case that whenever NEG commands a node A, node A will be in construction with NEG. The two notions will certainly differ in the case of [+AFFECT] words, however, which Langacker does not discuss at all; in those cases Langacker's condition will not do as well as Klima's (given Klima's PS-rules, at least), since Langacker's condition, if extended to include the overlooked [+AFFECT]-words, would allow not only (27.a) and (28.a), but also the following:

- (29)(a) *Anyone disliked anything
 (b) *John ever doubted that we would come.

Langacker was not dealing with the [+AFFECT] words, however; we will return to this problem later after discussing some of the other phenomena with which Langacker was concerned. In discussing NEG, he noted some relative clause counterexamples such as (39) below, and agreed that neither "in construction with" nor "commands" could exclude them. He proposed simply that a special condition excluding

relative clauses from the scope of some-any suppletion would be required. The case for which he considered "command" to be particularly useful does not actually involve the some-any rule, but rather the any-no suppletion rule (specifically, that part of it which we have called NEG Attraction). The two rules do not have identical environmental constraints, but are sufficiently similar to justify including this part of the discussion here.

To account for the ambiguity of

- (30) I will force you to marry no one. [Klima (130.b);
Langacker (85)]

Klima postulates two underlying structures each with one NEG, one with NEG in the matrix S and the other with NEG in the embedded S. He then allows Neg-attraction to move NEG from the matrix into the indefinite NP of the embedded S. For this example, either "command" or "in construction with" is an appropriate condition on NEG-attraction. However, as Langacker points out, if both matrix and embedded S had contained NEG, as in (31.a), NEG-attraction should not be permitted to move the matrix NEG into the embedded S (31.b).

- (31)(a) I won't force you not to marry anyone. [L 88]
(b) *I will force you not to marry no one. [L 89]

Langacker notes that an ad hoc restriction that NEG-attraction not be permitted to move one NEG across a string already containing a NEG would not be correct, since it would exclude the grammatical (and ambiguous) sentence:

- (32) I will force the girl who doesn't want children
to marry no one. [L 90]

The relevant difference between (31.b) and (32) can be expressed in terms of command: the matrix NEG cannot be moved into an embedded constituent which is commanded by an embedded NEG. Thus, if NEG₁ and NEG₂ both command some and NEG₁ commands NEG₂, but not vice versa, NEG-attraction cannot attach NEG₁ to some. Langacker suggests a generalization of this phenomenon which he calls the "principle of control", but does not offer further applications of it. It would appear that in this case Klima's "in construction with", if extended to a notion like "control", would have made exactly the same distinction. Langacker does not deny this; his claim is simply that "command" works as well as "in construction with" for negation, and much better for pronominalization (but cf. remarks on [+AFFECT] words above).

Ross (1967c) discussed the some-any (Indefinite Incorporation) rule in connection with several of his proposed constraints. His form of the rule, stated in two parts to allow both forward and backward application, is:

(33) INDEFINITE INCORPORATION [Ross 5.71]

- a. X - [+Affective] - Y - [+Indeterminate] - Z
 1 2 3 4 5 ⇒
 1 - 2 - 3 - $\left[\begin{array}{c} 4 \\ +\text{Indefinite} \end{array} \right]$ - 5
- b. X - [+Indeterminate] - Y - [+Affective] - Z
 1 2 3 4 5 ⇐
 1 - $\left[\begin{array}{c} 2 \\ +\text{Indefinite} \end{array} \right]$ - 3 - 4 - 5

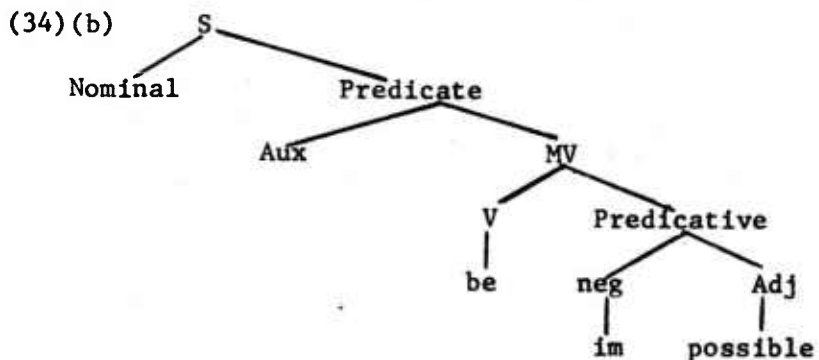
In place of Klima's "in construction with", he proposes that the rule be upward-bounded with respect to feature-changing: i.e. the constituent whose features are changed cannot be outside the limits of the structure dominated by the lowest S dominating the other non-variable constituents of the S.I. Thus in this case the scope of the rule includes the S dominating the [+Affective] element and everything subordinate to that S.

Ross rightly states that upward-bounding formalizes the suggestion in the remark he attributes to Klima, "that the change can take place in the same clause as the one in which the [+Affective] element appears, or in any clause subordinate to it." [Ross, p.314] However, he, like Langacker, overlooked an important distinction which Klima explicitly made: the quoted statement is true for such [+Affective] elements as NEG, WH, and only, but it is not true for words like doubt, unlikely, afraid, dislike, etc. As pointed out above (cf. (27), (28)), the latter words do not trigger some-any suppletion within their own simplex, or even in arbitrary clauses subordinate to that simplex, but only in clauses subordinate to those very lexical items, if we may speak of a clause being subordinate to a particular constituent. This is clearly an important part of the reason Klima chose such a specific notion "in construction with", rather than a more general one such as "command" or "upward-bounded".

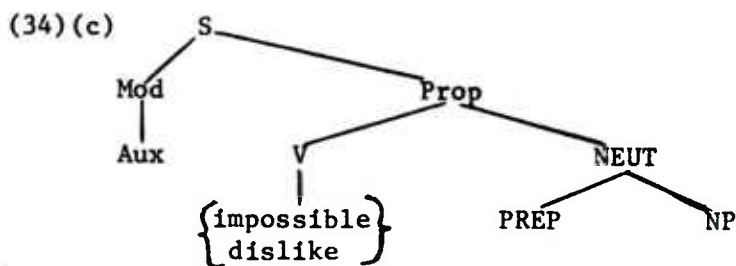
We have argued above that the PS-rules Klima needed in order for "in construction with" to discriminate the (a) and (b) sentences of (27) and (28) are incorrect; Ross also notes a specific problem for Klima's analysis in

(34)(a) That Jack ever slept is impossible. [R 5.125.b]

where the subject-clause, in which some-any suppletion has taken place, is not in construction with the [+AFFECT] word impossible, i.e. is not dominated by the node (Predicative) which immediately dominates impossible: cf. (34.b).



Note that within our case grammar framework, impossible will occur in the same kind of frame as e.g. dislike, namely as a verb with a neutral case NP (plus a further case for dislike), so that as long as some-any suppletion precedes case-placement, the rules can be made to work identically on the two superficially different structures.



Note that with impossible, as with dislike, it is only a sentential expansion of NP which permits some-any suppletion:

(34)(d) *Anything was impossible.

Thus the crucial difference between our analysis and Klima's that will cause (34.a) be treated in a manner exactly parallel to (27) and (28) in our grammar is two fold: (a) all adjectives are analyzed as V, and (b) all "complements" on adjectives in verbs, including those which end up as surface subjects as in (34.a), are introduced as NP's analyzed as particular cases within the PROP.

Ross goes on to state (sec. 5.2) that "command" is in fact a more useful notion than "upward-bounding"; and because of application to pronominalization and a number of other phenomena, either one is more useful than "in construction with". But, since both he and Langacker overlooked Klima's observation that the lexical [+AFFECT] words do not trigger some-any suppletion throughout the simplex in which they occur, their constraints do not in fact correctly characterize the scope of the some-any rule, except in the subcases where the triggering element is NEG, WH, only, or the like. We have therefore had to make the S.I. of the some-any rule more detailed than Ross proposed.

Some of Ross's other constraints do appear to account nicely for some of the other exceptions to Klima's some-any rule, and these we are incorporating. Ross attributes to Kiparsky the insight that the restrictions on feature-changing rules (such as some-any suppletion) exactly parallel those on "chopping" rules (such as Question).

- (35)(a) Do you believe that anybody was looking for anything? [5.73.e]
 (b) *Do you believe the claim that anybody was looking for anything? [5.73.e']
- (36)(a) Waldo didn't report that anyone had left. [6.194.a]
 (b) *Waldo didn't report the fact that anyone had left.

Sentences (35.b) and (36.b) are excluded by Ross's complex-NP constraint (cf. REL for statement and further application of this and other constraints). The ungrammatical sentences below are excluded by the coordinate-structure constraint:

- (37)(a) *I didn't eat the ice cream and any cake. [6.201.b]
 (b) *I didn't realize that it had rained and any crops had been destroyed. [6.203.b]

But in these cases there are relatively unexplored complications in the relation of and and or in conjunctions containing negation, so the facts are less clear. The sentential-subject constraint also seems to be operative, but again the evidence is not entirely clear; it depends on the intuition that (38.a) below is significantly worse than (38.b), and that (38.c) is acceptable:

- (38)(a) *I deny that that MacIntyre has any money is certain. [6.214.a]
- (b) ?I deny that that MacIntyre has some money is certain. [6.214]
- (c) I deny that it is certain that MacIntyre has any money. [6.214.b]

In discussing the applicability of the complex-NP constraint to the some-any rule, Ross draws an interesting new distinction that appears to be necessary, between some-any suppletion as conditioned by factors such as Klima suggests and a separate rule of some-any suppletion in relative clauses, the latter being governed by constituents in the determiner of the head noun. He notes the impossibility of applying ordinary some-any suppletion into relative clauses in examples like (39) below.

- (39)(a) I never met that man who somebody tried to kill. [R(5.72.f)]
- (b) *I never met that man who anybody tried to kill. [R(5.73.f)]
- (c) This isn't the man who is looking for some Bantam roosters.
- (d) *This isn't the man who is looking for any Bantam roosters.
- (e) I didn't kill the woman who had some money. [Langacker (83)]
- (f) *I didn't kill the woman who had any money. [Langacker (84)]

In Ross's examples (39.a-b) it could be argued from the point of view of our analysis that somebody can only be [+SPECIFIC] in that environment, and that it is that factor that prevents suppletion. But that is certainly not the case in (39.c-d), and probably not in (39.e-f). (Langacker noted these examples but did not attempt to draw any general conclusions from them.)

Ross contrasts examples such as the above with cases where suppletion does apply in relative clauses even where there is no negative element in the sentence:

- (40)(a) Anybody who ever swears at me better watch his step. [6.195.b]
- (b) Everybody around here who ever buys anything on credit talks in his sleep. [6.195.c]
- (c) I want all the students who have ever tried to pat Macavity to show me their scars. [6.195.d]

Furthermore, Ross shows that relative clause some-any suppletion must follow ordinary some-any suppletion, since the suppletive any is one of the determiners which triggers suppletion within a relative clause. That some, whether [+SPECIFIC] or [-SPECIFIC], is not one of the determiners that causes relative clause suppletion can be seen from the following:

- (41)(a) *I need some books which have anything to do with metaphysics.
- (b) *I can't remember the name of somebody who had any misgivings. [6.196]

But if ordinary suppletion has already been applied, (42) is possible:

- (42) I can't remember the name of anybody who had any misgivings. [6.196]

Ross points out a very odd property of the relative clause some-any rule, namely that it applies in an "anti-cyclic" order: since it is the higher determiner that triggers the change in a lower one, and since an unconverted some cannot trigger any changes below it, sentences like the following apparently result only from a top-to-bottom cycle of application (the subscripts indicate the cycles):

- (43) Everybody who has ever₁ worked in any₁ office which contained any₂ typewriter which had ever₃ been used to type any₃ letters which had to be signed by any₄ administrator who ever₅ worked in any₅ department like mine will know what I mean. [6.198]

However, it is not clear that this "anti-cyclic" order would have to be stated explicitly. If we were simply to state that the rule may reapply to its own output, and that it only applies in a relative clause S immediately dominated by the NP (or NOM, or whatever we take to be the node just over the S) which has the conditioning DET, then the "anti-cyclic" ordering would be an automatic consequence of what structure satisfied the S.I. of the rule on each reapplication: i.e. that part of the ordering would be intrinsic. It is not clear to us whether any of Ross's constraints would account for the immediate dominance condition just stated; that problem seems in any case to be independent of the ordering question.

The determiners which allow the relative clause some-any suppletion are, according to Ross: no, any, a, every, all, the first, the last, the Adj+ est, the only. What syntactic feature(s) should be held responsible is not clear.

In summary, we have two some-any suppletion rules. The first depends on the feature [+AFFECT], and is constrained equally well by "in construction with", "commands", and "upward bounding". All of these are relevant when the [+AFFECT] element is NEG, WH, only, but unless Klima's particular verb-phrase structure is accepted (and we have argued against it above), none of these are relevant when the item is doubt, dislike, afraid, etc.; only Klima's analysis ever takes cognizance of this case. The second some-any rule applies in topmost relative clauses under the influence of an appropriate determiner; we know of no general constraints for it and have simply written the details into the rule.

C. Problems with One NEG per S.

1. Double negatives.

The most obvious problem for any analysis which postulates a deep structure NEG occurring at most once per simplex S is the existence of sentences with more than one sentential-type negative:

- (44) (a) He doesn't often really not understand.
[Klima, fn. 11]
- (b) Chomsky doesn't not pay taxes for nothing.
- (c) Never before had none of his friends come to one of his parties. [Jackendoff (1968e) 98]
- (d) None of his friends had never come to one of his parties before. [J 99]
- (e) No one had nothing to eat.

Klima, noting (44.a), admits two NEG's per S, but only with an intervening adverb:

- (45) S → (WH) (NEG) (ADV(NEG)) (ADV) NOMINAL-PREDICATE

However, sentence (44.b) contains three negatives, and sentence (44.e) has two negatives without having any adverb. Sentences (44.c) and (44.d) each have the same two constituents negated, but the different order yields quite distinct semantic interpretations.

The question of grammaticality for double negation is complicated by the existence of a substandard dialect which, like Chaucerian English, converts all some's directly into no's in negative sentences, rather than leaving all but one of them as any's. Typical examples are:

- (46)(a) (*) I didn't see nobody nowhere.
- (b) (*) They don't never tell me nothing.
- (c) (*) You can't hardly get them kind no more.

In such instances, the possibility of finding an interpretation along the lines of (44) is clouded by the existence of this common substandard dialect. An intuitively relevant factor which cannot be reasonably built into a model such as ours is that there are usually multiple-sentence paraphrases for simplex sentences with multiple negation, and that the former are usually "preferred". Two common devices for such paraphrases are "there is/are" sentences and cleft sentences.

- (47)(a) It isn't often that he really doesn't understand.
- (b) There were none of his friends that had never come to one of his parties before.
- (c) There was no one who had nothing to eat.

Another point relevant to the cases which include adverbs is that even with only one negative, the position of the negative with respect to the adverb can influence the meaning in a way that seems directly related to having two negatives with the adverb.

- (48)(a) He doesn't really like her.
- (b) He really doesn't like her.
- (c) He doesn't really not like her.
- (49)(a) He hasn't often paid taxes.
- (b) He often hasn't paid taxes.
- (c) He hasn't often not paid taxes.

There are many difficulties with adverbs, including their "scope" relative to one another, and, as here, their "scope" relative to NEG in a given sentence. These problems seem to be closely interconnected, and we do not have solutions for any of them. With respect to (49), we choose to generate (49.a) as the result of the single sentence NEG, and we do not generate (49.b) or (49.c) at all. There are two reasons not to call (49.b) ordinary sentence negation:

(i) Only (49.a) is perfectly acceptable with the tag has he?; (49.b) does not in fact feel comfortable with either has he? or hasn't he?.

(ii) (49.a) and (b) are not paraphrases. The difference is subtle, but can perhaps be seen in the following situations:

CASE A: A young immigrant is having difficulty filling out his income tax form because he hasn't had much practice at it, since he has not often paid taxes. (a) is true for him, (b) is false.

CASE B: An old tycoon who has often paid lots of tax is getting adept at finding exemptions and deductions and has been so successful at it that he has often not paid taxes, although it is also true that he has often paid taxes -- he has done a lot of both. (b) is true for him, (a) false.

In short, (b) can only be true if there have been many opportunities to pay taxes and expresses a voluntary avoidance thereof, while (a) has no such presuppositions. This reinforces the claim that (a) is ordinary sentence negation, whereas (b) is something more special.

On the other hand, the claim that (48.a) and (49.a) are ordinary negatives depends on the assumption that the corresponding positive sentences, (48.d) and (49.d) are simplexes.

(48)(d) He really likes her.

(49)(d) He has often paid taxes.

But if the ADV's were to be analyzed as deriving from higher S's, as seems plausible, then the (b) forms of (48)-(49) would be negating simplexes, with the ADV dominating the whole negated simplex; the (a) forms would thus be specifically negating (the higher sentences containing) really, often.

We believe that examples like (49) pose a very serious problem for the analysis proposed here, but we see no solution at present. We have chosen not to generate any multiply negative sentences, since a correct analysis would appear to require a much more thorough prior analysis of adverbs and their scope, and of the possible effects on semantic interpretation of reordering-rules (as in 44.c, d).

2. Ambiguous sentences with adverbials.

Lakoff (1965) cites the interesting ambiguous sentence:

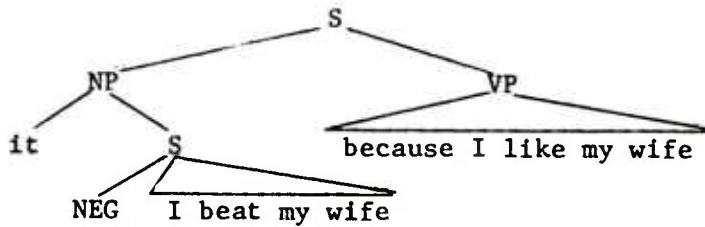
(50) I don't beat my wife because I like her. [Lakoff F-6-3]

which has the two possible interpretations:

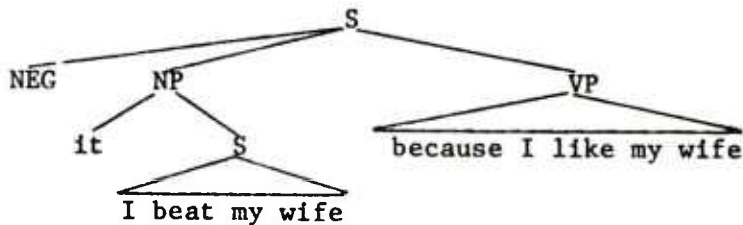
- (51)(a) It is because I like her that I don't beat my wife. [F-6-4]
- (b) It is not because I like her that I beat my wife. [F-6-5]

Corresponding to these two interpretations he has the following two deep structures:

(52)(a)



(52)(b)



Lakoff postulates a two-sentence source for many other types of adverbials, including locative, instrumental, and frequency adverbials. He claims that these other types forbid NEG ("however it is to be formally stated") from occurring in the embedded sentence, because "one cannot assert the location (frequency, etc.) of an event that does not occur."

It is only this restriction, which is nowhere explicitly formulated, which differentiates the ambiguity of negation with because-clauses from the purported non-ambiguity of negation with other types of adverbials. However, the restriction appears to be too strong, since there are certain cases where the negation of an

event may, loosely speaking, itself be an event, e.g. not paying taxes, not getting up early, not going to church, not eating dinner, not thinking clearly (semantically, the "event" seems to be the breaking of a habitual or expected pattern of activity). Such "negative events" certainly allow frequency adverbs (cf. (49.b), (53.c,d)), perhaps locative adverbials, but apparently not instrumental adverbs. In the following examples, at least one interpretation seems to involve the adverb modifying the whole negated S:

- (53)(a) I don't get up early at home.
 (b) He doesn't go to church at the university.
 (c) He sometimes doesn't eat dinner.
 (d) He doesn't eat dinner two nights a week.

Both (53.a) and (53.b) may perhaps be while-clauses rather than locatives in one underlying structure; (53.c) is unambiguous; (53.d) on the reading under discussion sounds much better with the adverb preposed.

There are certainly serious problems facing any analysis which, like ours, includes NEG and the various adverbs within the simplex sentence in fixed slots, since the ambiguity of (50) is then left unaccounted for, as is the difference between the (a) and (b) sentences of (48) and (49). Noting that the ambiguity of (53.b) might be attributable to a distinction between a true location and a while-clause, one could look for a similar distinction between superficially identical because-clauses. In particular, the intonational difference which can disambiguate (50) suggests a distinction between a "conjunction" because and a "restrictive adverbial" because. The conjunction form would be "insulated" from the NEG by Ross's Coordinate Structure Constraint. However, since these notions are still quite vague and not formally justified, and there are many other problems concerning adverbs which we have not been able to solve, the analysis of (50) remains an unsolved problem in our system.

3. Negatives with modals.

Both Hofmann (1964) and Boyd and Thorne (1968) touch on the ambiguity of such sentences as:

- (54)(a) John may not leave tomorrow.
 (b) The solution must not be obvious.

Ross (1967a) did not include any such examples among his arguments for treating auxiliaries as main verbs, but presumably he could have. Boyd and Thorne's analysis of modals does not have a clear interpretation within ordinary transformational grammar; Hofmann's proposal

is essentially that the sentences of (54) each have one deep structure with an ordinary negated simplex and one with an "epistemic" modal, roughly:

- (55)(a) It may be (true) that John will not leave tomorrow.
- (b) It must be (true) that the solution is not obvious.

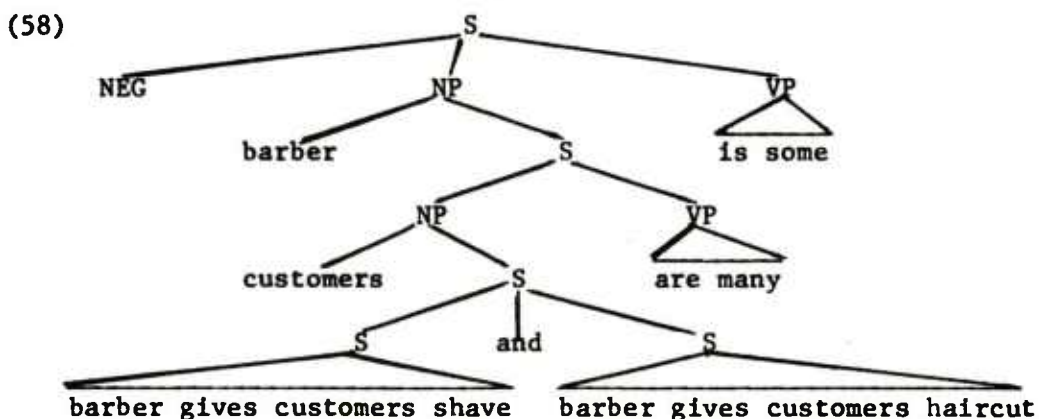
There are some modals, such as might, which can have only the epistemic sense of (55), and others such as will which can have only the non-epistemic sense. We consider something along the lines of Hofmann's suggestions quite plausible, and syntactically quite well motivated for a number of reasons in addition to the cited ambiguities, but we have not built into our rules any apparatus for handling the epistemic modals. Therefore all case of negation with modals generated in our grammar are to be taken in the non-epistemic sense.

4. Negatives with conjunction.

We are presently deriving (56) from (57):

- (56) No barber gives many customers both a shave and a haircut.
- (57) No barber gives many customers a shave and no barber gives many customers a haircut.

The two sentences are clearly not synonymous, however. A semantically more appropriate deep structure, along the lines suggested by Lakoff (1965), would be (58) (cf. Partee (1968)):



But syntactic arguments against treating quantifiers as predicates are given in DET. We have not found or been able to invent a structure which could simultaneously satisfy the semantic and syntactic requirements; sentences such as (56) pose an important problem for future research.

5. "NEG-raising".

For certain matrix verbs, Klima proposes a special analysis in connection with embedded NEG's, with which we disagree. Consider the following pairs:

- (59)(a) I think he won't tell her.
 (b) I don't think he will tell her.
- (60)(a) It's likely that he won't get there until after the game.
 (b) It's not likely that he will get there until after the game.
- (61)(a) John knows they aren't here.
 (b) John doesn't know they're here.

For Klima, as for us, (59.a), (60.a) and (61.a) have a sentence NEG in the embedded sentence only. In our analysis (59.b), (60.b), and (61.b) have a sentence NEG in the matrix only, and the fact that the (59) and (60) pairs are nearly synonymous is regarded as due simply to the meaning of words like think and likely. Klima, however, assumes an underlying NEG in both matrix and constituent in (59.b) and (60.b), which would predict a radical difference in meaning: (59.b) should be the negative of (59.a) and (60.b) of (60.a). His main argument for his analysis is to account for the possibility of such items as until after the game in (60.b), which could not occur in a corresponding positive sentence. Similarly restricted items are need and help as in:

- (62) I don't suppose I need mention this again.
- (63) I don't think John can help his bad manners.

Although we do not know how to state the restrictions on the occurrence of these items, we claim that they are not restricted to sentences containing a sentence NEG, because at least some of them can also occur in questions:

- (64) Need he accept any of them?

(65) Who could help laughing at that?

(but (66) *Did he arrive this time until 5 o'clock?)

Furthermore, they can even appear sometimes embedded in questions, where the embedded sentence may not itself be analyzed as a question:

(67) ?Do you think he need accept anything from them?

(68) ?Did you suppose I could help laughing?

(69) (?) Why would you expect him to start signing autographs until after the game is over?

Hence, we would argue that it is quite plausible that a NEG in a matrix sentence may constitute a sufficient environment for such items in an embedded sentence, and we therefore have not postulated any NEG's in embedded sentences which become absorbed by matrix NEG's or [+AFFECT] words. This solution avoids the incorrect semantic consequences of Klima's analysis.

For the sentences

(70) He dislikes doing nothing all summer.

(71) It isn't likely that there won't be any rain in January.

which for us have an ordinary negative constituent sentence, Klima's analysis claims an underlying double negative in the constituent sentence. Besides being semantically inappropriate, this is in fact disallowed by Klima's own rules, since he allows two negatives only with an intervening adverb such as often or really. This would appear to further weaken his argument for embedded NEG's being absorbed into the matrix.

Kiparsky and Kiparsky (1968) suggest that the relevant rule is NEG-raising rather than NEG-absorption. Thus they would claim that (59.b) and (60.b) are derived from (59.a) and (60.a) respectively. Then they claim that the failure of NEG-raising to apply in factives (cf. NOM) is attributable to the complex-NP constraint, which prevents, for example, the derivation of (72.b) from (72.a).

(72)(a) It bothers me that he won't lift a finger until it's too late.

(b) *It doesn't bother me that he will lift a finger until it's too late.

But there are many non-factives which do not allow NEG-raising either, if synonymy is a criterion:

- (73)(a) I didn't claim that I was right.
 (b) I claimed that I wasn't right.

- (74)(a) I wasn't sure that you were coming.
 (b) I was sure that you weren't coming.

Similar examples can be constructed with assume, conclude, maintain, assert, positive, certain.

Furthermore, unless there is an ad hoc constraint to prevent it, sentence (59.b) and other such examples which lack special constituents like until-phrases will have a derivation with NEG in the matrix sentence anyway, so the rule of NEG-raising will predict an ambiguity which is not present, or is at best debatable (cf. Jackendoff (1968c) for more on this point).

Lakoff (1965) assumes without argument a rule of NEG-raising, which he calls "not-transportation" (section IV.1). He does not relate it to any general properties of matrix verbs, but simply posits an exception feature for it.

It would seem to us that the synonymy of certain non-factive pairs such as (59.a-b) and (60.a-b) is best accounted for with the NEG generated in the clause in which it eventually appears, coupled with the following semantic observation: Non-factives express "propositional attitudes" (a term due to Bertrand Russell); in some cases it happens that a negative attitude toward a positive sentence may be very nearly or perhaps perfectly equivalent to a positive attitude toward a negative sentence; this seems to be true when either (i) the attitude is a moderate one, such as think, believe, seem, or (ii) the attitude is dichotomous, such as true and false. When the attitude is a strong one such as claim or sure, however, the equivalence fails.

This approach toward an explanation is certainly not without its own problems, however. For instance, guess works like think and suppose in some dialects but not in others; but the analog of (59.a) with guess does not appear to differ in meaning between the two dialects. Furthermore, if (59.b) is indeed ambiguous in some dialects, then it would be desirable to have two sources for it.

Jackendoff (1968c) presents a semantic argument similar to the above, plus a counter-argument to the claim that a NEG in the embedded sentence of (60.b) is necessary to account for the until-phrase. This argument rests on the fact that there is no reflex of a raised NEG in the following:

- (75)(a) I doubt that John will arrive until 4:00.
[Jackendoff 42]
- (b) Bill is afraid to leave until his mother comes. [43]
- (c) Scarcely anybody expected him to get there until after 5:00. [44]

Jackendoff's argument rests on certain theoretic assumptions, such as that lexical insertion of items like doubt, afraid, scarcely is done on the deep structure level. It might be suggested in a framework allowing more abstract deep structures that doubt, etc. are derived from a raised NEG plus some corresponding positive verb. Detailed exploration of such a proposal, although interesting, would be outside the scope of this project. It is worth noting that such a proposal would appear to require very different lexical items doubt and afraid (i.e. NEG-less ones) in the following:

- (75)(a') I doubt his story.
(b') Bill is afraid of camels.

Klima (pp. 294-295) in fact raises very similar syntactic arguments, and even hints that the possibility of allowing the intuitively plausible NEG-raising operation is dependent upon alterations in such basic properties of the theoretical framework as place of insertion of lexical items.

Thus we claim, with Jackendoff, that there is neither a NEG-raising nor a NEG-absorption rule in the grammar. The only way a NEG can move out of its own S is by NEG-attraction (the rule which leads to any-no suppletion) and then only into lower, not higher S's.

6. Phrasal Negation.

Klima points out certain occurrences of not which lack the criterial properties of sentence negation.

- (76)(a) He found something interesting there not long ago, { *and neither did she } . [186.a]
{ and so did she }
- (b) He had spoken with someone else not many hours earlier, hadn't he? [186.b]
- (c) There was some rain not long ago, { *not even in the desert } . [186.c]
{ even in the desert }

They are also unlike sentence negation in not triggering AUX-attraction (77) or SOME-ANY suppletion (78), nor allowing the occurrence of until-phrases.

- (77) (a) Not long ago there was rain falling. [187.b]
- (b) *Not long ago was there rain falling.
- (c) Not even then was there rain falling. [188.a]
- (78) (a) *Not far away I bought any books.
- (b) In none of those stores did I buy any books.
- (79) (a) Not three weeks ago he got there before 3:00.
- (b) *Not three weeks ago he got there until 3:00.
- (c) He almost never gets there until 3:00.

Klima suggests that these occurrences of not should be treated as the same morpheme neg which he postulates for sentence negation, but introduced in lower constituents. The evidence that it is the same morpheme neg in both cases includes sentences such as the following, which illustrate the similarity of constituent and sentential not with respect to both co-occurrences and semantic interpretation.

- (80) (a) It wasn't long ago that he found something interesting there (, was it?). [195.a]
 [compare (76.a) above.]
- (b) He had spoken with someone else, which hadn't been many hours earlier. [195.b] [compare (76.b)]

He tentatively suggests the use of a base rule of the following sort:

Time → (neg) long { ago
 after
 before }

but note that if he were to make the natural extension to include subordinate structures such as after S, before S, the fact that these subordinate clauses would be in construction with the constituent neg would incorrectly predict that the some-any suppletion rule would apply within them.

- (81) (a) John came in not long { after } { some } of
 before } { *any }
- the delegates stormed out.

This is particularly puzzling in view of the fact that before is itself [+AFFECT] and therefore normally allows SOME-ANY suppletion:

- (81)(b) John came in (long) before any of the delegates stormed out.

Neither Klima nor we have any solution to this problem; whatever is going on is probably also involved in sentences containing not plus doubt, which, while meeting the tests for sentence negation, do not allow some-any suppletion or the occurrence of until-phrases in the subordinate clause:

- (81)(c) *They don't doubt that she has ever been to Europe.
(d) *They don't doubt that he will get here until noon.

That this is not a general property of double negation can be seen by comparing the sentences above with the following:

- (81)(e) He won't not pay taxes until he's convinced that it would have some effect on policy (will he?).

Thus it is not obvious that example (81.a) by itself argues conclusively against Klima's introducing the phrasal not in positions where subordinate clauses would be in construction with it, since there are apparently other unexplained factors involved.

There are some arguments for deriving the not of not long ago, not ten miles away, etc. from less than.

(i) In many instances, i.e. before a numeral (agreed to by everyone) and before long ago and far away (debatable) not seems to mean less than.

(ii) Before a numeral not can be replaced by less than.

(iii) Less than and not both occur in locative and point time adverbial measure phrases, but not in e.g.

- (82)*Not in Boston he found the book.

(iv) Both not and less than can cooccur with sentence negation:

- (83) { Not
Less than } two weeks ago he didn't like any fruit.

There are even stronger arguments against such a derivation, however:

(i) In many cases, i.e. before long ago and far away, only not and not less than can occur.

(ii) To many speakers not means less than only when immediately preceding a numeral.

(iii) In support of (ii) it was noted that we could also get:

(84) Not quite 300 ft. away I found a dime.

where not ≠ less than.

(iv) Not can cooccur with less than. The full range of adverbial phrases of this kind appears to be:

- (85)(a) Not 300 ft. away ...
- (b) Less than 300 ft. away ...
- (c) Not less than 300 ft. away ...
- (d) Not much less than 300 ft. away ...
- (e) Not very much less than 200 ft. away ...
- (f) Much less than 300 ft. away ...
- (g) Very much less than 300 ft. away ...
- (h) 300 ft. away ...
- (i) Not quite 300 ft. away ...

Not quite is a unit: quite cannot occur in such phrases without not. More than has the same distribution as less than.

In summary, the cooccurrence restrictions appear to be:

$$\left(\left(\text{(not)} \left(\left(\text{(very) much} \left\{ \begin{array}{l} \text{less than} \\ \text{more than} \end{array} \right\} \right) \right) \right) \right) \text{ 300 ft. away ...}$$

not (quite)

There are further constraints on not when the measure phrase adverbial does not occur in presential position. That is, we do not have:

- (86)(a) *She didn't like him not 2 days ago.
- (b) *The race will start in not ten minutes.

If therefore this adverbial is generated following the VP, it must be obligatorily preposed if not rather than less than is chosen. If the adverbial is generated presententially, then it must be blocked from extraposing when not is chosen.

At present we have no suggestion for deriving these adverbials.

D. The Interpretive Approach: Jackendoff

Jackendoff (1968e) proposes a radically different approach to negation, namely that negatives are introduced in their full range of surface positions, with the relations that exist between sentences explained by semantic interpretation rules acting on derived structures. One of the main functions of the semantic rules in this case is to determine the "scope" of any occurrence of NEG in a sentence. Thus, for example, (87.a) and (87.b) are both generated by PS-rules, and an interpretive rule assigns VP-scope to the NEG of (87.a) and S-scope to the NEG of (87.b).

- (87)(a) Some of the men didn't see anything. [32]
 (b) None of the men saw anything. [33]

But he gives no indication of how the variability of scope might be limited to sentences containing indefinites: he would appear to be predicting an ambiguity in:

- (88) John didn't see the police car.

He gives no arguments against Fillmore's proposal for handling (87.a-b) by a feature [+ SPECIFIC], which appears to us to be quite convincing.

A crucial part of Jackendoff's argument is that the scope of negation is always a (continuous) constituent, i.e. that it is always associated with a particular node in the tree. But this would appear to be contradicted by such examples as:

- (89)(a) No one has found any solution to some of these problems.
 (b) I couldn't find some of the books I needed in any of the branch libraries, so I had to go downtown.
 (c) Mary supports John, not John Mary.
 (d) He didn't answer some of the questions.

These examples point to a difference in individual determiners, as suggested by Fillmore, rather than a global difference in scope. (They might be attributable to global differences in scope in a deep structure which had the quantifiers as predicates, along the lines suggested by Lakoff, but that is the kind of structure Jackendoff is trying to avoid.)

Some of the strongest arguments in favor of his position come from sentences with more than one negative in which the order of the constituents crucially affects the interpretation, e.g. (47.a-b) above and the following:

- (90) (a) Never before had any of his friends not come to one of his parties. [100]
 (b) Never before hadn't any of his friends come to one of his parties. [101]

As we stated in part C above, we have no way of accounting for this phenomenon; but we do not consider it sufficient justification for Jackendoff's position, given the counterarguments presented above.

E. Source of NEG with the One-NEG-per-S Approach

1. Deep Structure Position of NEG

One of Klima's fundamental conclusions is that, except for double negation, all negative sentences should be accounted for on the basis of a single deep structure constituent NEG whose position in the base should be the same no matter what constituent its superficial reflex is associated with. Furthermore, his use of the concept "in construction with" (see section II.B.2. above) leads him to conclude that NEG must be immediately dominated by S in the deep structure. He gives some arguments for introducing it between subject and predicate, and some arguments for having it precede the subject, with the balance favoring the latter. His rule is stated above, (45). Before commenting in detail on his arguments, we will indicate some of the main features of Fillmore's treatment of this question and sketch roughly our own analysis; then we will consider together the arguments concerning deep structure position of NEG in the three analyses.

Fillmore also introduces not in sentence-initial position (preceded only by a question morpheme, as in Klima's analysis), but not immediately dominated by S. For Fillmore, not is simply one member of a lexical category NEG which includes also hardly, seldom,

scarcely, and which along with Pos(itive)(sometimes, often, ...) is an expansion of Preverb, which in turn is immediately dominated by S. His expansion of S is:

(91) S (Q)(Prev) NP Aux VP.

But Fillmore's reasons for introducing NEG in S-initial position are not the same as Klima's; we will discuss them shortly.

With the adoption of a case grammar, (Fillmore (1966d) did not use case grammar) the first rules expanding S change; the major break, instead of being between Subject and Predicate, or NP and VP, is between MOD(ality) and PROP(osition), the former including at least AUX and the latter including V and NP's in various cases. The various arguments for introducing NEG in S-initial vs. pre-AUX position then converge, since AUX itself is S-initial in the deep structure.

We turn now to the specific arguments relevant to the choice of deep structure position in Klima's, Fillmore's, and our analyses.

(i) In all three analyses, NEG is one of the elements which can trigger some-any suppletion. Since Klima uses the notion "in construction with" to define the scope of the some-any rule, NEG for him must be immediately dominated by S, if it is to trigger suppletion throughout that S. However, since the notion "in construction with" loses its advantages over the notion "command" with the present treatment of the verb phrase (see II.B.2.), and since the notion "command" does not require that S immediately dominate NEG, the latter requirement is no longer supported. Note that in Fillmore, NEG is dominated by PREV, and in this grammar it is dominated by MOD.

The some-any rule can be stated most simply if NEG precedes all the quantifiers at the time the rule applies. In Klima's and Fillmore's analyses, this is accomplished by having NEG start out sentence-initially, and move into AUX only after the some-any rule applies. In our grammar the analogous device is for subject-placement rules to follow some-any suppletion, NEG starting out and remaining in MOD.

(ii) In Klima's and Fillmore's analyses one of the arguments for S-initial NEG is the parallelism between NEG and the interrogative morpheme, WH or Q. Both trigger some-any suppletion and both trigger AUX-inversion; and for WH there are clear arguments (such as indirect questions with whether) for S-initial position. Jackendoff (1968f) also gives a number of arguments for the parallels between NEG and

WH, although he concludes that both are to be generated with NP's as well as in S-initial position.

However, there are certainly differences between WH and NEG. Katz and Postal (1964b), without making the comparison explicit, accept Klima's treatment of NEG (apparently unaware of the optionality of the meaning -changing some-any suppletion rule), but argue for quite a different treatment of WH. In particular, they note that a single deep structure WH would not provide the distinctions necessary to account for the following, no two of which are paraphrases:

- | | |
|----------------------------------|------|
| (92)(a) Did someone see someone? | [78] |
| (b) Who saw someone? | [74] |
| (c) Who did someone see? | [75] |
| (d) Who saw whom? | [79] |

The claim implicit in their treatment, namely that a single deep-structure NEG would not have the same inadequacy, is a tricky one to verify or disconfirm. There are at least two differences that complicate the issue: (i) some-any suppletion with WH does not seem to affect meaning substantially, while with NEG it always does; and (ii) WH can incorporate into any indefinite item, whereas NEG can incorporate only into the first of several any-words. Thus we have to consider all of the following, some of which are ungrammatical in the NEG case. (The four above are repeated for convenience.)

- | |
|----------------------------------|
| (92)(a) Did someone see someone? |
| (a') Someone didn't see someone. |
| (b) Who saw someone? |
| (b') (?) Noone saw someone. |
| (c) Who did someone see? |
| (c') Someone saw noone. |
| (d) Who saw whom? |
| (d') Noone saw noone. |
| (e) Did someone see anyone? |
| (e') Someone didn't see anyone. |
| (f) Did anyone see someone? |
| (f') *Anyone didn't see someone. |
| (g) Did anyone see anyone? |
| (g') *Anyone didn't see anyone. |
| (h) Who saw anyone? |
| (h') Noone saw anyone. |
| (i) Who did anyone see? |
| (i') *Anyone saw noone. |

The lack of correspondence between the two sets, in terms both of meaning and of grammaticality, undoubtedly involves a number of factors such as (i) and (ii) above. But at least as far as semantics is concerned, the biggest differences in meaning in the WH set appear with the changes in position of the WH; (92.a,e,f,g) are all closer to each other in meaning than to any of the others in the set. For NEG, on the other hand, the biggest differences in meaning come with some-any suppletion, and incorporation of NEG into an any constituent does not affect the meaning: (92.e') is synonymous with (92.c') rather than with any of the other sentences in which NEG is located in the AUX.

Thus, while we would not support Katz' and Postal's position on NEG and WH fully (for divergence from Klima's treatment of NEG, see above; for alternative treatment of WH, see INTERROG), we would at least agree that NEG and WH have many important non-parallelisms. Note that even the two parallels most frequently cited are quite superficial on closer inspection: (a) both trigger some-any suppletion, but if we use the feature [+ SPECIFIC], the rule would appear to be obligatory for NEG but optional for WH; (b) both trigger Aux-inversion, but WH always stays in or moves to S-initial position (except for echo questions) and thus always leads to eventual Aux-inversion; NEG only does so when it ends up in a preposed adverb.

Thus, it would appear to us that the parallelisms between NEG and WH pointed to by Klima, Fillmore, and Jackendoff have not in fact been shown to be of a type best accounted for by sameness of deep structure position. The facts that both are [+AFFECT] and that both often end up in S-initial position could seem to be sufficient to explain the surface regularities in question.

(iii) One argument used only by Fillmore (implicitly) for the sentence-initial origin of NEG is that it would simplify the account of the following:

- (93)(a) Never had he seen such a marvelous device.
 (b) Hardly anyone believed him.
 (c) *Hardly John believed him.
 (d) John hardly believed him.
 (e) Seldom has anyone performed so well.
 (f) *Anyone has seldom performed so well.
 (g) Seldom has Sheila performed so well.
 (h) Sheila has seldom performed so well.

Fillmore has the negative preverbs originate S-initially, then move into AUX only if the subject is not an any-word (cf. 93.f); the movement then is obligatory for certain preverbs like hardly, (93.c-d),

optional for other such as seldom (93.g-h). He claims that the only ones which can remain in S-initial position are those which subsequently attract the AUX, and thus he will not generate:

(94)(a) Usually John drinks his coffee black.

He does not relate the positioning of the preverbs to the positioning of larger adverbs of similar types. Thus while (94.b) may be preferable to (94.a), (94.c) is preferable to (94.d), and this is not accounted for in Fillmore's system.

- (94)(b) John usually drinks his coffee black.
- (c) On weekdays John drinks his coffee black.
- (d) (*) John on weekdays drinks his coffee black.

We suggest in the next section that such facts are better accounted for if adverbs are classified primarily by function, with the possibility of occurrence in preverb position simply indicated by a feature [+PREVERB].

Another problem that arises from Fillmore's use of the S-initial position of preverbs to account for (93) stems from his separation of the any-no rule from the rule for positioning the preverbs other than NEG. The problem is that hardly, since it is not included in the any-no rule, can end up only in S-initial position or in the AUX. Thus, Fillmore generates all of (95) and none of (96).

- (95)(a) *Hardly the authors of any of the books objected.
- (b) (?) John hardly told the story to anyone.
- (c) (?) He has hardly had anything to eat for the last three weeks.

- (96)(a) The authors of hardly any of the books objected.
- (b) (?) John told the story to hardly anyone.
- (c) He had had hardly anything to eat for the last three weeks.

Although the data are not clear cut, it would appear to us that at least as good results can be gotten by having the NEG and all the negative preverbs in pre-AUX position when adverb-preposing applies, and later positioning both NEG and the hardly-type preverbs by an extension of the any-no rule. Our main arguments for discarding part of Fillmore's analysis of preverbs is in the next section, however, so our rejection of this argument for S-initial NEG position rests heavily in arguments to be found below.

(iv) One of Klima's arguments for S-initial NEG comes from sentences like

- (97)(a) The old people wanted to remain, but not the young people. [177.a]
- (b) Mary can come in, but not anybody else. [177.d]
- (c) Mary supports John, not John, Mary. [177.c]

However, this phenomenon seems to be a matter of special NEG-attraction to adversative conjunctions rather than a reflection of the deep structure position of NEG. Note the non-standard position of NEG in the following (and cf. CONJ):

- (98)(a) I saw John but not Bill.
- (b) I saw not John but Bill.
- (c) I gave it not to John but to Bill.

(v) Another of Klima's arguments for an S-initial for NEG is to keep the structure of a sentential NEG with a preposed adverb separate from that of constituent NEG, in order to correctly predict AUX-inversion. That is, the following must have distinct structures at the time AUX-attraction applies:

- (99)(a) Not even two years ago was I there. [175.a]
 - (b) Not even two years ago I was there. [175.b]
- (100)(a) In not many years will Christmas fall on Sunday. [176.b]

However, it is clear from the position of not in the prepositional phrase in (100) that it cannot still be dominated directly by S. Thus although it is not clear how the difference should be represented, the S-initial position postulated as the source of NEG does not seem sufficient.

In summary, while we have no strong arguments against a sentence-initial deep structure for NEG, we reject most of the specific arguments that have been advanced for it. In the next section we argue for a uniform treatment of not, hardly, scarcely, barely, all as NEG, contrasting with others of Fillmore's negative preverbs. We generate NEG in the MOD constituent, with the only positive argument for that position being simplification of the some-any rule, certainly a very weak argument. We thus regard the deep structure position of NEG as very much an open question, particularly with respect to any parallelism with WH.

2. Preverbs.

Fillmore introduces preverbs under category labels POS and NEG, with cross-classified features [+TEMPORAL]. He then has to make the inelegant restriction that POS and NEG cooccur only if either NEG is not or POS is ever. (The other POS's include sometimes, often, always, usually; other NEG's are never, rarely, seldom, barely, hardly, scarcely.)

Klima reserves NEG for not (and resultant combined n-forms), and introduces Fillmore's negative preverbs as cooccurring with N, rather than as alternative rewrites of it.

It seems intuitively that some of the preverbs are just temporal adverbs (mainly frequency), and that hardly, barely, scarcely (and not, of course) are something else. But just what these latter are is much less clear.

Items which can occur in preverbal position include:

obviously, probably, finally, thus, actually, really,
therefore, still, apparently, certainly, nevertheless

Obviously, "preverb" is not a syntactic category: it comes closer to being a feature shared by all one-word sentence adverbs. Let us then assume that there is a feature [+PREVERB] associated with those items in the lexicon. Most of them belong to categories which also contain non-preverbs; and most of them, when cooccurring with not in preverb position, must precede the not. The fact that this last generalization fails for sometimes, often, usually, actually, and really has to be left as part of the unsolved area of interacting NEG and ADV and double negation.

The preverbs which seem to need the most explaining are barely, hardly, and scarcely, all negative but not obviously members of a class which includes corresponding positive members. For Klima they occur only in the environment of NEG, which they later "incorporate". For Fillmore they form the class of non-temporal negative preverbs whose only other member is not. Neither has suggested any related positive elements.

Both Klima's and Fillmore's analyses have problems with the rules for sentence-initial adverb placement and attraction of NEG to any-words, precisely because of the behavior of the "negative preverbs". There are similar problems in the analysis used in the NEG report of UESP (1967); cf. pp. 19, 22 of that report.

(1) The worst thing is that the adverb placement rule could be made completely optional and completely independent of negation except for the fact that if the adverb is seldom or rarely and the subject of the sentence is indeterminate (i.e. an any-word), the adverb must prepose. Fillmore manages to capture the restriction but does not generalize adverb-preposing beyond the preverbs; Klima is vague about environments although apparently aware of the problem. The rule in UESP (1967) was stated in quite general terms, with an unpleasant restriction of the above form appended.

(2) The NEG-attraction rule must be stated as applying to not and to the non-temporal negative preverbs hardly, barely, scarcely, but not to the temporal negative preverbs, an ad hoc restriction if "preverbs" are a natural class.

A new approach is suggested by the synonymy of the following sentences:

- (101)(a) Hardly anyone ever buys turnips.
- (b) Hardly ever does anyone buy turnips.
- (c) Seldom does anyone buy turnips.

Sentences (101.a) and (101.b) are analogous to (102.a) and (102.b):

- (102)(a) No one ever buys turnips.
- (b) Never does anyone buy turnips.

The problem with previous analyses was to generate (101.c) while excluding (103):

- (103) *Anyone seldom buys turnips.

If it were not for (103), the adverb-preposing rule could be perfectly optional. But it still can be if we analyze seldom as a surface form of hardly ever. (From here on, we assume incorrectly that hardly, barely, scarcely are just stylistic variants of each other, and likewise seldom, rarely.) Then it is only the ever which is optionally moved by adverb-preposing, and the hardly is then attached (as in NEG) to the leftmost constituent. Thus (103) is automatically excluded, because if ever is not preposed, hardly must attach to anyone, giving (101.a).

This solution has two further advantages. Because seldom would no longer be a negative preverb in deep structure, we can adopt a Fillmore-like derivation of hardly as a possible rewrite of NEG and completely do away with Klima's rule of NEG-incorporation for "incomplete

negatives". Not and hardly will share the category NEG and differ by some feature we might call [+COMPLETE] or the like, a feature we can use to control e.g. neither-tag formation.

(104) *John hardly ever sleeps late and neither does Bill.

Secondly, the NEG-attachment rule, which used to apply to NEG and to non-temporal negative preverbs, now applies simply to NEG.

Thus all the major problems connected with the preverbs appear to be simultaneously solved.

F. Too, Either and Neither.

Overview. Following Klima, we consider too-either alternation essentially the same process as some-any alternation, and either-neither a case of any-no suppletion. It then turns out that except for one small problem (the absence of neither in final position), a proper choice of assumptions about the structure of too in conjunctions yields all the grammatical forms without any new rules.

Too-conjunction. Since too is not currently generated by the conjunction rules, a word about it is in order here.

Firstly, we will ignore single sentences containing too, such as:

(105) John likes meat, too.

Such sentences are certainly possible in a discourse, but so are "Neither did I", "But I can't", and "Not him, him", and it is not clear where to draw the line.

Considering only two-sentence conjunctions, we find that the possibility of too in the second sentence depends on a semantic distinction which we might call "addition" vs. "contrast":

addition:

(106) Peter left, and Bill left, too.

(107) John likes Mary, and he likes Susan, too.

(108) John didn't leave until 3 AM, and Mary stayed late, too.

- (109) The Orioles have lost all their games against the Tigers, and the Red Sox were beating them, too.

contrast:

- (110) *Peter left, and Bill stayed, too.
 (111) *John likes Mary, and he dislikes Susan, too.
 (112) *John left at 3 AM, and Mary arrived at 4 o'clock, too.
 (113) *The Orioles beat the Tigers, and were beaten by the Red Sox, too.

In examples (110)-(113), deletion of too makes the sentence grammatical; furthermore, the sentences are all positive, so the impossibility of too here has nothing to do with negation. Examples (108) and (109) show that formal identity is not the deciding factor. Example (108) shows further that even verb phrase synonymy is not required, since in (108) Mary may have left at 2 AM or 4 AM (although stating such a time explicitly would disallow too).

The non-syntactic nature of the distinction is particularly clear in the following sentence, where whether too is appropriate or not is certainly not up to the grammar:

- (114) John left at 3 AM, and Mary left early (too).

Since the occurrence of too in a conjoined sentence is not syntactically conditioned, we must apparently generate it either in all conjunctions or in none of them. Since the derivation from too to either to neither is syntactically perfectly regular, we prefer to assume that too-conjunctions (presumably with (110)-(113) included) are being generated, and to carry on the derivation from there, even though there is no account of too-conjunction in CONJ.

Too-either. Two assumptions about too are necessary in order for the some-any rule to be able to convert it to either.

(i) Too must be [-SPECIFIC]¹, since it always changes to either when under the influence of negation.

¹ It appears that there is also a [+SPECIFIC] too, but it never appears in addition-type and-conjunction. We have no suggestions about it.

- (n1) I gave him a necktie last year; I can't give him a necktie this year too. (*either)

- (115)(a) John refused the package, and Mary wouldn't accept it either.
 (b) (*) I think it is a brownie, but I'm not quite certain; Nanny isn't certain, too.
 (A.A. Milne)

(ii) Too must be a constituent of the conjunct sentence it appears at the end of, in order for a NEG in just that sentence to command it.

Given these assumptions, the some-any rule will automatically account for the too-either alternation.

Neither. At this point we need a third assumption about too, namely that it is a sentence adverb. With this assumption it will be subject to the general adverb-preposing rule to give us neither-tags without any new rules. A typical derivation would involve a large number of the (independently needed) negation rules, and would go roughly as follows:

- (116)(a) NEG John will eat liver and S [NEG Bill will eat liver too]
 [-SPEC]

⇒ by T some-any (oblig)

- (b) NEG John ... and S [NEG Bill will eat liver either]
 [-SPEC]
 [+INDET]

⇒ by Truncation (not included here) (opt)

- (c) NEG John ... and S [NEG Bill will either]

⇒ by ADV-preposing (opt)

- (d) NEG John ... and S [NEG ADV[either] Bill will]

⇒ by Preliminary Neg Placement (oblig)

(n2) He hears that from his wife every day; don't you start nagging him too. (*either)

(n3) They already have 10 linguists; I'm sure I shouldn't go too. (*either)

(e) John NEG will eat liver and S[either Bill NEG will]

⇒ by NEG-Attract to indeterminates (oblig)

(f) John NEG will eat liver and S[ADV[NEG either] Bill will]

⇒ by Any-No Suppletion (oblig)

(g) John NEG will eat liver and S[ADV[neither] Bill will]

-	SPEC
+	INDET
+	NEG

⇒ by Preverbal Particle Placement (oblig)

(h) John will NEG eat liver and ...

⇒ by S-Initial Aux-attraction (oblig)

(i) John will NEG eat liver and S[ADV[neither] will Bill]

There are two problems remaining, however:

1. Too in its positive form does not prepose. Perhaps we can justify calling too and so conditioned alternants, however. Also is another apparently related item, and is the most freely movable of the set.

2. The any-no rule could optionally apply to an either which had optionally stayed in sentence-final position to give a sentence-final neither:

(117) *John didn't leave, and Bill left neither.

Klima notes (p.320) that the either should therefore not be considered a constituent of the clause it appears at the end of. But it must be a constituent of that clause for the some-any rule to have derived it from too at an earlier stage, and for the adverb-preposing rule optionally to move it to sentence-initial position. There is no independent motivation for moving it out of that S (without changing its surface position, furthermore) part way through the derivation. It would be possible to prevent T Neg-Attract from applying to it, of course, but only by an ad hoc condition on the rule.

Fillmore's suggestion is that any-no suppletion precedes neither-fronting, with the latter obligatory. But the neither-fronting could not then be accomplished by the ordinary adverb-fronting rule, which must precede any-no suppletion to account for the fact that there are initial indeterminate ones:

(118) Sometimes he goes to movies on weekdays.

(119) Never does he go to movies on weekdays.

(120) *Ever { he doesn't } go to movies on weekdays.
 { doesn't he }

But it may be correct that neither-fronting is unrelated to adverb-fronting, since too-fronting is possible only if we can justify regarding so as a variant of too.

We therefore tentatively treat neither-fronting as adverb-fronting and simply add an ad hoc condition to part b of T NEG-ATTRACT to prevent sentence-final either from becoming neither:

Restriction 4: 4 ≠ either

III. TRANSFORMATIONAL RULES

A. Rules

1. SOME-ANY Suppletion (Obligatory)

S.I. X - [+AFFECT] - X - $\left[\begin{array}{c} -\text{SPEC} \\ -\text{INDET} \end{array} \right]$ - X
 1 2 3 4 5

Conditions:

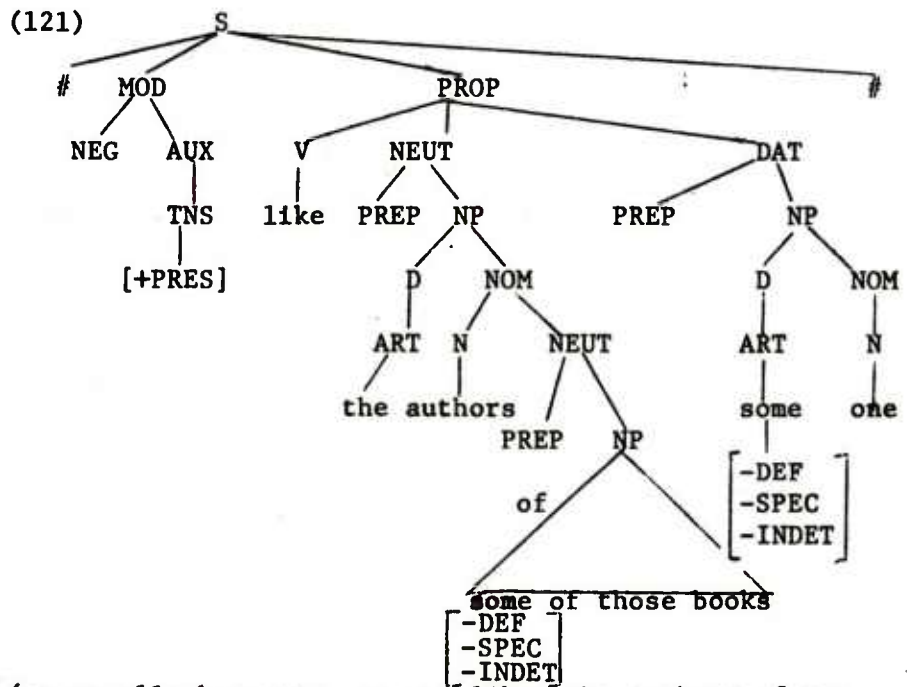
(i) 2 commands 4 (see II.B.2)

(ii) If 2 is [+N], [+V], or [+PREP], then 4 does not command 2 (i.e. is not in the same simplex) and 3 - 4 - 5 = $\text{S} [X - 4 - X] - X$

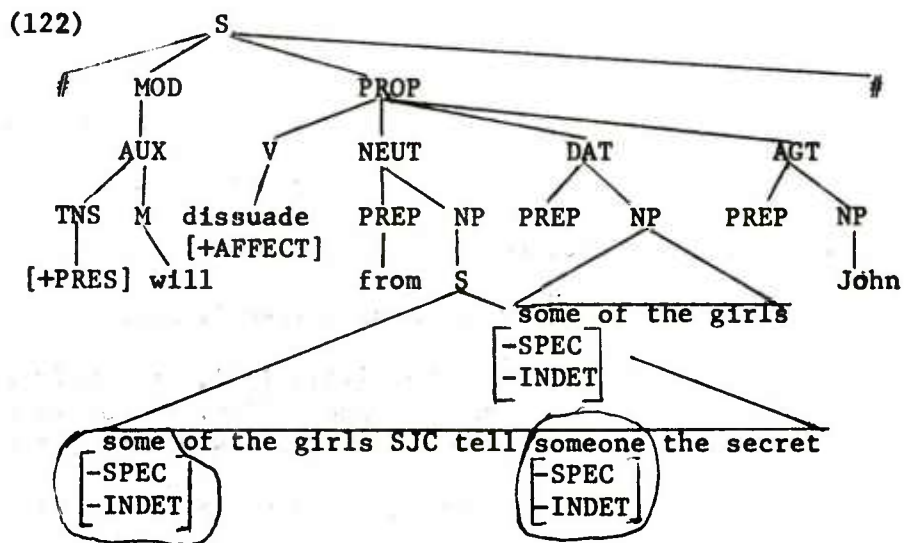
(iii) (Complex-NP constraint holds)

S.C. (1) Change [-INDET] to [+INDET] in 4

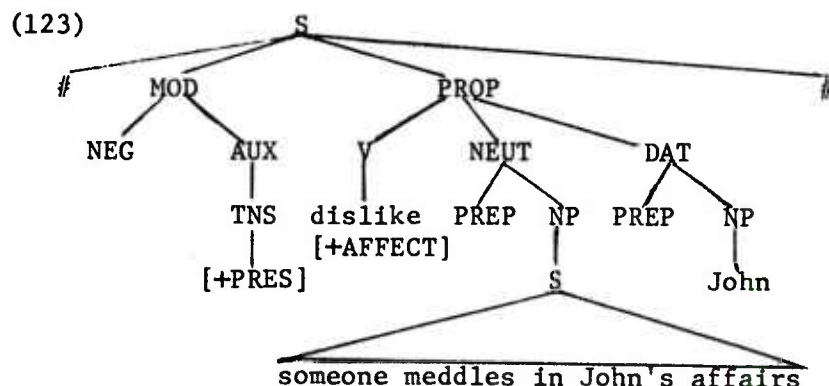
Tree examples



(eventually becomes: no one likes the authors of any of those books.)



(→ John will dissuade some of the girls from telling anyone the secret [only the circled constituents change])



(⇒ John dislikes anyone meddling in his affairs)

Examples

(a) Grammatical and generated

(124) John dislikes anyone meddling in his affairs.
 (Where someone meddling in John's affairs is all the direct object of dislike; if someone had been the direct object of dislike, it would not have changed to anyone; cf. tree (122) above.)

(125) John doubted that anyone would ever believe him.

(126) John is afraid { to trust } anyone with his
 { of trusting }
 secret.
 (afraid of must be [+AFFECT] while afraid that is [-AFFECT]. We assume that afraid to derives from afraid of to.)

(127) Scarcely anybody believed that we would ever find anyone there.

(128) If anyone drives carelessly, someone suffers.
 (If, when, before are all [+AFFECT].)

(129) His doubt that anyone will recognize him is gnawing at him.

- (130) He dislikes not doing anything.
 (OPT ⇒ He dislikes doing nothing)
 (From NEG in constituent sentence; [+AFFECT] in matrix which could have triggered it on next cycle doesn't because any has already been marked [+INDET].)
- (131) Not many of the students came on time.
 (All this rule actually does is mark the [-SPECIFIC] indefinite article with many as [+INDET]; the Neg-attraction rule then obligatorily moves NEG to precede many. If the indefinite article with many had been [+SPECIFIC], we would get (136) below.)
- (132) John never works hard.
 (This has an underlying presentence NEG and [-SPECIFIC] sometimes, which by this rule is changed to ever, and later incorporates the NEG. See (137) for contrast.)

(b) Grammatical but not generated by this rule

- (133) Anyone can become President. (It is conceivable that generic any might be marked [-DEF, -SPECIFIC, +INDET] in the base, but that is not being explored here.)
- (134) Only then did anyone realize that anything was wrong. (Certain only's should be [+AFFECT], but it is not clear how to distinguish them from the ones which are not: *John only bruised one of the boys.)
- (135) John hadn't read some of the important articles.
 (This is [+SPECIFIC] some)
- (136) Many of the students didn't come on time. (See (131) above)
- (137) John sometimes doesn't work hard. (see (132) above.)
- (138) Everybody around here who ever buys anything on credit talks in his sleep. (By some-any Rel suppletion; cf. (40) above)

(c) Ungrammatical, not generated

- (139) *John doubted anything. (There is no sentence NEG; although doubt is [+AFFECT], something is not in an embedded S.)
- (140) *John is afraid that he might say anything indiscreet to her. (see (126))
- (141) *After he drank any beer, he left. (Before is [+AFFECT], after is [-AFFECT]. It may be that every item which can occur before an S "complement" must be marked in the lexicon as [+AFFECT] or [-AFFECT].)

2. SOME-ANY REL Suppletion (Obligatory)

This is the special rule for some-any suppletion in relative clauses, proposed by Ross (not in exactly this form): see discussion in II.B.2.

$$S. I. \quad X \text{ NP} \left[\text{D} \left[\left\{ \begin{array}{l} X [+AFFECT'] \\ X [+INDET] \end{array} \right\} \right] X \right] \text{ NOM} \left[\text{NOM} \text{ S} \left[\begin{array}{l} X \left[\begin{array}{l} -\text{SPEC} \\ -\text{INDET} \end{array} \right] \\ X \end{array} \right] \right] X \right] X$$

1 2

Condition: 1 is the lowest S dominating 2

S. C. Change [-INDET] to [+INDET] in 2

Notes:

1. [+AFFECT'] is a feature being used to mark a, every, all, the first, the last, the Adj+est, the only. No and any qualify by being [+INDET].
2. The rule may apply to its own output.

Examples

Grammatical: cf. (40), (42), (43).

Ungrammatical, excluded: cf. (29), (41).

3. S-Initial ADV Placement (Optional)

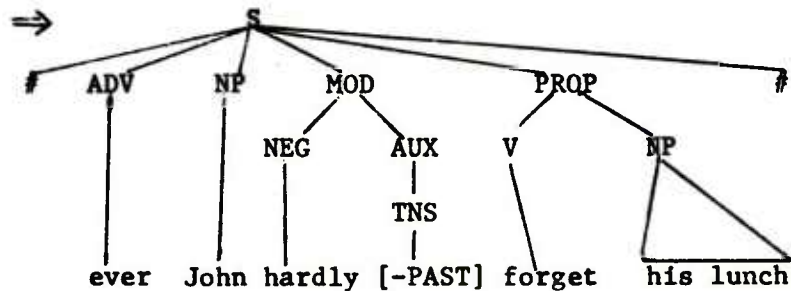
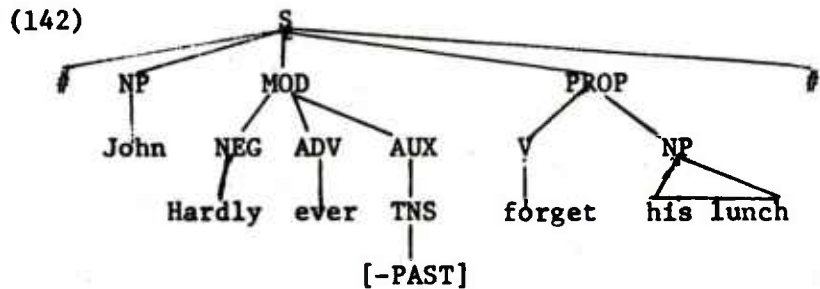
S.I. # NP MOD[X ADV AUX] X
 1 2

S.C. 1. Attach 2 as right sister of 1.
 2. Erase 2.

(1) This rule moves any sentence adverb, including so-called "temporal preverbs," to the front of the sentence. To avoid complication, only one adverb may be moved. Further details are ignored.

(2) We have not included emphatic inversion, which need not involve sentence ADV, e.g. of you I think nothing.

Tree Examples:



Examples

A. Grammatical (or stages in grammatical sentences)

- (143) Ever John hardly forgets his lunch (NEG-attraction followed by AUX-attraction will give Hardly ever does John ..., which may then become Seldom does John ...; see sentences (146), (149) below.)
- (144) Often John doesn't forget his lunch (if this often is [+SPECIFIC] no further changes will occur; if it is [-SPECIFIC] it will be subject to Neg-incorporation which in turn will trigger AUX-attraction, giving Not often does John forget his lunch. Contrary to Fillmore's claim, often by itself does not generally trigger AUX-attraction: *often does John(not) forget his lunch.)
- (145) In England horse-racing is respectable.
- (146) In any other country women are not such slaves. (neg-incorporation and Aux-attraction will give In no other country are women such slaves.)
- (147) Women are not such slaves in any other country. (The rule is optional; this sentence results from not applying it.)
- (148) Sometimes he doesn't fall asleep easily. (No further changes)
- (149) Ever he doesn't fall asleep easily. (NEG-incorporation and AUX-attraction will give Never does he fall asleep easily.)
- (150) Seldom anyone has been there.

B. Ungrammatical, not generated

- (151) *Hardly John likes Mary. (Only ADV can be preposed; hardly is NEG)
- (152) *For three hours the play lasted. (Only sentence adverbs can be preposed.)

C. Grammatical, not generated by this rule

(153) Hardly anybody likes Mary. (This is analyzed as NEG-attraction into the indeterminate anybody, not as adverb-preposing.)

4. NEG-Attraction (Partly Optional)

a. (obligatory)

Structure Index

X - [+INDET] (QUANT) - X - NEG - X
 1 2 3 4 5

Conditions:

1. If 4 = ADVB, then 2 ≠ [-HARDLY] + X
2. 1 ≠ X - [+INDET] - X

Structure Change

1-2-3-4-5 ⇒ 1 - 4 + 2 - 3 - ∅ - 5

b. (optional)

Structure Index

X - NEG - X - [+INDET] - X
 1 2 3 4 5

Conditions

1. 3 ≠ X - [+INDET] - X
2. 5 ≠ QUANT - X

Structure Change

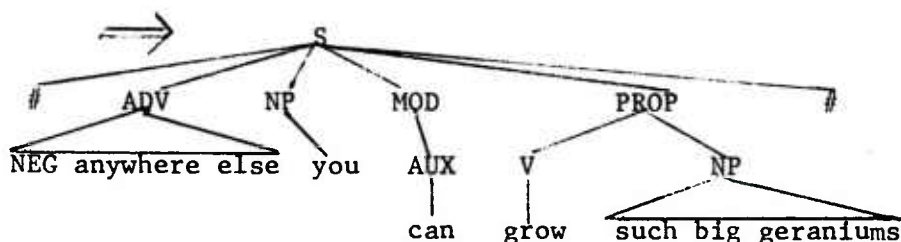
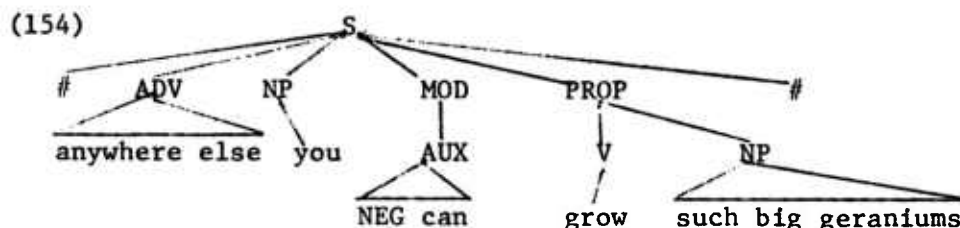
1 - 2 - 3 - 4 ⇒ 1 - ∅ - 3 - 2 + 4 - 5

Notes

1. The feature [+HARDLY] is an ad hoc device to distinguish those quantifiers modifiable by negative preverbs, e.g. hardly three, hardly any, hardly a dozen, from those that are not, e.g. *hardly many, hardly all.

2. QUANT must be included in the obligatory part of the rule but omitted from the optional part to account correctly for sentences (155.g), (156.d) and (157.c-d) below.

Tree examples:



Examples

A. Grammatical (or stages in the derivation of grammatical sentences)

- (155)(a) Scarcely anyone showed up.
- (b) Not anyone showed up. (⇒ No one ... by next rule)
- (c) Barely a hundred people voted Socialist.
- (d) Hardly anywhere else can you find so many green houses.
- (e) John was finding mushrooms not anywhere.
(⇒ nowhere)
- (f) John spoke to scarcely a dozen people.
- (g) Not three of the people showed up.

B. Ungrammatical

- (156)(a) *Anyone had scarcely anything to say.
- (b) *Hardly many people came to the party.
- (c) *Anyone isn't down there.
- (d) *He answered not three of the questions.
- (e) *He spoke to anyone nowhere.
- (f) *He saw not many people there.

C. Grammatical, but not from this rule

- (157)(a) John has hardly seen any of California.
(Optional part not applied; pre-verbal placement then obligatorily applies.)
- (b) Not many years ago there was a wilderness here. (source for this negative so far undetermined.)
- (c) Three of the people didn't show up. ([-INDET])
- (d) He didn't answer three of the questions.
(Ambiguously [+INDET])
- (e) He saw few people there. (see note 4 below)

JUSTIFICATION

1. Fillmore collapses this rule together with the following any-no suppletion rule, adding negative directly as a feature to the first following indeterminate determiner, obligatorily if it precedes tense, optionally, otherwise. (Recall that his negative starts out in pre-sentence position.) Thus for him example (155.a) and (155.d) are unrelated; it appears that he does not generate (155.d) at all. (155.a) is taken to be the preverb remaining in its sentence-initial position (rather than moving inside the NP as in our analysis). (155.e) and (155.f) are not related by him either; (155.f) appears not to be generated.

2. Klima notes that "negative pre-verbal adverbs like scarcely occur obligatorily attached to the first indefinite in Pre-Tense position" (p. 272); but his rule of neg-incorporation into indefinites does not apply to scarcely, etc., because the rule applies to neg, which has previously been absorbed by the incomplete negatives scarcely, etc.; this is probably an oversight. In other respects our rule is essentially Klima's; note that he has moved neg into pre-Tense position before this rule applies.

3. This treatment allows adverb-preposing and negative attraction both to be made fully general instead of having a special rule for preposing adverbs containing negatives.

4. Note that since we exclude example (156.f) above, we cannot derive few in (157.e) from not many, as has sometimes been advocated. But if we argue that few should never be derived from not many anyhow, this would not be a defect in the rule. And we can so argue, on a number of grounds.

(i) Very few is certainly not synonymous with not very many, and *very not many does not exist.

(ii) There is considerable difference in the acceptability of the tags in the following:

- (158)(a) Not many people live there, do they?
- (b) *Not many people live there, don't they?
- (c) ?Few people live there, do they?
- (d) ?Few people live there, don't they?

(iii) All the properties of few which are shared by not many, primarily some-any suppletion and Aux-attraction, are also shared by only a few, which is at least as good a paraphrase of few as not many is and which furthermore patterns like few in respects (i) and (ii), above.

- (159)(a) only a few few = very few
- (b) ?Only a few people live there { do they?
don't they? }
- (c) Only a few people ever saw anything there.
- (d) In only a few countries do people drive on the left.

These factors suggest that few is better derived from only a few (a suggestion due to Elinor Charney (M.I.T. Seminar talk, 1962)) than from not many. The question is far from settled, however, since for many speakers (158.c) is preferred to (158.d), but the second alternative of (159.b) to the first.

5. ANY-NO Suppletion (Partly Optional)

Structure Index

X - NEG - $\left[\begin{array}{c} -DEF \\ +INDET \end{array} \right]$ - X
 [+COMPLETE]
 1 2 3 4

Structure Change

1 - \emptyset - $\left[\begin{array}{c} 3 \\ +NEG \end{array} \right]$ - 4

Optional if 3 dominates ever and 1 ≠ #; obligatory otherwise

Examples

A. Grammatical

- (160)(a) No one knows anything about it.
 (b) John never goes to the store. (option taken;
 negative pre-verbal particle placement blocks)
 (c) Never does John go to the store. (oblig
 since 1 = #)

B. Ungrammatical

- (161)(a) *Not anyone knows anything about it.
 (b) *John does never go to the store. (If this
 rule came after, or could be applied after,
 pre-verbal particle placement, this sentence
 would be generated.)
 (c) *Not ever does John go to the store.

C. Grammatical, not generated by this rule

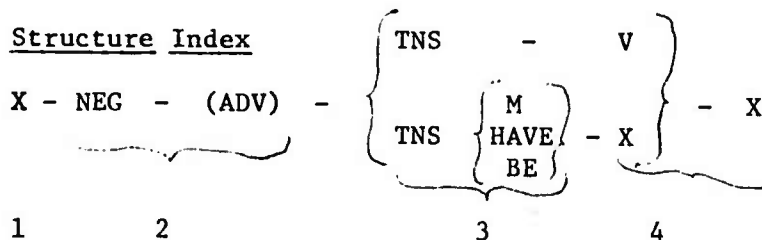
- (162)(a) Not many people came. (Does not apply
 because NEG not adjacent to [+INDET] which
 is on the (eventually deleted) article.)
 (b) John doesn't ever go to the store. (Optional
 variant of (160.b) gotten by not taking the
 option in this rule and hence obligatorily
 applying preverbal particle placement.)

JUSTIFICATION

1. The rule is optional for not ever - never so as to allow the alternation between "doesn't ever go" and "never goes". Klima and Fillmore both take account of this, Fillmore by a separate rule for never, Klima by a distinction between the order ever neg and neg ever.

2. It is not necessary to add the feature [+ATTRACT] to never, as Fillmore does, because Aux-attraction is triggered by the [+NEG] feature anyway.

6. Preverbal Particle Placement (Obligatory)

Structure Change

1 - ∅ - 3 + 2 - 4

Examples

A. Grammatical

- (163) (a) John didn't often visit his mother
 (contraction is actually later)
 (b) John hasn't often visited his mother
 (c) John hasn't ever seen the ocean
 (d) John can't swim

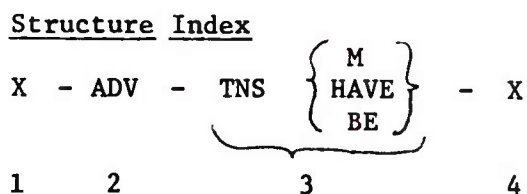
B. Ungrammatical

- (164) (a)*John did never go home
 (b)*John not has (ever) seen the ocean
 (c)*John not (really) likes Mary

C. Grammatical, not this rule

- (165) (a) John has never seen the sea
 (b) John has often dreamed of it
 (c) John never saw them
 (d) John hardly recognized his own mother
 (e) John often has not paid taxes (would be
 generated by this rule if often not were
 generated at all)
 (f) John has often not paid taxes (if often not
 were generated at all, this would be a case
 of applying this rule to move NEG and the
 following rule to move often)

7. Preverbal ADV Placement (Optional)

Structure Change

1 - Ø - 3 + 2 - 4

Notes

1. This rule differs from pre-verbal particle placement in two ways; this rule is optional, and it requires a full helping verb, not just TNS alone. The previous rule applies to NEG with an optionally following adverb, this rule to any preverbal adverb. Both rules are Klima's. Fillmore erroneously requires a full helping verb in the preceding case as well.

Examples

A. Grammatical

- (166)(a) John has never seen the sea
 (b) John has often dreamed of it
 (c) You would hardly recognize him
 (d) Henry has rarely been late
 (e) George will probably have been drinking again

B. Ungrammatical

- (167)(a) *John does never go home
 (b) *John did often dream of it

C. Grammatical, not this rule

- (168)(a) John has not ever seen the sea
 (b) John did not do it
 (c) She has not often come on time (by previous rule)
 (d) Barking dogs never bite
 (e) John hardly recognized his own mother
 (f) She has often not come on time (see note to (165.f) with the preceding rule)

8. S-Initial AUX Attraction (Obligatory)

S.I.

(S CONJ)* # { ADV } [X { [+WH] } X] X TNS ({ M }) (NEG) (ADV) X #
 { NP }
 { HAVE }
 { BE }

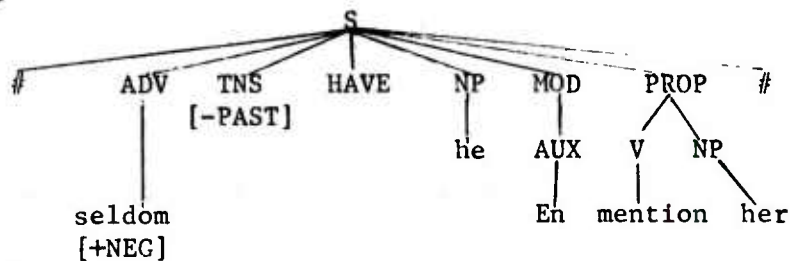
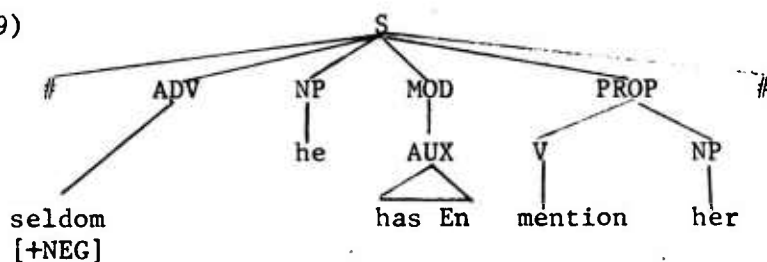
- S.C. 1. Add 567 as right sisters of 3
 2. Delete 567

- Conditions: 1. If 6 is null, 9 = $\begin{bmatrix} +V \\ -BE \end{bmatrix}$ + X
 2. The rule applies last-cyclically

Notes: see same rule in INTERROG

Tree Example

(169)



Examples

A. Grammatical

- (170)(a) Hardly ever is he late. (by SOME-ANY suppletion, NEG INCORP, S-INIT.ADV placement, NEG ATTRACT, AUX ATTRACT)
- (b) Never have I seen a more beautiful day. (SOME-ANY, S-INIT ADV. NEG ATTRACT, ANY-NO, AUX-ATTRACT)
- (c) In not many years does Christmas fall on Sunday.
- (d) Seldom has he mentioned her. (S-INIT ADV, AUX ATTRACT)
- (e) Did he leave?

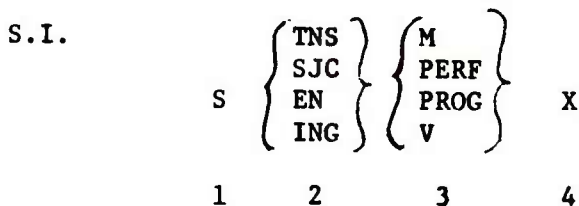
B. Ungrammatical

- (171)(a) *Never I have seen a more beautiful day.
- (b) *Yesterday did he come.

C. Grammatical, but not by this rule

- (172)(a) Only then did he recognize her. (not generated by our grammar at all)
- (b) Were he to come, ... (not generated by our grammar at all)

9. Affix Shift (Obligatory)

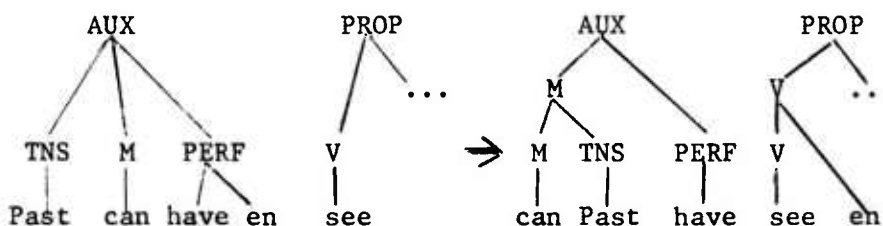


S.C. 2 Chomsky-adjoin to the right of 3; erase 2.

This rule must be applied simultaneously to all applicable constituents; if it were simply reapplied to its own output, all the affixes would end up on the main verb stem. The rule must be last-cyclic, applying to all levels of the tree. This is because all embedding rules which deform AUX require deep structure AUX's for input and introduce new stems and affixes in their output; hence the embedded AUX must not have undergone AFFIX Shift on its own cycle.

Tree Example

(173)



Notes:

Perhaps constituents 2 and 3 should simply mention the features "Af" and "V", as was done informally in e.g. Chomsky (1958). However, the saving would be small, particularly since there are transformationally introduced occurrences of PERF (see NOM).

10. DO-Support (Obligatory)

$$\begin{array}{ccccc}
 \text{S.I.} & & X & \left\{ \begin{array}{l} \text{TNS} \\ \text{SJC} \end{array} \right\} & X \\
 & & 1 & 2 & 3
 \end{array}$$

Condition: 2 not dom by M, PERF, PROG, or V

$$\text{(equivalently: } 1 \neq X + \left. \begin{array}{l} M \\ V \\ \text{have} \\ \text{be} \end{array} \right\} \text{)}$$

S.C. Add do as left sister of 2.

Notes:

1. We cannot use Chomsky adjunction here, since that would duplicate the TNS node, rather than some stem node.
2. This rule as it stands is not ideal, since it gives a very different derived structure from that obtained by affix-shift; in particular it gives very different structures to helping do and main verb do.

3. Chomsky (1958) has an ad hoc rule of word-boundary placement following affix-shifting and preceding do-support; do then comes in if and only if TNS is a word. Fillmore (1966d) uses the same rules. The above rule is similar, but recognizes the Chomsky-adjoined structure produced by the previous rule rather than doing anything with word boundaries.

4. Rosenbaum and Lochak (1966) expand AUX in the PS rules into just T (M); have + en and be + ing are introduced as constituents of VP. A have or be following T is attracted into the AUX before any of the rules which refer to the "first part of the AUX", i.e. simply AUX in their grammar. The AUX node is retained in all questions, etc. Then do-insertion applies simply if, after affix-shifting, T is the first constituent of AUX. This works very neatly.

5. Klima (1965) states in prose that do is inserted if after affix-shifting, TNS is still not attached to anything. Orally in 1967, however, he suggested that do is present in every deep structure, and is replaced by the first element after it if that is not a main verb. (This would also result in a single analysis for the "first part of aux", which would be desirable in its own right.) One possibly undesirable consequence of his proposal is that the presence of do would then be the normal case and its absence due to transformational replacement; this is at odds with the widespread belief that semantically empty things should not be in the deep structure.

11. NEG - Contraction

S.I.	X	{ TNS SJC }	NEG	{ [+V] NP }	X
	1	2	3	4	5

S.C. Add [+CNTR] to 3.

Conditions: Obligatory if 4 = NP; optional otherwise.

Notes

1. The rule mentions SJC as well as TNS in order to include imperatives.

2. This rule precedes verbal ellipsis in order to account for (174.d-g), (175.a-b), (176.a, c-e).

3. The rule is obligatory when 4 = NP in order to account for (174.c) vs. (175.d). An alternative approach would be to have this rule precede AUX-attraction and make AUX-attraction dependent on its having applied.

Examples

A. Grammatical, generated by this rule

- (174)(a) John hasn't seen the doctor yet.
- (b) He couldn't have left yet.
- (c) Isn't he going?
- (d) Is he going or isn't he going?
- (e) He is going or he isn't going.
- (f) Which ones haven't you seen yet?
- (g) I will go if he doesn't go.

B. Ungrammatical, not generated.

- (175)(a) *Is he going or isn't? (Excluded by constraints on ellipsis)
- (b) *Have you seen him or haven't?
- (c) *He wants n't to go. (Since NEG is within the embedded sentence, it is not followed by [+V] or NP.)
- (d) *Is not he going? (Contraction is obligatory if NEG precedes NP.)

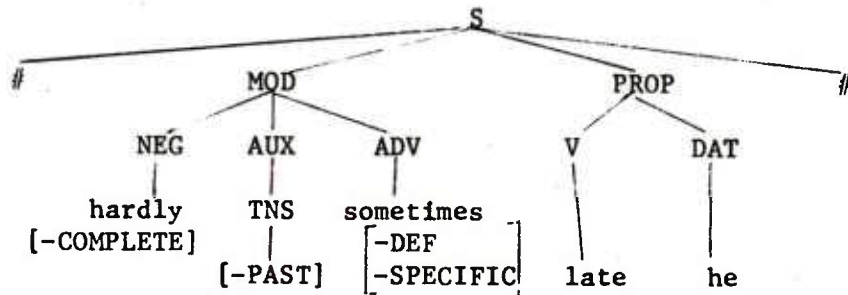
C. Grammatical, not generated by this rule.

- (176)(a) Is he going or not? (by ellipsis from Is he going or is he not going?)
- (b) Those rules will not work. (Option not taken)
- (c) He is going or he isn't. (From (174.f) by verbal ellipsis.)
- (d) Is he going or isn't he? (From (174.d) by ellipsis.)
- (e) I will go if he doesn't. (From (174.g) by ellipsis.)

B. Sample Derivations

(177) Hardly ever is he late.

Deep structure:



(a) Hardly [-PAST] ever late he (SOME-ANY Suppletion)
 [-DEF
 -SPECIFIC
 +INDET]

(b) He hardly is ever late (SUBJ.-Placement, BE-Insertion)

(c) Ever he hardly is late. (S-Init. ADV Placement)

(d) Hardly ever he is late. (NEG-attraction)

(e) Hardly ever is he late. (AUX-attraction.)

(178) Seldom has he mentioned her.
 The derivation is identical to that of hardly ever has he mentioned her, plus a low-level rule not included here converting hardly ever to seldom.

(179) Never have I seen a more beautiful day.
 (a) NEG have-en sometimes see a more beautiful day I.
 (b) NEG have-en ever see a more beautiful day I (SOME-ANY suppletion)
 (c) I NEG have-en ever see a more beautiful day. (SUBJ-Placement)
 (d) Ever I NEG have-en see a more beautiful day. (S-Initial ADV Placement)
 (e) NEG + ever I have-en see a more beautiful day. (NEG-Attraction)
 (f) Never have I seen a more beautiful day. (ANY-NO Suppletion, AUX-Attraction, AFFIX-Shift.)

- (180) Nobody has been hit by anyone. [Klima (88.c)]
- (a) NEG has-en hit somebody someone.
 - (b) Anybody NEG has been hit by anyone.
(Case-placement rules, SOME-ANY suppletion)
 - (c) NEG + anybody has been hit by anyone.
(NEG-Attraction)
 - (d) Nobody has been hit by anyone. (ANY-NO
Suppletion)

December 1968

CONJUNCTION

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II. INTRODUCTION

A. Survey of Problems

We are concerned here with what has traditionally been called "coordinating" conjunction. Our primary concern is with structures containing and, but we also attempt to give an account of structures containing but or or. In particular, we shall investigate the structure of sentences like the following, especially (1.a-g) (which must, however, be regarded as a representative sample rather than an exhaustive summary of types):

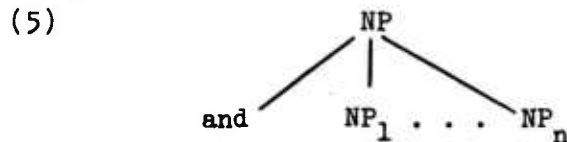
- (1) (a) John is in the house and Mary is at school.
 (b) John and Bill left.
 (c) I gave the boy both a nickel and a dime.
 (d) I gave the boy a nickel and the girl a dime.
 (e) Emily may be, and everyone agrees that Millicent definitely looks, pregnant.
 (f) John and Mary sang and danced respectively.
 (g) Julian ate pears, Jill peaches, and Jake papayas.
- (2) (a) (Either) John is playing basketball or his brother is jumping on the roof.
 (b) (Either) Jonathan or David played the harp.
 (c) I'll give (either) a nickel to the boy or a dime to the girl.
- (3) (a) Algernon went home but Nathaniel stayed.
 (b) I gave the boy a nickel but the girl a dime.

In recent treatments of conjunction by generative grammarians, attention has been focused on two major questions: (1) Is there a deep-structure relationship between conjoined sentences (such as (1a) and other conjoined structures? (2) If there is such a relationship, how many distinct devices (sets of rules or rule schemata) are required to derive these other conjoined structures from conjoined sentences?

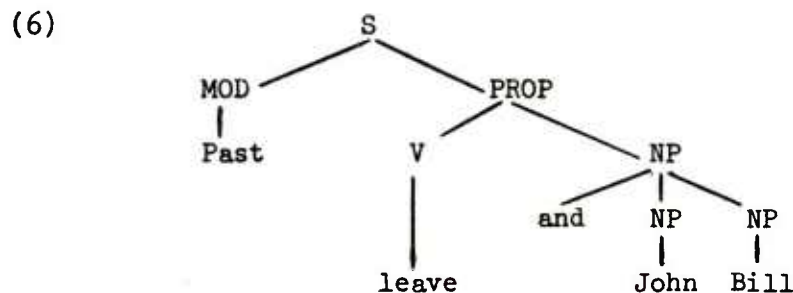
Relevant to the first question is the choice between two possible sources for sentences such as (1.b). First, we might wish to generate the conjoined structure (John and Bill) in this sentence by means of a phrase structure rule like:

- (4) $NP \rightarrow \text{and } NP \text{ } NP^*$

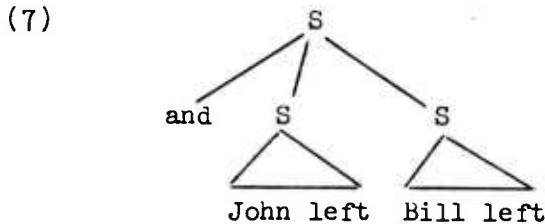
where (4) represents an infinite schema generating, in the first instance, structures like:



This approach, known as "phrasal conjunction", would provide for (1.b) a deep structure something like:



Alternatively, we might wish to say that the deep structure underlying (1.b) comes from the rule generating coordinate sentences in the base (PS Rule 1), and is, roughly:



Where a deep structure such as (7) is modified to produce a surface form such as (1.b), we shall call this process "derived conjunction". (The process has also been called "conjunction reduction".)

The first question, then, may be restated as follows: Is there derived conjunction, and, if so, which constructions result from it and which from phrasal conjunction? (It is, of course, possible that certain surface constructions may result either from derived conjunctions or from phrasal conjunction: i.e., the constructions may be structurally ambiguous.) In the light of this restatement of the first question, the second may be restated: If there is derived conjunction, how many kinds of derived conjunction must be distinguished?

With regard to the second question we may note, first, the possibility of positing different derivational processes for sentences in which all of the conjuncts are full single constituents and those in which some of the conjuncts are not full single constituents. In (1.c), for example, the conjuncts a nickel and a dime are NPs, and thus full single constituents. In (1.d), on the other hand, the conjuncts the girl a nickel and the boy a dime are not full single constituents (each being a sequence of two NP's, and neither constituting an entire PROP). Similarly, in (1.e), the conjuncts Emily may be and everyone agrees that Millicent definitely looks are not full single constituents.

If we assume that (1.c-e) are all products of derived conjunction (and there is general agreement that at least (1.d) and (1.e) must be), we may wish to say either that there is a single derivational process involved in all three cases, or that there are two different processes involved, one for (1.c), the other for (1.d-e). Advocates of the latter position have sometimes used the terms "primary" and "secondary" conjunction for the processes involved in constituent conjunction and non-constituent conjunction respectively, and we shall follow this terminological practice. (Schane, however, uses the term "secondary conjunction" in a somewhat different sense--cf. Section C, below.)

In addition to the possibility of positing distinct derivational processes for primary and secondary conjunction, we may note two other kinds of distinctions that might be posited. We might wish to say that the derivation of sentences which contain respectively, such as (1.f), is different from that of sentences which do not contain respectively. (Respectively conjunction, unlike derived conjunction of other types, does not necessarily involve the "reduction" of identical constituents of underlying sentences.) And we might wish to say that the derivation of sentences such as (1.g), which involve "gapping" (i.e., the deletion of verbs--and, in some cases, additional material--from non-initial members of sets of conjoined sentences), is different from that of sentences that do not involve gapping.

To anticipate our answers to the questions with which we have been concerned, we shall argue, in the following sections, that: (1) Not only is there derived conjunction, but it is derived conjunction, rather than phrasal conjunction, that underlies essentially all conjunctions of non-sentences; and (2) With the exception of gapping, and certain other structures involving deletion, a single process is involved in all derived conjunction.

B. Derived Vs. Phrasal Conjunction

We turn now to a detailed consideration of the question of derived and phrasal conjunction. There are three logically possible positions, all of which have had their supporters:

1. Both phrasal and derived conjunction are basic
(Smith, Lakoff + Peters, Ross)
2. Only phrasal conjunction is basic
(Wierzbicka, McCawley, Dougherty)
3. Only derived conjunction is basic
(Gleitman, Bellert, Schane)

We shall consider these three positions in turn.

1. Both Phrasal and Derived Conjunction Basic

This position, which has been argued for most forcefully by Lakoff and Peters, asserts that certain surface conjunctions of non-sentences (especially of NP's) are derived by means of derived conjunction, others by means of phrasal conjunction, and still others, which represent cases of structural ambiguity, by either of these means. Consider the following examples:

- (8) (a) Diogenes and Sophocles are erudite.
 (b) Diogenes is erudite and Sophocles is erudite.
- (9) (a) Oedipus and Jocasta are a happy couple.
 (b) *Oedipus is a happy couple and Jocasta is a happy couple.
- (10) (a) John and Mary are married.
 (b) John is married and Mary is married.

It is clear that (8.b) is a paraphrase of (8.a), that (9.b) is not a paraphrase of (9.a) (and is, in fact, ungrammatical), and that (10.b) is a possible paraphrase of (10.a) (in the sense, "John and Mary are both married to someone"), but that (10.a) also has a sense ("John and Mary are married to one another") of which (10.b) is not a paraphrase. According to the position under scrutiny here, (8.a) is derived, by means of derived conjunction, from the structure underlying (8.b), (9.a) is derived by means of phrasal conjunction, and (10.a) is derived either by means of derived conjunction from the structure underlying (10.b) or by means of phrasal conjunction.

The capturing of paraphrase relations and the explication of ambiguities are, of course, standard aims of generatively-oriented analyses, and we consider the rather natural account of examples such as (8-10) provided by the Lakoff-Peters position to be the strongest argument in its favor. Lakoff and Peters themselves, however, have also argued for the need for phrasal conjunction on other grounds that we find less persuasive. (This particular argument, since it concerns only phrasal conjunction, might also be used in support of the position to be discussed in the next subsection.)

The argument has to do with sets of examples such as:

- (11) (a) Algernon is similar to Reginald.
 (b) Reginald is similar to Algernon.
 (c) Algernon and Reginald are similar.
 (d) *Algernon is similar and Reginald is similar.
 (e) Algernon and Reginald are similar to one another.
- (12) (a) Priscilla debated with Marmaduke.
 (b) Marmaduke debated with Priscilla.
 (c) Priscilla and Marmaduke debated.
 (d) *Priscilla debated and Marmaduke debated.
 (e) Priscilla and Marmaduke debated with one another.

As these examples show, there are certain adjectives, such as similar, and verbs, such as debate, which, when they are used transitively, express a relation (R) such that if xRy is true, then yRx is also true. Thus (11.a) entails (11.b) and (12.a) entails (12.b). Adjectives and verbs of this type may be called "symmetric predicates".

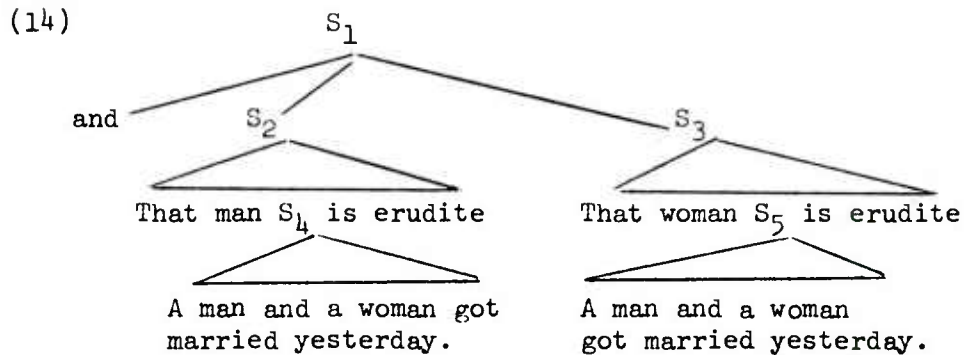
As Lakoff and Peters point out, symmetric predicates such as similar and debate may be used intransitively with conjoined subjects, as in (11.c) and (12.c). They point out, further, that the symmetry of the transitive uses of such predicates is paralleled by the reversability of the conjoined subjects in the intransitive uses of the predicates. (Thus Reginald and Algernon are similar is equivalent to (11.c), and Marmaduke and Priscilla debated is equivalent to (12.c).) They propose to capture this parallelism by deriving the transitive from the intransitive cases, by means of a "conjunct movement" transformation which moves one of the phrasally-conjoined subjects into object position.

While we agree with Lakoff and Peters that there is a relation among the members of sets such as (11.a-c) and (12.a-c), (and also agree with them that there is no relation between (11.c) and (11.d) or between (12.c) and (12.d)), we feel that a quite different account of the nature of the relations that obtain may be offered. We would propose (following Gleitman) that (11.c) is derived from (11.e), and (12.c) from (12.e) by means of an optional rule of reciprocal-pronoun deletion, and that (11.e) and (12.e) themselves are derived, by means of derived conjunction, from the deep-structure conjunction of the pairs of sentences (11.a-b) and (12.a-b) respectively. We shall attempt to defend this position in more detail in subsection B3, below.

However persuasive some of the arguments in support of the position that both phrasal and derived conjunction are required may be, the position seems to us to involve a number of very serious problems. One of these is the difficulty, given this position, of handling certain cases of relativization. Consider the sentences:

- (13) (a) That man and woman who got married yesterday
are both erudite.
(b) That man and woman who got married yesterday
are a Republican and a Democrat respectively.

Given the Lakoff-Peters position, the deep-structure subject of the relative clauses in these sentences (in the sense "who got married to one another yesterday") must be phrasally conjoined: i.e., something like a man and a woman. But the matrix sentences into which the relative clauses are embedded do not involve phrasal conjunction. Presumably, the deep structure of (13.a) would have to be something like:



Now if we had generated just the subtree S₂ (or the subtree S₃), as an independent sentence, we would certainly want to block the relativization of S₄ (or S₅). That is, we would not want to generate:

- (15) *That man who and a woman got married yesterday is erudite.

(Relativization is, in fact, blocked by what Ross (1967b) has called the "Conjunct Movement Constraint".) But in (14), once we have blocked relativization on the S₂ cycle, can we ever get to the S₁ cycle? (On the S₁ cycle, derived conjunction would convert S₂ and S₃ into That man and that woman S₄ are erudite, so that the conditions for relativization of S₄ would be met.) Can we, in other words, ever derive (13.a)?

It is usually assumed that if an obligatory transformation (such as relativization) is blocked on some cycle, internal boundaries fail to get erased, and the entire derivation is blocked. We might, alternatively, suggest that a failure to erase internal boundaries does not itself block a derivation, and that if, on some later cycle, the conditions for boundary-erasure are met, the boundaries are erased on this later cycle and the resultant sentence is well-formed. Thus we might permit a later cycle to operate upon a structure like:

- (16) #that man # a man and a woman got married yesterday # is erudite#

and if, on this later cycle, we generate:

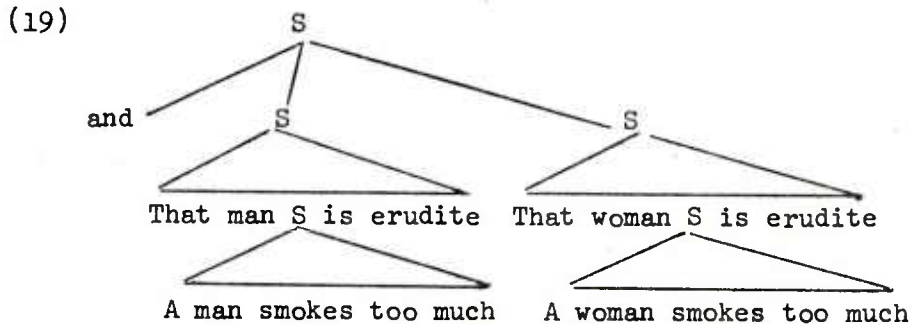
- (17) #that man and that woman # a man and a woman got married yesterday # are erudite#

we might permit relativization and boundary erasure to occur at this point.

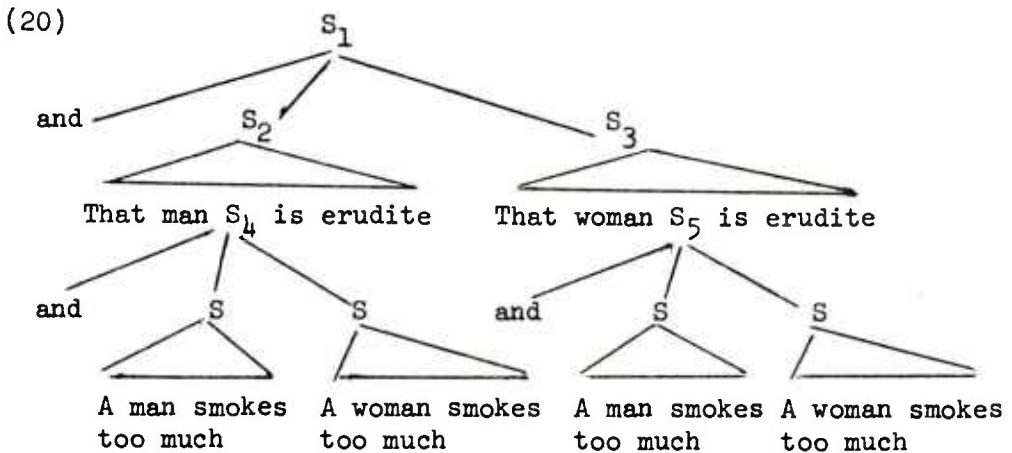
While such a change in the model, although curious, might be feasible, to allow it would seem to permit alternative deep structures for certain unambiguous sentences such as:

- (18) That man and woman who smoke too much are both erudite.

Presumably, if derived conjunction is permitted at all, the appropriate deep structure for (18) is something like:



However, the proposed change in the model would apparently permit a derivation of (18) not only from (19) but from (20) as well:



That is, after derived conjunction has applied on the S₄ cycle, S₂ would have a form similar to that of (16), i.e.:

- (21) #that man # a man and a woman smoke too much #
is erudite#

If relativization is blocked at the S_2 cycle (and the S_3 cycle) but derived conjunction is nonetheless permitted to apply at the S_1 cycle, we would eventually derive:

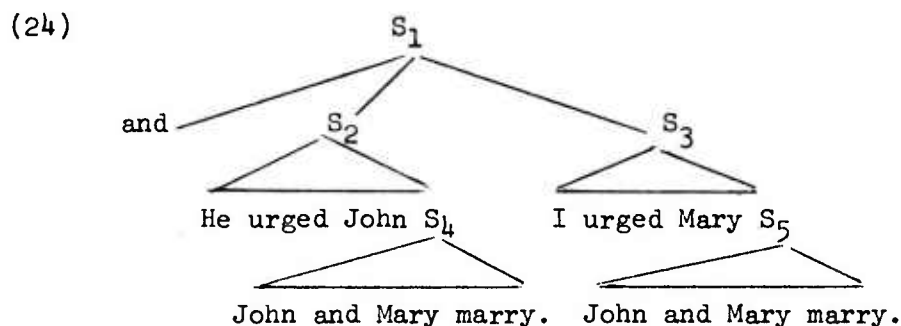
- (22) #that man and that woman # a man and a woman
smoke too much # are erudite#

and (22) would then be transformable into (18).

Similar problems arise in handling certain cases of equi-NP deletion: e.g.,

- (23) He and I urged John and Mary respectively
to marry (one another).

If the deep structure of (23) is something like:



then equi-NP deletion must be blocked at the S_2 and S_3 cycles, but permitted at the S_1 cycle, after derived conjunction has occurred. Again, this requires a curious change in the model, and apparently permits alternative deep structures for such unambiguous sentences as:

- (25) He and I urged John and Mary respectively
to go to New York and Chicago respectively.

A second, very different, objection to the position under discussion concerns the supposed ambiguities which the twofold mechanism predicts. It is not at all clear that there is an ambiguity in (1.b) (John and Bill left) comparable to that found in (10.a) (John and Mary married). It is true that there are two sentences:

- (26) (a) John and Bill left together.
(b) John and Bill left separately.

which cannot both apply to any one situation, and that either (but not both) of these may be used at any time when (1.b) is applicable. Further we might identify the senses of (26.a) and (26.b) with those ascribed to phrasal and derived conjunction respectively. While there are no clear arguments for such an identification, however, there is at least one argument against it. In case John and Mary are brother and sister (for example), the most natural interpretation of (27) is that, at a double wedding, they married different spouses:

(27) John and Mary were married together.

It is not clear that (27) can be interpreted as a partial paraphrase of the symmetric sense of (10.a), although it can easily be interpreted as a partial paraphrase of the non-symmetric sense of this sentence. Hence there seems to be evidence that together, contrary to Lakoff and Peters' suggestion, is not a marker of phrasal conjunction.

Furthermore it is possible to find just as much, or as little, ambiguity as there is in (1.b) in the conjoined sentences of:

(28) John left and Bill left.

That is, (28), like (1.b), is noncommittal as to whether or not John and Bill left together. (Admittedly, the most usual interpretation of (1.b) would be that John and Bill left together, while that of (28) would be that they did not. However, we would maintain that both interpretations are possible for both sentences, and that the usual interpretations alluded to are a matter of the preferred interpretation of surface structures. We return to this point in subsections B.2 and B.3, below.) And, as Dougherty (1967b) has pointed out, the dichotomy suggested by alternative sources for sentences such as (1.b) will not account for cases where separate acts are performed together, as in:

(29) Jack, Bill, and Harry all died together.

Now, if both is a mark of derived conjunction, can it account for:

(30) John and Bill both got in on one ticket.

The last arguments against the position that both phrasal and derived conjunction are required are rather general. There are arguments, which Dougherty develops in detail (see subsection 2, below), for treating plural NP's and conjoined NP's as in some way closely related. For example, the subjects of:

- (31) (a) The men are here.
 (b) Tom and Jack are here.

both select plural agreement in the verb. If there are two quite different sources for (31.b) the problem of relating both to plurals becomes just that much more difficult. Moreover, it seems that perhaps we cannot limit the relationship to plurals only to cases of phrasal conjunction, if there are acceptable sentences like (32):

- (32) Simon very quietly, and Peter with more haste
 and noise, leave the dormitory each morning
 at 5 a.m.

This sentence must have been derived from two deep structures and does not even exhibit superficial constituent conjunction. Yet there is plural agreement in the verb.

Finally, if it is possible to maintain with any consistency either of the other two positions, which claim that conjunction is really a single process, it seems that such a position should be preferred: either of them represents in effect a stronger claim than this one.

2. Only Phrasal Conjunction Basic

This position has been supported in detail only rather recently, and from several different points of view. Wierzbicka's arguments for the position are primarily logico-semantic. She points out, first, that conjoined noun phrases in subject position, like plurals, always constitute a single semantic unit (the "argument" on which a "predication" is made). Thus (1.b) (John and Bill left) does not contain two separate predications, one on John, the other on Bill, but, rather, a single predication. She claims, in addition, that (28) (John left and Bill left), the putative sentential source for (1.b), is a curious sentence, and in any case is not a perfect paraphrase of (1.b).

Wierzbicka suggests, further, that there are grounds for regarding the underlying argument in sentences such as (1.b) not as the conjuncts themselves but, rather, as a separately defined set equivalent to some plural NP. If we consider the sentences:

- (33) (a) The men and the women are all here.
 (b) The men and the tables are all here.

we note that while (33.a) is perfectly normal, (33.b) is rather peculiar. Wierzbicka would relate the normality of (33.a) (and of (1.b)) and the peculiarity of (33.b) to the fact that, while it is easy to find an NP--e.g., the people--which expresses a semantic common denominator between the men and the women (or between John and Bill), it is more difficult to find such an NP in the case of the men and the tables. If a common denominator is in fact required for surface conjunction of NP's in subject position, it seems reasonable, Wierzbicka suggests, to regard this common denominator itself, rather than the conjoined NP's, as the underlying subject or argument, and to say that, in the deep structure, the (phrasally) conjoined NP's occur in apposition to this underlying subject.

While we do not accept this last suggestion of Wierzbicka's regarding the deep structure of sentences such as (1.b) and (33.a), we do accept her general observation regarding the lack of a perfect paraphrase relationship between sentences with conjoined NP's and the conjoined sentences which, in our view, underlie them. We also accept her observation that constituent conjunction implies a semantic common denominator between the constituents. In fact, we would go further than Wierzbicka does, and assert that the implication of a semantic common denominator is by no means restricted to conjoined NP's. If we compare the following sentences with (33.a-b):

- (34) (a) I can sing and dance.
 (b) I can sing and analyze conjunction.

we find that (34.a), like (33.a), is quite normal, while (34.b), like (33.b), is peculiar, and in much the same way. Our account of the phenomena that Wierzbicka has brought to light is, however, different from hers. (For a presentation of this account, cf. subsection B.3, below.)

McCawley and Dougherty have both presented a number of syntactic arguments in favor of the position that only phrasal conjunction is required. Since Dougherty's exposition is the fuller one, incorporating all of McCawley's arguments and adding others, we shall direct our attention primarily to this exposition.

Dougherty points out, then, that conjoined NP's and plurals exhibit many similarities. Among these similarities are: distribution in relation to the quantifiers all, both, each and respective(ly) (examples (35-38) below); similar behavior with

respect to the following transformations: pronominalization (39), number agreement (40), reflexive pronominalization (41), and reciprocal pronominalization (42). Consider the pairs of sentences:

- (35) (a) Peter, John, and Harry all went home.
(b) The boys all went home.
- (36) (a) Sacheverell and Osbert both write books.
(b) The brothers both write books.
- (37) (a) The Republican and the Democrat each claimed a moral victory.
(b) The two politicians each claimed a moral victory.
- (38) (a) Sam and Saul kissed Sally and Susie respectively.
(b) The men kissed their respective wives.
- (39) (a) Tom and Bill went to New York, where they saw a movie.
(b) The men went to New York, where they saw a movie.
- (40) (a) Miss Jones and Miss Smith are schoolteachers.
(b) The women are schoolteachers.
- (41) (a) Dickie and Billie hurt themselves.
(b) The children hurt themselves.
- (42) (a) Dickie and Billie hurt each other.
(b) The children hurt each other.

If one assumes, with Dougherty, that plurals are not derived from, or closely related to, conjoined sentences, examples like the above constitute a prima facie argument against deriving conjoined NP's from conjoined sentences. The argument may be restated as follows: (a) plural NP's and conjoined NP's show highly similar syntactic behavior; (b) therefore, plural NP's and conjoined NP's must correspond to highly similar deep structures; (c) plural NP's are not derived from conjoined sentences; (d) therefore conjoined NP's are not derived from conjoined sentences. (We may note, in passing, that we entirely accept steps (a) and (b) of this argument, but question step (c), and therefore question the conclusion, (d).)

Another argument that Dougherty presents against permitting the derivation of conjoined NP's from conjoined sentences has to do with examples like the following:

- (43) (a) John paid for Mary and Bill paid for himself (\Leftarrow Bill).
 (b) *John and Bill paid for Mary and himself respectively.
 (c) *John and Bill paid for Mary and Bill respectively.

If sentence conjunction underlies respectively conjunction, how can we block the derivation of the ungrammatical (43.b) (or 43.c) from the grammatical (43.a)? (Dougherty and McCawley present several other minor arguments against permitting any derived conjunction of NP's. Since these arguments are more or less subsumed under the general argument concerning the relation between conjoined and plural NP's, we shall not go into them in detail.)

Having reached the conclusion that conjoined NP's are not derived from conjoined sentences, Dougherty goes on to propose that no conjunctions of full single constituents be derived from conjoined sentences. Instead, he suggests that all such conjunctions are phrasal in nature, and that the base includes schemata for generating conjunctions of all types of constituents that occur conjoined in surface forms. He proposes, further, that all quantifiers occur (in feature form) in the base, where they are associated with the constituents to which they pertain, whether these constituents are NP's, as in (35-38) or constituents of other types as in:

- (44) (a) John both sings and dances.
 (b) The husband and wife are tall and short respectively.

Dougherty does recognize the need for derived conjunction in the cases that have been called "secondary conjunction" (e.g., (1.d-e) and "gapping" (e.g., (1.g)): i.e., those cases in which the surface conjuncts are not full single constituents. Apart from such cases, however, he maintains that all conjunction is phrasal in nature.

To balance the arguments in favor of Dougherty's proposal, there are several arguments against it. Of these, the most powerful is the following: it is impossible that all conjunctions of full single surface constituents are phrasal if constituents appearing in different places in the deep structure can be conjoined, and there appear to be many such cases: e.g.,

- (45) (a) John went to the party and appeared to have a good time.
 (b) The message was ambiguous and was misunderstood by almost everyone.
 (c) He is popular and likely to succeed.
 (d) The article is coherent and easy to read.
 (e) He receives and distributes vast sums of money.

In the surface structure of (45.a), went to the party and appeared to have a good time is a set of conjoined PROP's (or VP's), but in the deep structure, appeared to have a good time is not even a constituent. (That is, we are assuming that John appeared to have a good time is derived transformationally from a deep structure more closely corresponding to It appeared that John had a good time (← *That John had a good time appeared).) Similarly the conjoined surface structure PROP's (or VP's) of (45.b), was ambiguous and was misunderstood by almost everyone, cannot be conjoined in the deep structure if the latter arises only by means of a passive transformation.

In examples (45.c) and (45.d) we find conjoined surface structure adjectivals: popular and likely to succeed and coherent and easy to read respectively. But these adjectivals cannot be conjoined in the deep structure if one assumes the usual transformational derivation of phrases like likely to succeed and easy to read. (That is, we are assuming that He is likely to succeed is derived from a deep structure more closely corresponding to That he will succeed is likely, and that The article is easy to read is derived from a deep structure more closely corresponding to To read the article is easy.)

Examples like (45.c) pose a similar problem for Dougherty's analysis if one assumes a case-grammar base. In such a base, receive would be marked as co-occurring with Neutral NP (vast sums of money in the example) and a Dative NP (presumably, he in the example) while distribute would be marked as co-occurring with a Neutral NP (again, vast sums of money) and an Agent NP (again, presumably he). But if receive and distribute is derived from a phrasally-conjoined V, it is impossible to assign a case to he, since a single NP cannot simultaneously be Dative and Agentive.

It is, of course, admitted by Dougherty that some kind of reduction of conjoined sentences will be necessary for instances of non-constituent conjunction. But to generate a sentence such as (45.c) from conjoined sentences, it would be necessary to extend the reduction mechanism to cover some cases of conjunction of (surface) constituents. Such a rule would have to operate after the second conjunct of (45.c) had become:

(46) He is likely to succeed.

But in that case (47.a) must provide one source for (47.b):

- (47) (a) He is popular and he is successful.
 (b) He is popular and successful.

Thus the distinction between constituent and non-constituent conjunction breaks down, and unwanted ambiguities are postulated.

Before concluding this counter-argument to Dougherty's proposal, we may note that some of the same quantifiers that occur with conjoined surface constituents in general occur with those conjoined surface constituents that apparently must occur in different places in deep structure. Thus there are sentences such as:

- (48) (a) He is both popular and likely to succeed.
 (b) John and his wife are easy to please and eager to please respectively.
 (c) John and Bill went to the party willingly and appeared reluctant to go respectively.

Such sentences provide counter-examples to Dougherty's suggestion that all quantifiers are associated in the deep-structure with those constituents with which they are associated in the surface structure. If popular and likely to succeed, as was argued above, cannot be a deep-structure constituent, then Dougherty's account of the quantifiers cannot be correct for sentences like (48.a).

Further difficulties for Dougherty's proposal about quantifiers are provided by sentences such as:

- (49) (a) John bought, and Mary sold, a house and a car respectively.
 (b) I gave both a nickel to the boy and a dime to the girl.

Since these sentences involve the conjunction of non-constituents, they must (and Dougherty would, presumably, agree) be derived from conjoined sentences. Yet the quantifiers that occur in them (respectively in (49.a), both in (49.b)) cannot have been constituents of these conjoined sentences, as is evidenced by the ungrammaticalness of:

- (50) (a) *John bought a house (respectively) and Mary sold a car respectively.
 (b) *Both I gave a nickel to the boy and I gave a dime to the girl.

Hence it must be the case that quantifiers may be introduced in the course of derived conjunction. But if this is so, then Dougherty's proposal about the introduction of quantifiers falls short of its stated, and worthy, goal of providing a uniform account of the quantifiers.

The above arguments--and in particular the first--force us to conclude that, however attractive the position that all constituent conjunction is phrasal may be, this position is untenable. As we have seen, there are cases of surface constituent conjunction that apparently cannot be traced to deep-structure phrasal conjunction. If this is so, then the arguments in favor of phrasal conjunction that have been offered by Wierzbicka, McCawley, and Dougherty can only be viewed as further arguments in support of the position that both phrasal and derived constituent conjunction are basic. But this latter position, as we saw in subsection B.1, above, is fraught with various difficulties. Since these difficulties can be avoided only if a uniform derivation can be provided for all constituent conjunction, and since the proposal that only phrasal conjunction is basic has been found to be inadequate, we must conclude that, unless insuperable objections can be found to the third logically possible position--namely, that only derived conjunction is basic--it is this position that must be adopted.

3. Only Derived Conjunction Basic

Gleitman was the first to develop this position in detail, providing the main arguments and pointing to a small residue of cases difficult or impossible to handle. In adopting this position, we find that, although we are able to account for somewhat more of the data than was Gleitman, some of the difficult cases still resist analysis. However, we do not regard any as posing a threat to this position as serious as those posed for the alternative positions by the arguments we have presented above. We feel, and hope to demonstrate in Section III, that adopting the position that essentially all non-sentence conjunction is derived from sentence conjunction permits us to give a coherent account of the phenomena in question, emphasizing their underlying unity. Further, we believe that we can handle most of the problems that have been raised by proponents of one of the other two positions.

First, there are the arguments of those who favor two methods of derivation. These, as we have seen, center largely around the derivation of symmetric predicates. To begin with, we may note our agreement with Langendoen that some of the predicates that show the

syntactic behavior attributed to symmetric predicates are not, in fact, logically symmetric. That is, in our opinion, (51.a) \neq (51.b) (and neither (51.a) nor (51.b) = (51.c)).

- (51) (a) Johnson agreed with Kosygin.
 (b) Kosygin agreed with Johnson.
 (c) Johnson and Kosygin agreed.

If this is so, then the claim that sentences like (51.a-b) are derived from sentences like (51.c) loses much of its force. That is, if meaning is not always preserved under the proposed "conjunct-movement" transformation (a transformation which is, in any case, suspect in that it represents a unique case of movement of material out of a conjoined structure), it can hardly be claimed that the preservation of meaning in some cases (e.g., (11.a-c)) proves the validity of the proposed derivation. (Since we, in general, take the view that transformations may affect meaning in certain limited ways--i.e., that there are certain rules of surface-structure interpretation--we could not argue that the semantic non-equivalence of (51.a-c) itself proves that these sentences do not have a common deep structure.)

In our view, the fact that certain predicates which are not logically symmetric show syntactic properties similar to those of predicates which are logically symmetric indicates that it cannot be the inherent symmetry of the latter that underlies their syntactic behavior. While we do feel that symmetric predicates like similar and quasi-symmetric predicates like agree belong to a single syntactic class, we would claim that this class is defined not by "symmetry" but, rather, by susceptibility to a reciprocal-pronoun-deletion transformation. Thus we would propose derivations like the following:

- (52) Johnson agreed with Kosygin and Kosygin agreed with Johnson.

⇒ (by derived conjunction, etc.)

Johnson and Kosygin agreed with Kosygin and Johnson respectively.

⇒ (by reciprocal pronominalization)

Johnson and Kosygin agreed with one another.

⇒ (by reciprocal-pronoun deletion)

Johnson and Kosygin agreed.

We feel that the derivation (52), which is essentially Gleitman's, accounts for the "symmetrical" character of (51.c) (which is, we would maintain, not present in (51.a) or (51.b)) in a quite natural way. A similar derivation may be proposed for other sentences involving symmetric and quasi-symmetric predicates: e.g.,

- (53) (a) John and Mary got married (to one another).
- (b) Priscilla and Marmaduke debated (with one another).
- (c) Wilshire Blvd. and Sunset Blvd. are parallel (to one another).
- (d) Phrasal and derived conjunction are not distinct (from one another).

Reciprocal-pronoun deletion also seems to provide a viable account of certain occurrences of together in sentences involving conjoined noun phrases: e.g.,

- (54) (a) John and Bill left together (with one another).
- (b) Katz and Postal wrote the book together (with one another).
- (c) John and Bill together (with one another) own 15 horses.

It may also be involved in examples like the following:

- (55) (a) Goneril and Regan departed at the same time (as one another).
- (b) Hans and Fritz got in (with one another) on one ticket.

There is a residue of recalcitrant cases. For example:

- (56) (a) Beelzebub and Jezebel are a delightful couple.
- (b) Heifetz, Rubenstein, and Casals are an outstanding trio.
- (c) Tom, Dick, and Harry are three of my best friends.

While we can account for the great majority of conjoined NP's that receive a "joint" (or "phrasal") interpretation on the basis of underlying conjoined sentences of the type that, after derived conjunction, etc., are subject to reciprocal pronominalization and reciprocal-pronoun deletion, there appear to be no such underlying sentences in the case of (56):

- (57) (a) *Beelzebub is a delightful couple (together) with Jezebel and Jezebel is a delightful couple (together) with Beelzebub.

- (b) *Heifetz is an outstanding trio (together) with Rubenstein and Casals, and Rubenstein is...
- (c) *Tom is three of my best friends (together) with Dick and Harry, and Harry is...

Although it might be possible to argue that the ungrammatical (57.a-c) do in fact underlie the grammatical (56.a-c) respectively-- i.e., that items like couple, trio, and the cardinal numbers are marked as insertable, in certain cases, only into conjoined sentences which then obligatorily undergo derived conjunction, etc., we do not feel that such a solution, which is, essentially, the one proposed by Bellert, is very attractive. Semantically, a more plausible source for (56.c) might be:

- (58) Tom is one of my best friends and Dick is one of my best friends and Harry is one of my best friends.

To derive (56.c) from (58) would require that the linguistic model include a component that can perform certain arithmetic operations. (As Gleitman has observed, such a component would seem to have little to do with the grammar proper.) Given this component, it might be possible to say that such NP's as a couple and a trio may represent obligatory reductions from two (members) of a couple and three (members) of a trio respectively. That is, the derivation of (56.a) might be something like:

- (59) Beelzebub is one (member) of a delightful couple and Jezebel is one (member) of a delightful couple.

⇒ *Beelzebub and Jezebel are two (members) of a delightful couple.

⇒ Beelzebub and Jezebel are a delightful couple.

In any case, once the general problem of the behavior of numbers is solved, it seems that it should not be difficult to account for such items as couple and trio. (It may be pointed out that numbers and items like couple and trio constitute something of a problem-- though a lesser one--for the "only-phrasal-conjunction-required" approach as well, at least if we wish to differentiate (56.a-c) from:

- (60) (a) ?Beelzebub, Jezebel, and Baal are a delightful couple.
- (b) ?Heifetz and Rubenstein are an outstanding trio.
- (c) ?Tom, Dick, Harry, and Oscar are three of my best friends.)

To turn now to the arguments that have been raised by advocates of the position that only phrasal conjunction is required, we agree with Wierzbicka's observation that there is not a perfect paraphrase relation between sentences with conjoined NP's and sentences in which these NP's occur in separate conjoined sub-sentences. As was noted earlier, we would, in fact, extend Wierzbicka's observation to cover the lack of a perfect paraphrase between sentences with conjoined constituents of any type and their presumed (in our opinion, correctly presumed) conjoined-sentence sources. We would attribute such phenomena, however, to rules of surface-structure interpretation which are related to performance factors having to do with the circumstances under which a speaker chooses to make use of derived conjunction--or, for that matter, of sentence conjunction. That is, we would say that speakers choose to conjoin constituents, whether sentences or constituents of other types, only when they wish to express some relation between these constituents. (The relation may be one of similarity, contrast, simultaneity, succession, etc.) Thus, just as (33.b) (The men and the tables are here) and (34.b) (I can sing and analyze conjunction) are rather anomalous, so also is:

- (61) John is eager to please and flying planes can be dangerous.

We would attribute such anomalies to the existence of a rule of surface-structure interpretation which tells us, roughly, "If constituents are conjoined, they necessarily have a semantic relation," and to our inability to discover the nature of the relation in such cases.

As for the difference in interpretation, and in acceptability, between (1.b) (John and Bill left) and (28) (John left and Bill left), we would attribute this to the interaction between the above rule of surface-structure interpretation and its converse: "If constituents (that are conjoinable) are not conjoined, they do not necessarily have a semantic relation." Sentence (1.b) tells us, in effect, that there is a semantic relation between John and Bill; sentence (28), on the other hand, tells us that, while there is a semantic relation between John left and Bill left, there may not be a semantic relation between John and Bill. But, since we know that there can be a semantic relation between John and Bill, and since it is rather hard to imagine what the relation between John left and Bill left may be if we are not choosing to assert the semantic relation between John and Bill, we find sentence (28) somewhat puzzling.

Turning to the arguments of Dougherty and McCawley, we would say, first, that we accept absolutely their demonstration of the similarities between conjoined NP's and plurals, and the inference that they draw from this similarity to the effect that conjoined NP's and plurals must correspond to highly similar deep structures. However, we see no problem in principle in deriving virtually all plurals from conjunction (as was suggested by Postal at the 1967 San Diego Conference on English Syntax). It would seem that, if there is to be any derived conjunction at all, the "collapsing" of a set of formally identical but referentially distinct singular NP's into a single plural NP must somehow be provided for. Consider the sentences:

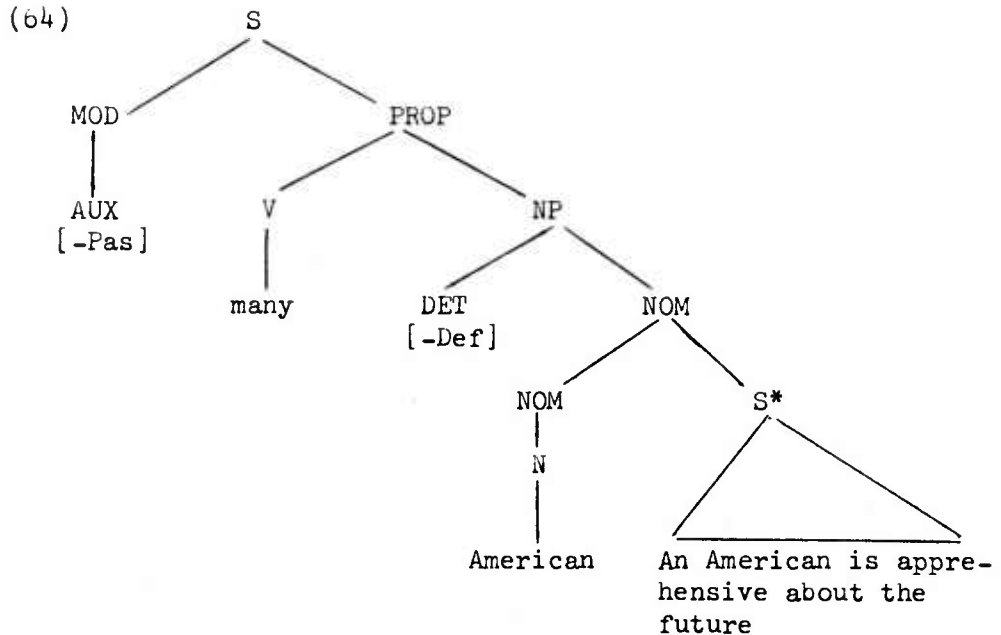
- (62) (a) My wife visited her mother yesterday and I visited my mother yesterday.
 (b) My wife and I visited our (respective) mothers yesterday.
 (c) My wife visited her mother yesterday and I called my mother yesterday.
 (d) My wife visited, and I called, our (respective) mothers yesterday.

The derivation of (62.d) (if it is fully grammatical) from the structure underlying (62.c) is particularly interesting, since (62.d) represents a case of secondary (i.e., at least partially non-constituent) conjunction, and hence could not be derived by means of phrasal conjunction.

While the derivation of all plurals (except items such as scissors, trousers, etc.) by means of derived conjunction seems attractive in principle, there are certain practical problems with such a derivation that have led us not to attempt to incorporate this derivation of plurals into the present grammar. Consider the sentences:

- (63) (a) Many Americans are apprehensive about the future.
 (b) Approximately one hundred oysters will be eaten.
 (c) Infinitely many points can be considered to lie between any two points on a line.
 (d) Over ten thousand demonstrators assembled.

One possible account of such sentences might be to say that the quantifiers and numerical expressions included in them (many, approximately one hundred, etc.) are themselves predicates in the deep structure and are incorporated into the NP's of which they are surface-structure constituents as the result of transformations. Thus the deep structure underlying (63.a) might be something like:



(where S* = any number of identical conjoined Ss)

This would be transformed into:

(65) ?Americans who are apprehensive about the future
are many.

which would, in turn, be transformed into (63.a).

An underlying structure like (64), while rather "deep", is by no means unusually so by contemporary standards. Implementing the proposed derivation of (63.a) would, however, no doubt involve many problems that have not thus far been investigated, and for this reason we have, in the grammar as a whole, taken a conservative view of the deep structure of quantifiers, and consequently of plurals. We do believe, however, that something like the derivation of quantifiers and plurals just sketched may be valid, and that such a derivation could provide the kind of uniform account of conjoined and plural NP's which Dougherty and McCawley properly require, without introducing the difficulties involved in their particular approach.

Other problems raised by Dougherty and/or McCawley seem to us less serious. For example, while it is probably true that

(43.b) (*John and Bill paid for Mary and himself respectively) is ungrammatical, there is no general constraint on the conjunction of reflexive pronouns and NP's of other types. Thus the following are fully grammatical:

- (66) (a) John paid for both himself and Mary.
 (b) John will pay for either himself or Mary.

It would seem that, just as the phrasal-conjunction approach must somehow block the generation of respectively with two conjoined NP's only one of which is a candidate for reflexivization, so must the derived-conjunction approach block the reduction of two conjoined sentences with corresponding reflexive and non-reflexive NP's when such reduction would require the insertion of respectively with these NP's.

In summary, then, while we admit that there are still certain unsolved problems that must be faced by anyone advocating the position that only derived conjunction is required, we feel that the problems themselves are less serious than those that must be faced by advocates of the other positions we have discussed, and that the prospects for solving the problems that do exist are brighter than they are in the other cases. For this reason, we have decided to exclude phrasal conjunction from the grammar.

C. Types of Derived Conjunction

Two lines of argument have been followed by those who favor making a basic distinction between primary and secondary derived conjunction. (For definitions, cf. Section A, above.) The first line of argument has to do with the relative acceptability, or normality, of the structures. The second has to do with the relative systematicness of the derivational processes involved. Both lines of argument were suggested originally by Chomsky. The first has been pursued to some extent by Gleitman; the second has been considerably elaborated by Schane.

In initiating the first line of argument, Chomsky notes that sentences in which the conjuncts are not constituents--e.g., (1.d-e) or:

- (67) Nick watered, and Sue weeded, the garden

--are, in general, marked by special phonological features, such as an extra-long pause (in (67), between weeded and the), contrastive stress and intonation, and failure to reduce vowels and drop

consonants even in rapid speech. He suggests that such features may indicate that sentences of this type, as opposed to sentences in which the conjuncts are constituents, are "semi-grammatical", or require the development of a theory of "degrees of grammaticality".

Gleitman (1965) accepts this suggestion, observing that some sentences which involve the conjunction of non-constituents (e.g., (68)) are uniformly accepted by native speakers, others (e.g., (69)) are judged to be awkward but acceptable, while still others (e.g., (70)) are rejected.

- (68) (a) I gave the boy a nickel and the girl a dime.
 (b) The Soviets rely on military and on political indications of our intentions.
 (c) He took John home and Mary to the station.
 (d) The conjunction of an imperative and an interrogative sentence is excluded.

(69) The man saw and the woman heard the shot fired.

(70) ?I want to know why John and when Mary are (is?) coming.

Because of the apparent unpredictability (at least in the absence of more data) of informant responses to sentences which involve non-constituent conjunction, Gleitman chooses not to attempt to provide any general account of their derivation, and concentrates instead on the conjunction of constituents, with regard to which, in general, such problems do not arise.

The second line of argument for distinguishing primary from secondary conjunction stems from Chomsky's observation that, while conjunctions of constituents ("of the same type") occurring in otherwise identical sentences are generally grammatical, at least some conjunctions of non-constituents occurring in such sentences are clearly ungrammatical. Thus (71.b), which involves the conjunction of two prepositional phrases occurring in identical contexts in (71.a), is grammatical, while (72.b), which involves the conjunction of two non-constituent strings occurring in identical contexts in (72.a), is not.

- (71) (a) The scene of the movie was in Chicago and the scene of the play was in Chicago.
 (b) The scene of the movie and of the play was in Chicago.

- (72) (a) The liner sailed down the river and the
tugboat chugged up the river.
(b) *The liner sailed down the and tugboat
chugged up the river.

Such evidence points to a conclusion that, while constituent conjunction is systematic, non-constituent conjunction is idiosyncratic, in some cases (e.g., (67), (68)) resulting in grammatical--or at least "semi-grammatical"--sentences, in others (e.g., (72)) resulting in ungrammatical strings.

Schane, however, observes that some types of constituent conjunction also appear to be idiosyncratic. Thus, although men and woman in (73.a) are constituents of the same type occurring in otherwise apparently identical conjoined sentences, their conjunction is, in fact, impermissible, as is evidenced by the ungrammaticalness of (73.b).

- (73) (a) The men are here and the woman is here.
(b) *The men and woman are here.

On the other hand, the following is clearly well-formed:

- (74) The men and women are here.

Similarly, while (75.b) can be derived from (75.a), (76.b) cannot be derived from (76.a):

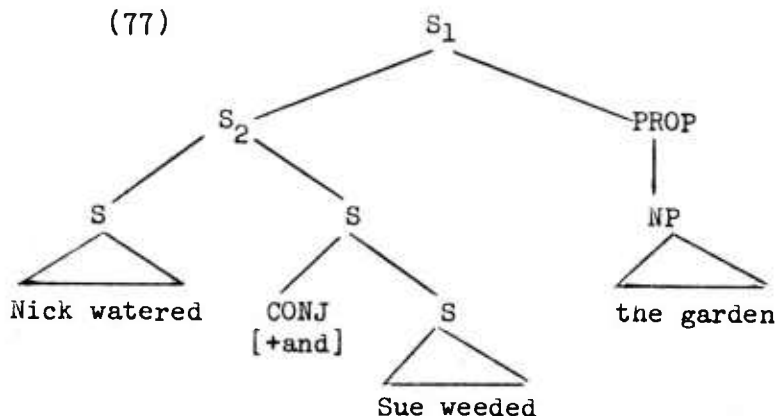
- (75) (a) I bought these pictures and (then) I
bought those pictures.
(b) I bought these and (then) those pictures.
(76) (a) I bought a picture and (then) I bought
another picture.
(b) *I bought a and (then) another picture.

On the basis of such observations, Schane concludes that it is not only the conjunction of non-constituents that is idiosyncratic but also that of constituents of certain specifiable types. Specifically, he concludes that only the conjunction of constituents that correspond to major categories that are not also lexical categories is fully systematic, and that all other conjunction is idiosyncratic. ("A category that appears on the left in a lexical rule we shall call a lexical category; a lexical category or a category that dominates a string ...X... where X is a lexical category, we shall call a major category." Chomsky, (1965), p. 74.)

This conclusion prompts Schane to propose a distinction between primary and secondary conjunction that is rather different from the one presented in Section A. For Schane, primary conjunction is the conjunction of just those constituents that correspond to major categories that are not also lexical categories (e.g., NP), while secondary conjunction is the conjunction either of non-constituents or of constituents that correspond to lexical categories (e.g., N as in (74)) or to non-major categories (e.g., DET, as in (75.b)).

To provide for primary conjunction Schane proposes a schema which operates to replace two (or more) conjoined sentences with a single sentence that includes two (or more) conjoined constituents of the appropriate type. To provide for secondary conjunction, he proposes a set of deletion rules which operate either upon conjoined sentences or upon certain specified products of the primary-conjunction schema.

With regard to the first line of argument that has been used to support a basic distinction between primary (constituent) and secondary (non-constituent) conjunction--i.e., the argument to the effect that the latter are "semi-grammatical"--we would say, first, that in those cases where sentences involving non-constituent conjunction show the special phonological characteristics noted by Chomsky, these characteristics are entirely predictable on the basis of the derived structure. For example, we believe that the derived structure of (67) is something like:



It is, we would claim, the occurrence of the constituent break between S_2 and PROP that accounts for the special phonological characteristics of (67): i.e., we would say that whenever there is a constituent break between an S and some constituent other than S, such characteristics may be predicted. (It may be noted, in

this connection, that those cases of non-constituent conjunction, such as (68.a), which do not, in our analysis, have a derived structure in which there is a constituent break between an S and some constituent other than S, do not show the phonological characteristics in question.)

As for the differences in acceptability between, say, (68.a) and (70), these, in our opinion, have to do with such performance factors as conformity with, or violation of, rules of surface-structure interpretation such as those suggested in Section B.3, above. Thus, in the case of (70), it is hard to find any semantic relation between the conjuncts why John and when Mary.

With regard to the second line of argument, we would argue, first, that the grammar has much to gain in generality if we allow a single conjunction schema to operate not only on major non-lexical constituents but also, in appropriate cases, on non-major constituents, lexical constituents, and non-constituents. Further, we feel that many of the cases of impermissible conjunctions cited by Schane can be explained on a principled basis without recourse to the kind of fundamental distinction he proposes. For example, in our opinion the ungrammaticalness of (73.b) stems not from any idiosyncrasy in the conjunction-potential of nouns, but, rather, from the fact that the two occurrences of the in (73.a) are only superficially identical, and hence cannot be treated by the conjunction schema as repetitions of the same item. Specifically, we would say that the the that precedes men has the feature [+Plural/Mass] while the the that precedes women has the feature [-Plural/Mass]. Thus, just as the [+Plural/Mass] and [-Plural/Mass] indefinite articles some and a must be treated as distinct items in derived conjunction, so must the [+Plural/Mass] and [-Plural/Mass] definite articles, although the latter happen to have identical forms. The parallelism between the indefinite and the definite articles is attested to by examples such as the following:

- (78) (a) We bought some beans and spinach.
 (b) We bought the beans and spinach.
 (c) *We bought some beans and carrot.
 (d) *We bought the beans and carrot.
 (e) *We bought some spinach and carrot.
 (f) *We bought the spinach and carrot.

Similarly, we feel that the ungrammaticalness of (76.b) stems from a general condition on the non-conjoinability of unstressed articles (similar to the condition on the non-conjoinability of inflectional affixes). Note that, if the unstressed article a in

(76.a) is replaced by its stressed counterpart one, the sentence becomes much more acceptable:

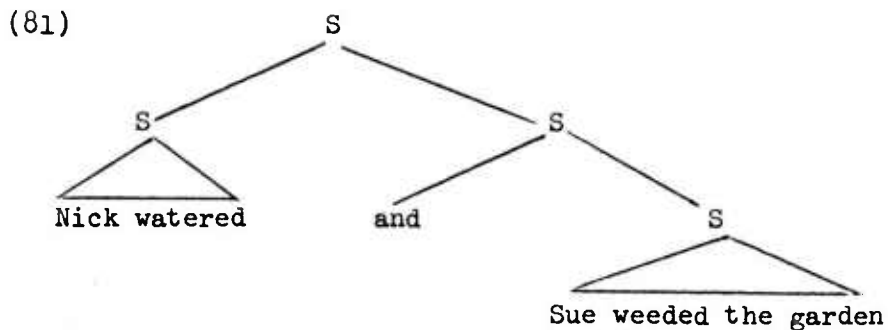
(79) I bought (first) one and then another picture.

While, then, it is likely that there are still some genuine idiosyncracies to be accounted for, we feel that such idiosyncracies as do remain hardly constitute a basis for making the kind of basic distinction between two different derivational processes that Schane has proposed.

As for Schane's specific proposal that all cases of secondary conjunction be derived by means of deletion rules, two strong counter-arguments can be offered. In the first place, to treat all conjunctions of non-constituents as arising from the simple deletion of elements of underlying conjoined constituents results, in many cases, in an incorrect derived structure which cannot account for the intonational characteristics of the sentences in question. Thus if (67) (Nick watered, and Sue weeded, the garden.) is generated simply by deleting the first occurrence of the garden from:

(80) Nick watered the garden and Sue weeded the garden.

it has the derived structure:



But, as we have seen, it is a derived structure like (77) that is needed to account for the intonational facts.

The second counter-argument against dealing with cases of non-constituent conjunction by means of deletion transformations is that such a derivation provides no account of the occurrence of certain quantifiers in these constructions. Thus if (49.b) (I gave both a nickel to the boy and a dime to the girl) is derived by deletion of the second occurrence of I gave from (82):

- (82) I gave a nickel to the boy and I gave a dime to the girl.

where does the both in (49.b) come from? These difficulties are compounded if one tries to account (as seems desirable) for non-constituent conjunction that involves respectively in a way consistent with non-constituent conjunction of other types. Thus sentences like (49.a) (John bought, and Mary sold, a house and a car respectively) clearly can not be derived by means of deletion transformations.

But in fact respectively conjunction has, in general, not been assumed to reflect the same derivational processes as derived conjunction of other types. More accurately, perhaps, respectively conjunction has been largely ignored by generative grammarians, who have preferred to concentrate instead on cases of derived conjunction which necessarily involve partial identity of the underlying sentences. We feel that the (sometimes implicit) assumption that respectively conjunction is unrelated to derived conjunction of other types is unwarranted, and that it is possible to develop a derived-conjunction schema which generates conjunctions that involve respectively and those that do not in a unified way, and which, incidentally, accounts in a straightforward manner for the paraphrase relations that sometimes obtain between cases of respectively and non-respectively conjunction: e.g.,

- (83) (a) John likes meat and loathes fish.
 (b) John likes and loathes meat and fish respectively.

The derived-conjunction schema that we shall propose underlies, we would claim, all sentences involving the conjunction of strings which are not themselves full sentences except for a certain limited set of cases where, in our opinion, the non-initial conjuncts do represent products of deletion transformations. One such case is constructions involving "gapping", such as (1.g) or:

- (84) John wants to see the house, and Bill, the car.

Another is sentences involving PROP-deletion, such as:

- (85) John has gone swimming, and Bill has too.

Unlike gapping, PROP-deletion is not restricted to conjoined structures: cf.

- (86) If John has gone swimming, then Bill has too.

III. DERIVED CONJUNCTION

The basic view adopted here is that all derived conjunction represents a kind of fusion of constituents of conjoined sentences. This fusion may occur whether or not there is identity between parts of the conjoined sentences. Thus constituents of the structures underlying each of the following sentences may undergo fusion:

(87) John sang and Mary sang.

(88) John sang and Mary danced.

In the case of (87), the ultimate result may be:

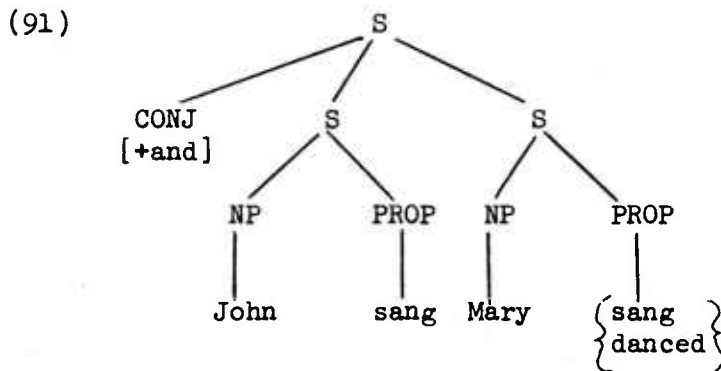
(89) Both John and Mary sang.

(It may also be John and Mary both sang, John and Mary each sang, or John and Mary sang.) In the case of (88), it may be:

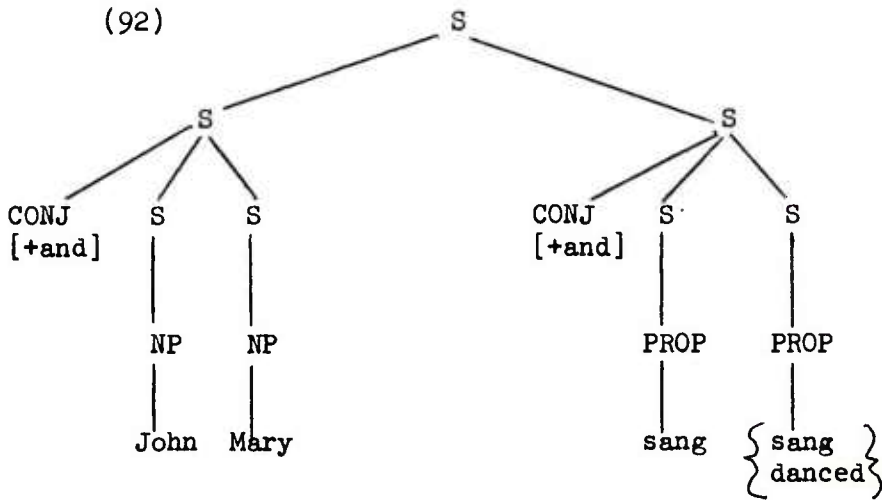
(90) John and Mary sang and danced respectively.

(It may also be John and Mary respectively sang and danced.)

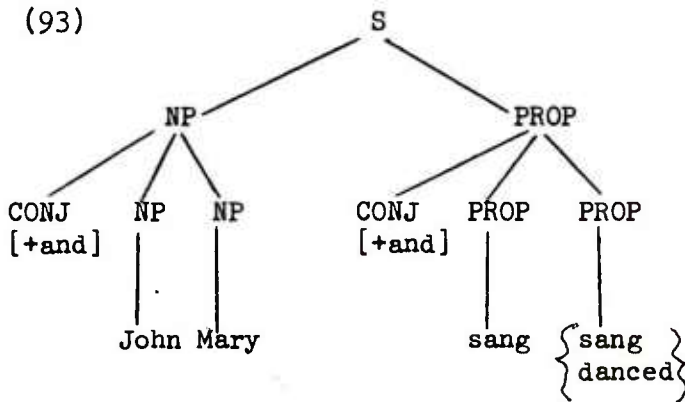
There are a number of rules and rule schemata involved in the derivation of (89) from (87) and (90) from (88), and not all of these rules and schemata apply in both cases. However, there are two fundamental schemata, the Derived Conjunction schema and the Node Relabeling schema, that do apply to both (87) and (88). Let us assume that the structure of (87) and (88) before the application of the Derived Conjunction schema is, roughly:



(For an explanation of the position of the conjunction in the above structure, cf. Note d, Base Rule 1.) The Derived Conjunction schema optionally changes (91) to:



Then the Node Relabeling schema obligatorily changes (92) to:

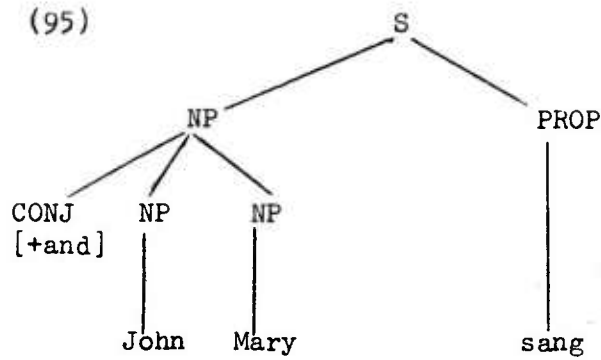


(In some cases, the Node Relabeling schema is inapplicable to one of the sets of conjoined S's that result from application of the Derived Conjunction schema. For example, in the derivation of:

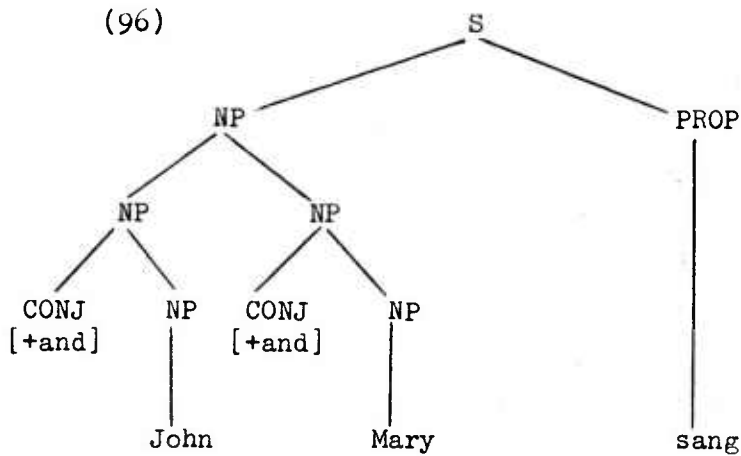
(94) John bought, and Mary sold, a house and a car respectively.

the Node Relabeling schema does not apply to John bought/Mary sold, which remains labeled as a set of conjoined S's in the surface structure, although it does apply to a house/a car, which is not labeled as an S in the surface structure.)

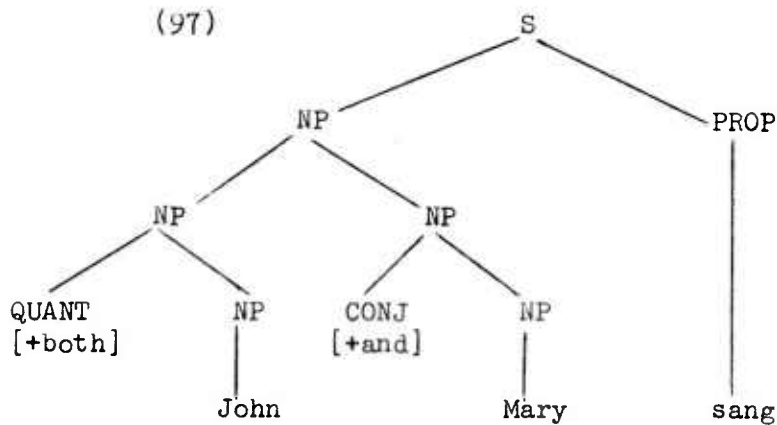
When the second of the conjoined PROP's of (93) dominates sang, the Identical-Conjunct Collapsing schema obligatorily applies, resulting in:



To this the Conjunction Spreading schema obligatorily applies, resulting in:

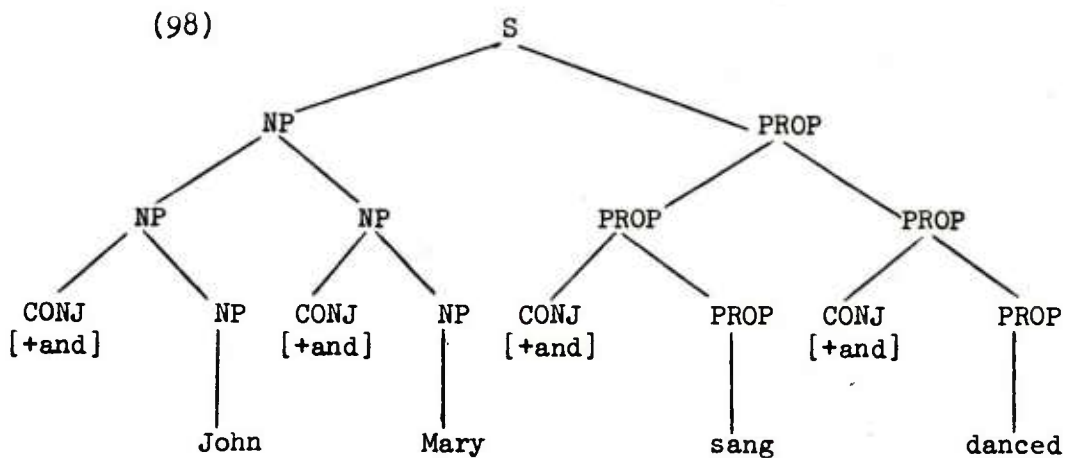


Finally, through application of the optional Both Insertion schema, we derive:

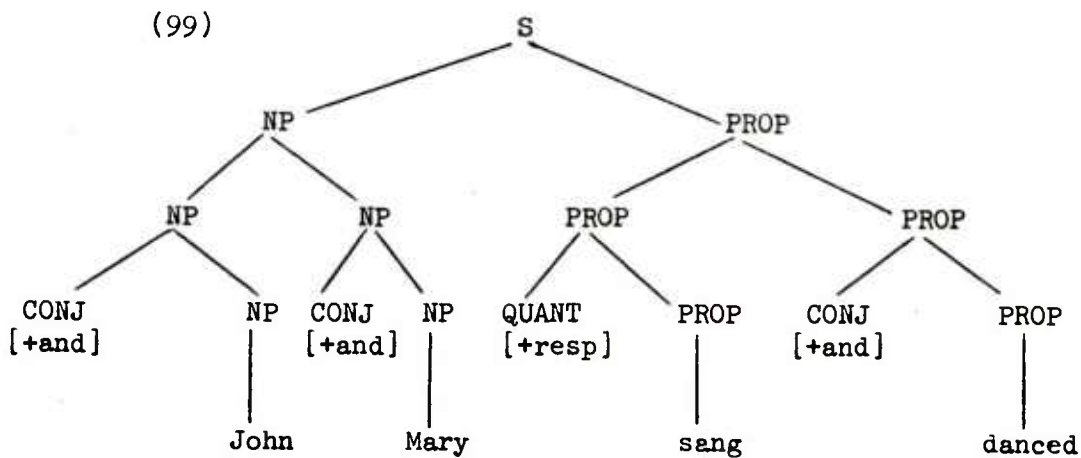


which is the structure that immediately underlies (89). (To derive John and Mary both sang, the Quantifier Movement rule would be applied to (97). To derive John and Mary each sang, the Each Insertion schema and Quantifier Movement rule would be applied to (96). If neither the Both Insertion nor the Each Insertion rule is applied to (96), the Initial-Conjunction Deletion rule applies, resulting in John and Mary sang.)

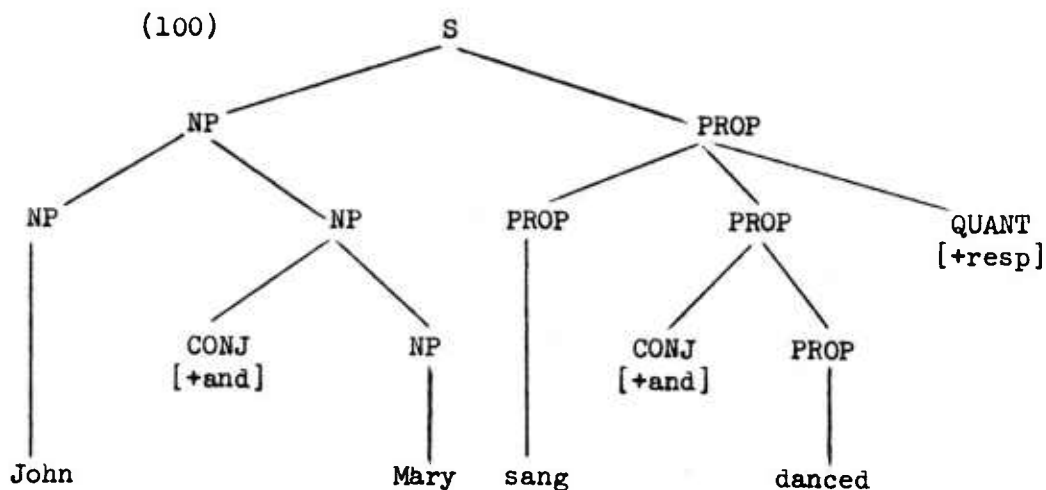
When the second of the conjoined PROP's of (93) dominates danced, the Identical-Conjunct Collapsing schema fails to apply, but the Conjunction Spreading schema obligatorily applies, the result being:



To this the Respectively Insertion schema applies, one of the two possible results being:



(In the second possible result of the application to (98) of the Respectively Insertion schema, the initial and of the NP, rather than that of the PROP, is replaced by respectively. In this case, the resultant sentence is John and Mary respectively sang and danced, rather than (90).) Finally, after application of the Quantifier Movement rule and the Initial-Conjunction Deletion rule, we have:



which is the structure that immediately underlies (90).

Most of the rules and rule schemata relevant to derived conjunction when the underlying conjunction is and have already been mentioned. A more-or-less complete set of the relevant rules and schemata, arranged in order of application, is:

- A. Derived Conjunction
- B. Node Relabeling
- C. Identical-Conjunct Collapsing
- D. Set Marking
- E. Conjunction Spreading
- F. Respectively Insertion
- G. Plural Collapsing
- H. Respectively → Respective and Respectively Deletion
- I. Both Insertion
- J. Either Insertion
- K. All Insertion
- L. Each Insertion
- M. Quantifier Movement
- N. Initial Conjunction Deletion
- O. Medial Conjunction Deletion

A brief account of the effect of those rules and schemata whose functioning has not been previously illustrated may be helpful. The Set Marking rule, then, ultimately accounts for the plural marking of the verb in a sentence such as

(101) Both John and Mary sing.

The Respectively → Respective rule operates upon certain products of the Respectively Insertion schema to derive such sentences as:

(102) John and Bill kissed their respective wives.

The Respectively Deletion rule also operates upon certain products of the Respectively Insertion schema to derive such sentences as:

(103) John and Bill occupy seats at the Captain's table. (Cf. the ungrammatical (104) and the grammatical (105):

(104) *John and Bill respectively occupy seats at the Captain's table.

(105) John and Bill respectively occupy those seats at the Captain's table.

The Plural Collapsing rule accounts for such cases as the derivation of:

(106) John and Bill bought houses.

(107) John bought { a house } and Bill bought { a house. }
 { houses } { houses. }

The All Insertion schema (together with the Quantifier Movement rule) is responsible for the all in such sentences as:

(108) John and Mary and Susan all sang.

Finally, the Medial-Conjunction Deletion schema operates, for example, upon (108) to derive:

(109) John, Mary, and Susan all sang.

The rules and schemata listed above are those that may apply when the conjunction in the underlying structure is and. When the conjunction is but or or, only a subset of these rules and schemata

may apply. In the case of but, the subset consists of A through D and N. In the case of or, the applicable rules and schemata are A through D, N, O, and, additionally, the Either Insertion rule (J), which is applied in the derivation of sentences such as:

(110) She suspected either Harry or Bob.

(111) Either John or Mary sang.

(The Either Insertion schema is quite similar to the Both Insertion schema and it would be possible to combine the two into a single schema, although this has not been done in the present treatment.)

A detailed presentation of the various rules and schemata mentioned above follows.

A. The Derived Conjunction Schema (optional)

Gleitman, Schane, and others who have worked on constructions involving primary derived conjunction (i.e., derived conjunction in which all of the conjuncts are whole single constituents) have noted that the device by means of which constructions of this type are generated must provide for a certain type of structure building. Specifically, the device must provide for the insertion, over a set of conjoined single constituents, of a node of the same type as the individual members of the set. Thus, in the course of the derivation of:

(112) John and Mary sang.

from:

(113) John sang and Mary sang.

an NP node must be inserted over John and Mary. Such an insertion is required not only on intuitive grounds--i.e., John and Mary is, intuitively, the subject NP of (112), just as John and Mary are, intuitively, subject NP's in (113) but also on syntactic grounds. For example, John and Mary must be treated as a (plural) NP in the pronominalization rules that derive:

(114) John and Mary sang, and they danced too.

from:

- (115) John and Mary sang, and John and Mary danced too.

Since the device that generates sentences like (112) must provide for structure building of the type just discussed, it seems clear that this device must have power beyond that of the usual set of elementary transformations. Suggestions about what this device may have been made by Schane, who has proposed a special schema for derived conjunction, and by Ross, who has proposed handling derived conjunction by adding "node raising" (Chomsky adjunction) and certain special pruning and relabeling conventions to the usual set of elementary transformations. (The approach that we take here has features in common with both Schane's proposal and Ross's.)

While a number of scholars have recognized the need for some fairly powerful device for generating primary derived conjunction, most scholars who have considered secondary derived conjunction (i.e., derived conjunction in which not all of the conjuncts are whole single constituents) have assumed that there is no need for such a powerful device in this case. Gleitman, and Schane, for example, have suggested that a simple deletion transformation may suffice to derive a sentence such as:

- (116) John bought, and Mary sold, a house.

from:

- (117) John bought a house, and Mary sold a house.

As was pointed out above, however, (cf. II.C), a treatment of constructions involving secondary conjunction as products of simple deletion transformations is deficient in two important respects: (a) failure to generate derived structures that correctly predict intonation; and (b) failure to provide an account of the occurrence of such quantifiers as respectively in certain constructions involving "secondary" conjunction: e.g.,

- (118) John bought, and Mary sold, a house and a car respectively.

Furthermore, in examples such as (116) and (118), it seems that a kind of structure building similar to that found in primary conjunction is involved. Thus, if we wish to say that the highest IC break in (118) comes between sold and a (as is indicated by the intonation), then we must conclude that there is a node to which John bought, and Mary sold has an "is a" relationship, and another to which a house and a car respectively has such a relationship.

It is for such reasons that we (following Ross) propose a uniform derivation for those constructions that have, in some other treatments, been distinguished as primary and secondary conjunction. Our proposal involves, as the first step in the generation of all constructions involving derived conjunction, a Derived Conjunction schema, and as the second step, a Node Relabeling schema. Application of the Derived Conjunction schema is optional. (If the schema is not applied, the potential inputs to the schema are ultimately realized as conjoined sentences.) However, if the Derived Conjunction schema is applied, the Node Relabeling schema must apply in all cases.

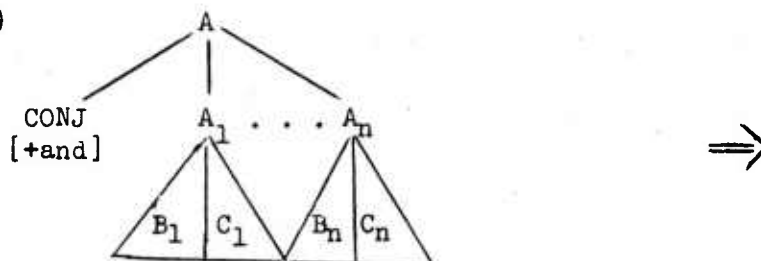
The Derived Conjunction schema operates somewhat differently according to whether the underlying conjunction is and, but, or or. In our initial exposition of the operation of the schema, we shall deal only with its operation when the underlying conjunction is and, temporarily deferring an account of the special properties of the schema when the underlying conjunction is but or or. To facilitate exposition, we shall also temporarily defer an account of the various conditions that must be imposed on the operation of the schema (with and) in order to ensure that it generates only well-formed and correct derived structures. Our exposition will take the following form:

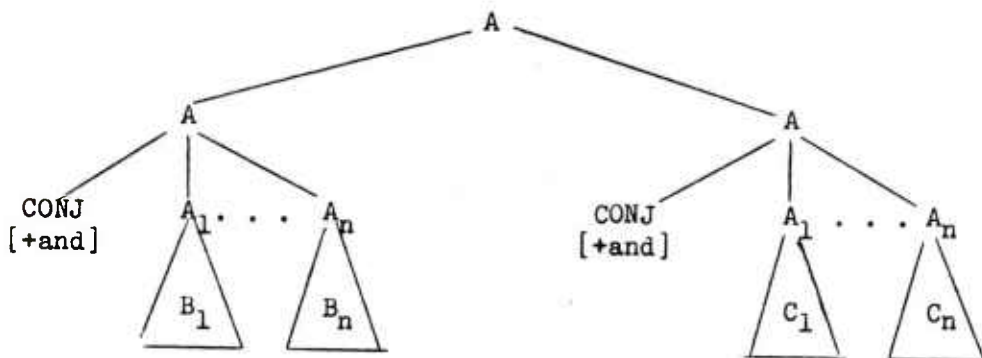
1. Derived And-Conjunction
2. Conditions on Derived And-Conjunction
3. Derived But- and Or-Conjunction

1. Derived And-Conjunction

When the underlying conjunction is and, the Derived Conjunction schema has the following form:

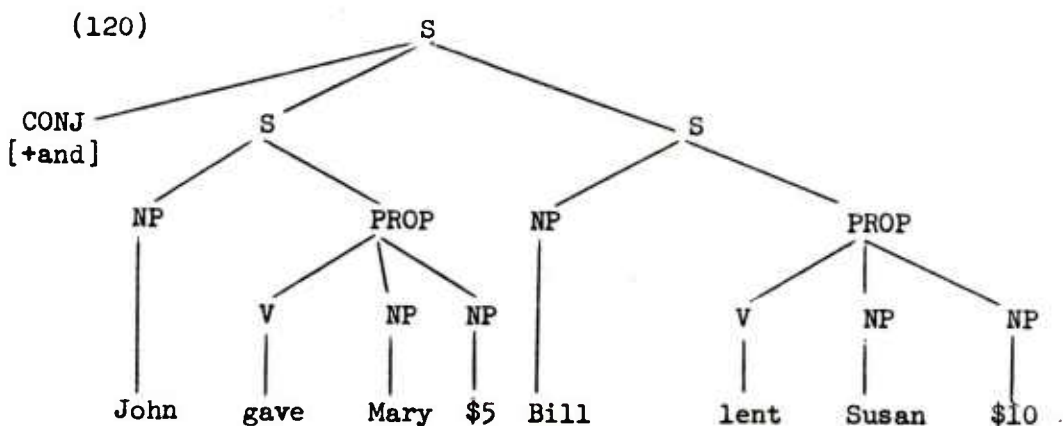
(119)





Where $B_1 \widehat{C}_1$ is a proper analysis of A_1 , $B_n \widehat{C}_n$ is a proper analysis of A_n (and where various other conditions specified in Section 2, below, are met)

This schema can operate upon, e.g.,

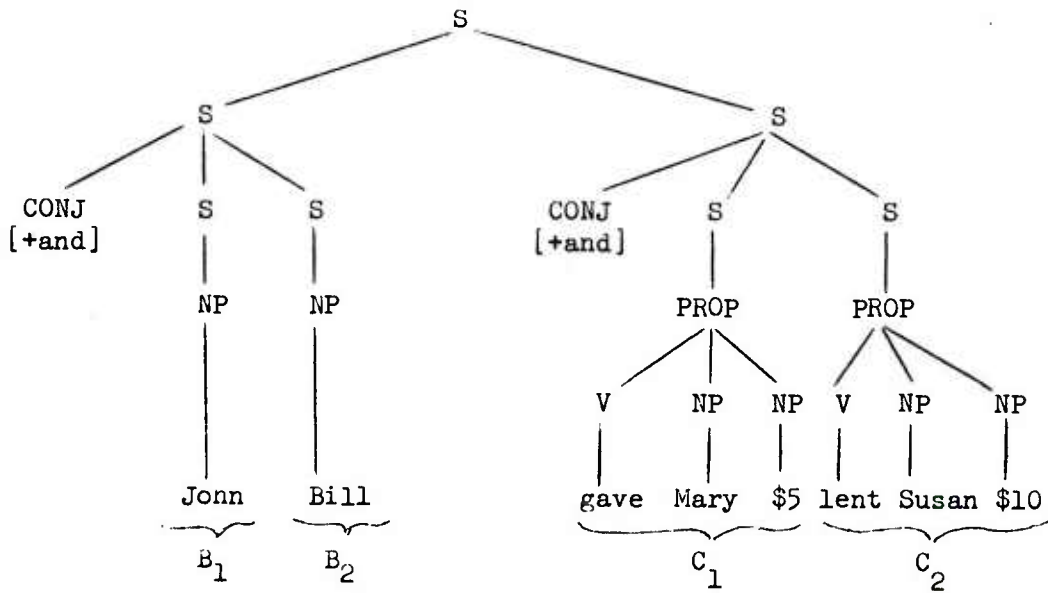


in a number of different ways, depending upon how the conjoined S's of (112) are analyzed into the B's and C's of the schema. For example, operating upon the following analyses of (120):

- (121) (a) $\underbrace{\text{John}}_{B_1} \underbrace{\text{gave Mary \$5}}_{C_1} \underbrace{\text{Bill}}_{B_2} \underbrace{\text{lent Susan \$10}}_{C_2}$
- (b) $\underbrace{\text{John gave}}_{B_1} \underbrace{\text{Mary \$5}}_{C_1} \underbrace{\text{Bill lent}}_{B_2} \underbrace{\text{Susan \$10}}_{C_2}$

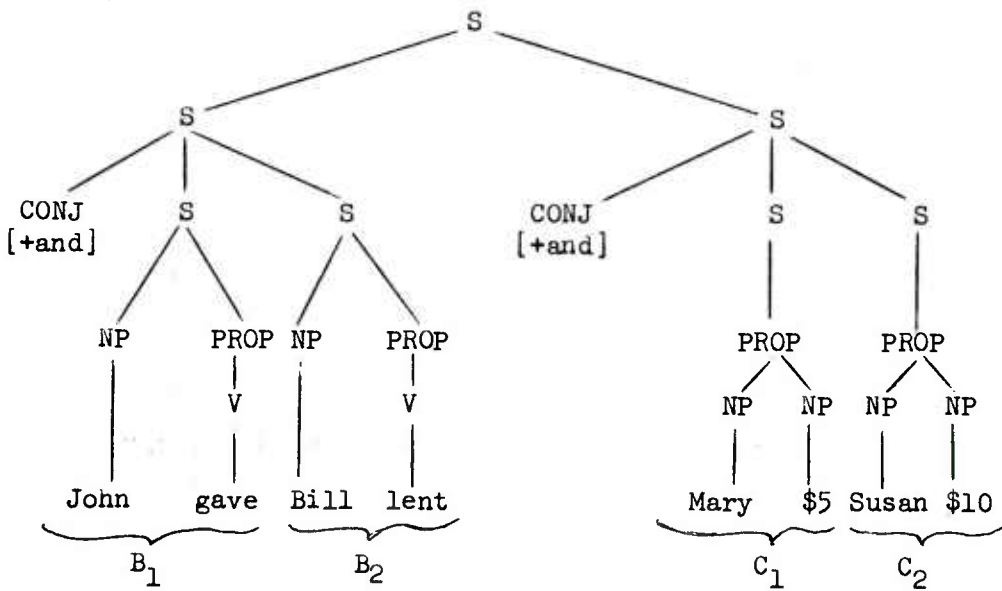
the schema generates, respectively:

(122)



(Ultimately: John and Bill gave Mary \$5 and lent Susan \$10 respectively, or John and Bill respectively gave Mary \$5 and lent Susan \$10.)

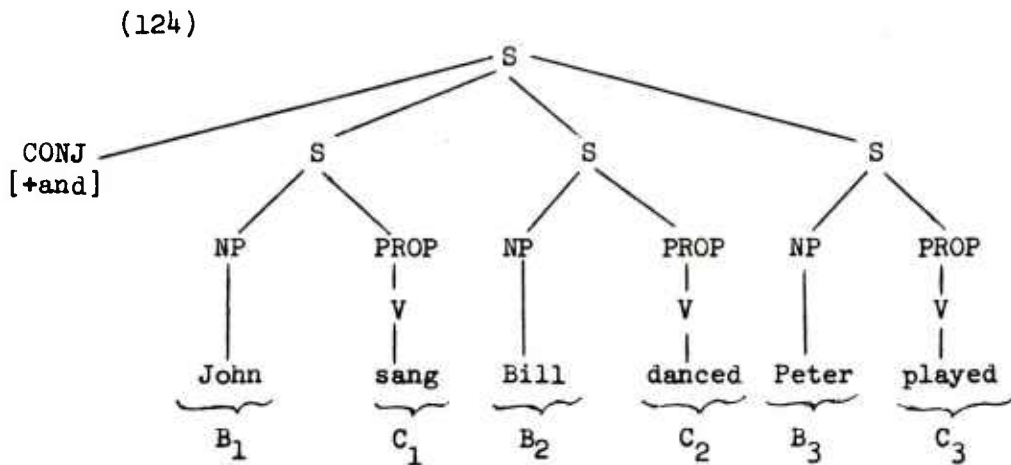
(123)



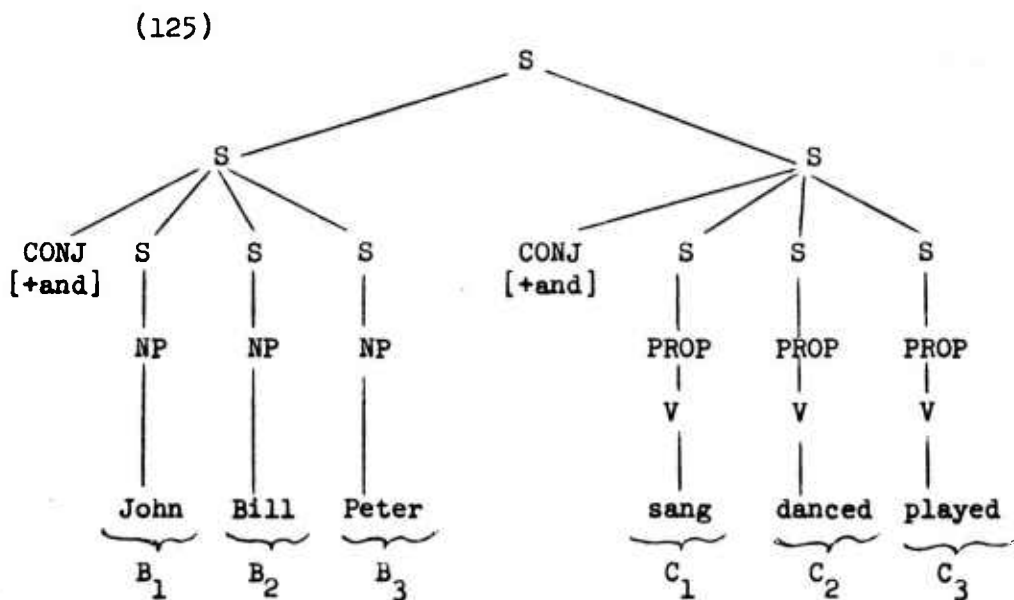
(Ultimately: John gave, and Bill lent, Mary \$5 and Susan \$10 respectively.)

(The trees (122) and (123), like all trees that result from the Derived Conjunction schema, must undergo Node Relabeling--see below--which considerably simplifies them.)

The schema may operate upon more than two conjoined S's. Thus, for example, given as input a structure like:



the schema generates:

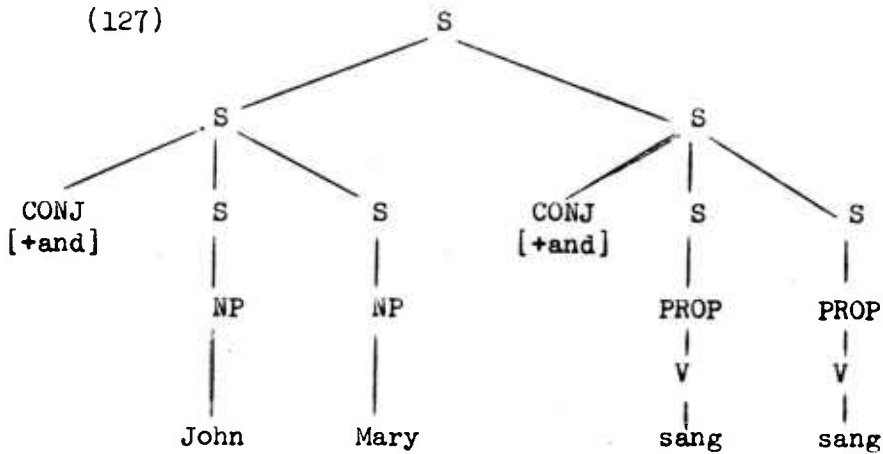


(Ultimately: John, Bill, and Peter sang, danced, and played respectively, or John, Bill, and Peter respectively sang, danced, and played.)

Examples of the operation of the schema thus far have all resulted in structures to which the Respectively-Insertion rule (cf. III.F, below) applies. Given other conjoined sentences as inputs, however, the resultant structures may be candidates for the optional insertion of other quantifiers. Thus the schema would operate upon the structure underlying:

(126) John sang and Mary sang.

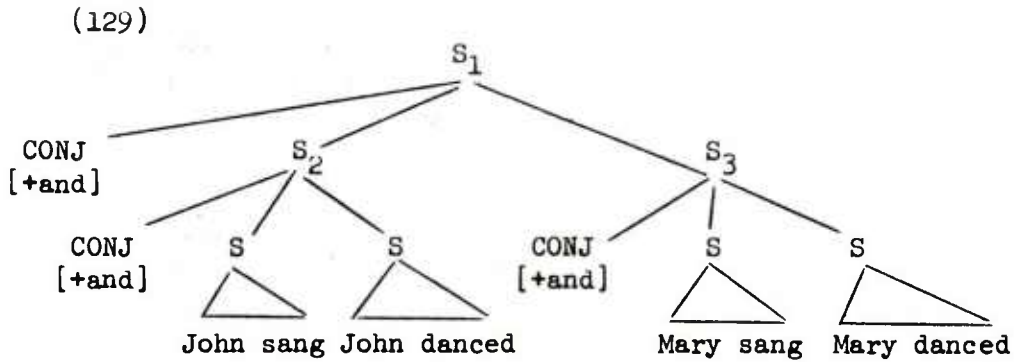
to yield the derived tree:



Ultimately, this tree would be realized as one of the following:

- (128) (a) Both John and Mary sang.
 (b) John and Mary both sang.
 (c) John and Mary each sang.
 (d) John and Mary sang.

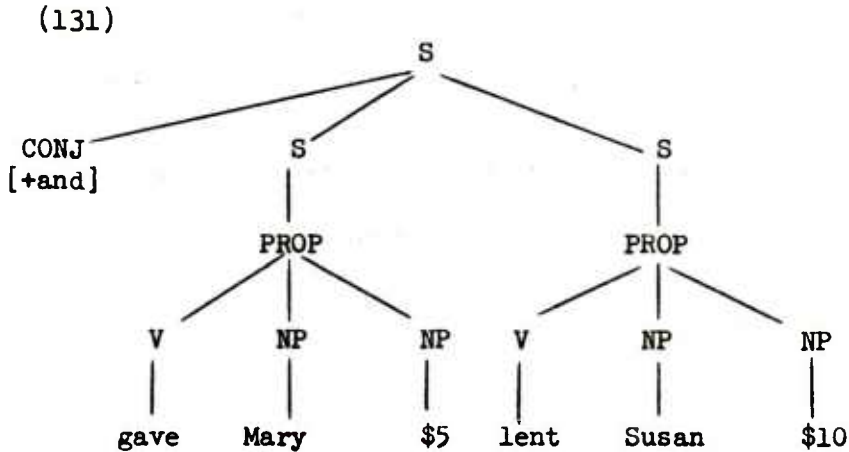
In cases where the base rules have generated a set of conjoined S's one or more of which dominates a set of conjoined S's, the Derived Conjunction schema applies first to the more deeply embedded set(s). Then, after the entire cycle of schemata and rules relevant to conjunction has been applied to the more deeply embedded set(s), the schema may again be applied to the less deeply embedded set. For example, given the underlying structure:



the cycle of conjunction schemata and rules is applied first to the sets of conjoined S's dominated by S₂ and S₃, then to the set dominated by S₁. Ultimately, the resultant sentence may be one of the following (among others):

- (130) (a) Both John and Mary sang and danced.
 (b) Both John and Mary both sang and danced.
 (c) John and Mary each both sang and danced.
 (d) John and Mary sang and danced.

It is also possible that the application of the Derived Conjunction schema may itself result in a structure to which the schema is applicable. The right-hand side of the tree of (122), i.e.:

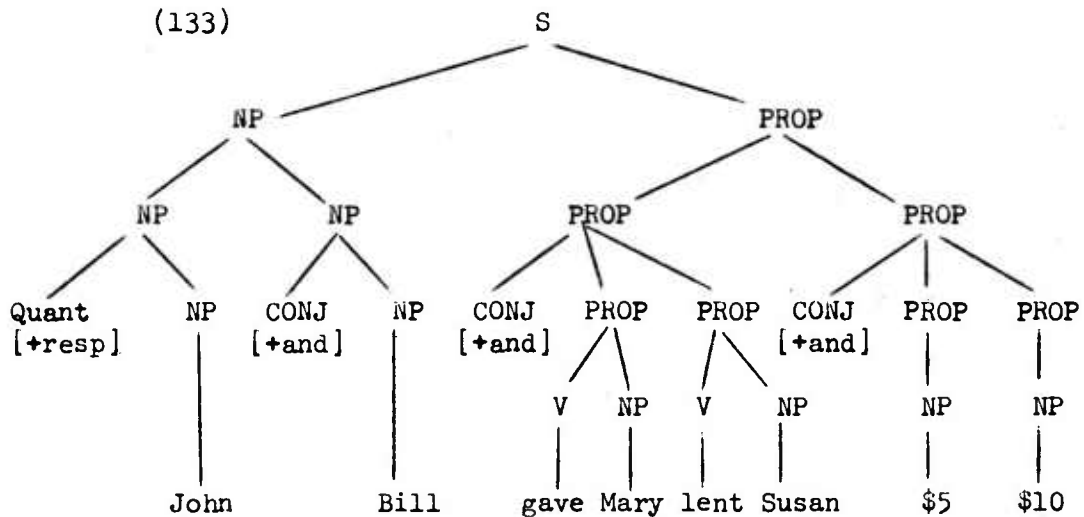


is such a case. The subtree (131) may be analyzed into the B's and C's of the schema in either of the following ways:

- (132) (a) $\underbrace{\text{gave Mary}}_B \underbrace{\$5}_C \text{ lent Susan } \underbrace{\$10}_C$
- (b) $\underbrace{\text{gave}}_B \underbrace{\text{Mary } \$5}_C \text{ lent } \underbrace{\text{Susan } \$10}_C$

In such cases, the Derived Conjunction schema does not actually operate directly upon a tree such as (122), since the entire cycle of conjunction schemata and rules (except, we shall assume, for Quantifier Movement and Initial- and Medial-Conjunction Deletion) will have applied to the conjoined structure of (122) before the Derived Conjunction schema can be re-applied to such analyses of the conjoined PROP's of (131) as (132).)

If we take the analysis (132.a), the result of the application of the schema to (122) (as modified by subsequent schemata and rules in the conjunction cycle) is:



After all relevant schemata and rules are applied to the conjoined PROP's of (133), the ultimate result is either (134.a) or (134.b).

- (134) (a) John and Bill respectively gave Mary and lent Susan \$5 and \$10 (respectively).
- (b) John and Bill respectively gave Mary and lent Susan (respectively) \$5 and \$10.

It is assumed here that in all cases where more than two sets of conjuncts occur in a derived structure, the Derived Conjunction schema has been re-applied. Thus, in deriving from the structure underlying:

(135) John will sing and Bill won't dance

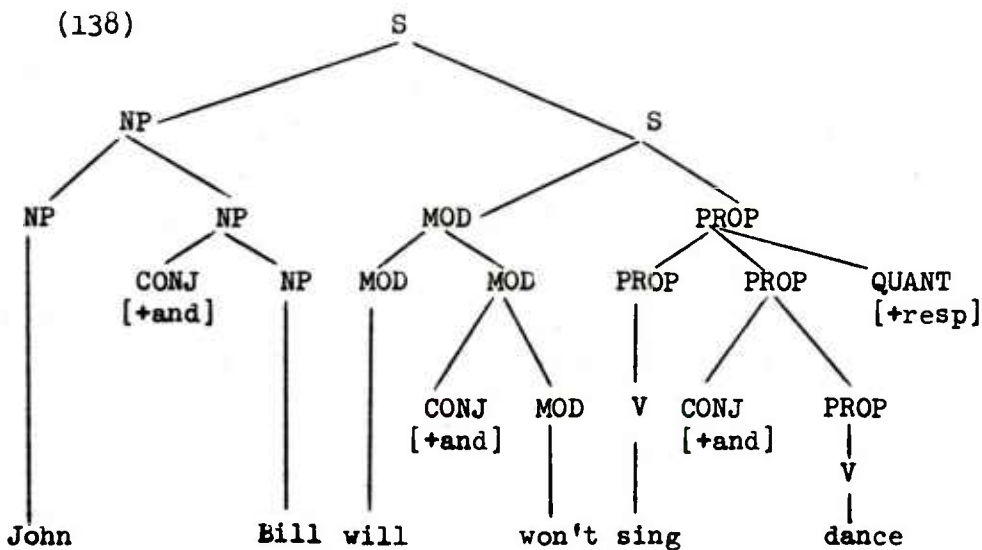
the sentence:

(136) John and Bill will and won't sing and dance respectively.

the schema will first derive the structure underlying either (137.a) or (137.b):

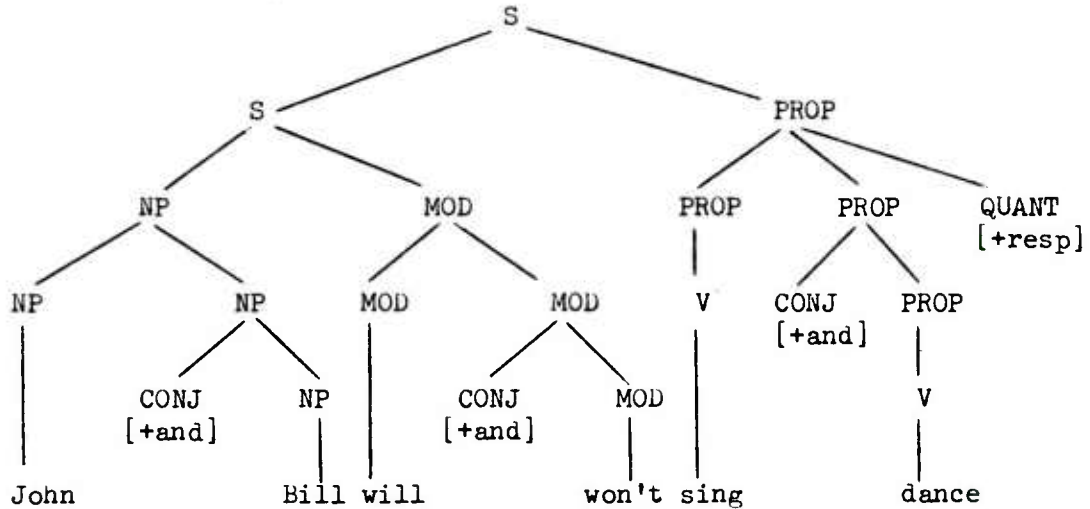
- (137) (a) John and Bill will sing and won't dance respectively.
- (b) John will, and Bill won't, sing and dance respectively.

If (136) is derived by way of (137.a), its ultimate derived structure is:



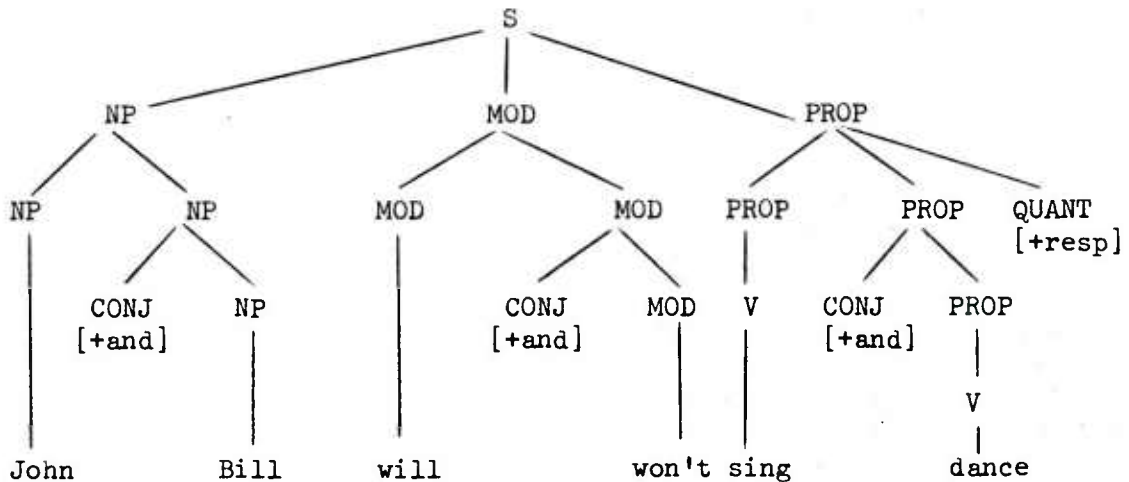
If it is derived by way of (137.b), its ultimate derived structure is:

(139)

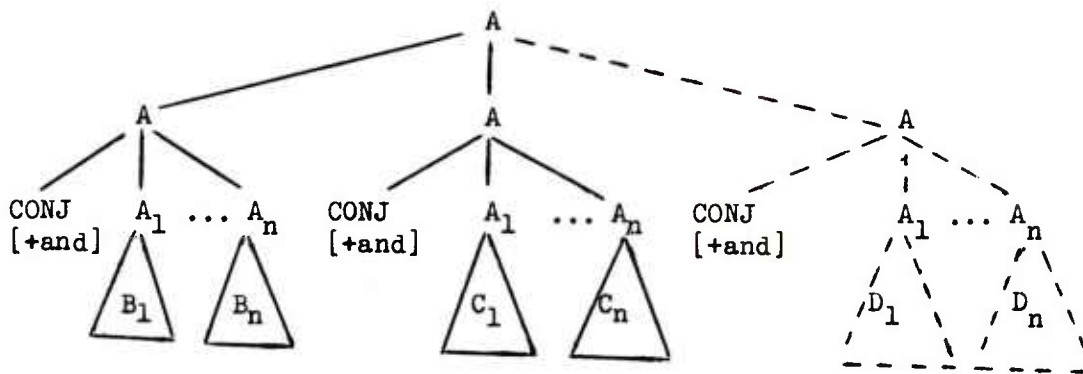
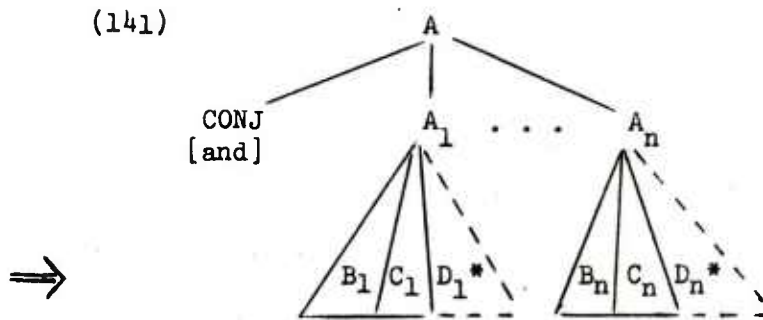


Thus the schema, in its present form, will not generate (134) with the derived structure (140):

(140)



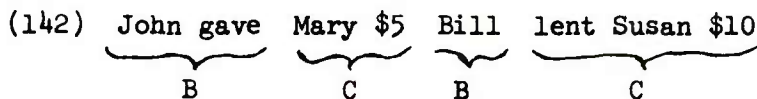
If structures such as (140) are possible, then it is necessary to replace the schema of (119) with something like the following:



We do not, however, feel that this change is clearly motivated, and so, since adopting (141) would entail considerable complication of subsequent rules, we have chosen to adopt the schema of (119) instead.

2. Conditions on Derived And-Conjunction

Unless various conditions are imposed on the operation of the Derived Conjunction schema (119), it may be used to generate both ungrammatical strings and grammatical strings with incorrect derived structures. An example of the use of the schema to generate an ungrammatical string would be an analysis of the tree (20)) (whose bottom line is John gave Mary \$5 Bill lent Susan \$10) into the B's and C's of the schema as follows:



Such an analysis would result, ultimately, in:

- (143) *John gave and Bill Mary \$5 and lent Susan \$10 respectively.

An example of the use of the schema to generate a grammatical string with an incorrect derived structure would be an analysis of the tree underlying:

- (144) Large flags were flying and small flags were flying.

into the B's and C's of the schema as follows:

- (145) $\underbrace{\text{large}}_B \underbrace{\text{flags were flying}}_C \underbrace{\text{small}}_B \underbrace{\text{flags were flying}}_C$

This would permit the generation of the grammatical string:

- (146) Large and small flags were flying.

with a derived structure in which the highest constituent-break comes between small and flags, rather than, as is appropriate, between flags and were.

In order to avoid undesirable applications of the schema as in (142) and (145), a number of conditions must be imposed on the ways in which structures may be analyzed into the B's and C's of the schema. For the purposes of explicating these conditions, we shall adopt the following notational conventions, which pertain to the left-hand tree of (119):

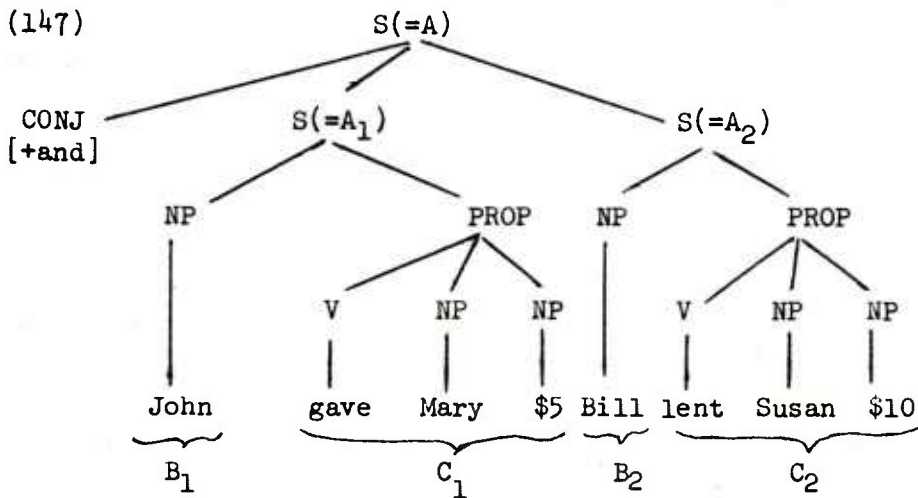
- A = any member of the set $\{A_1 \dots A_n\}$
 B = any member of the set $\{B_1 \dots B_n\}$
 C = any member of the set $\{C_1 \dots C_n\}$

(If a condition refers to A and/or B and/or C, it is to be understood that reference is to all A's and/or B's and/or C's with the same subscript.)

- $\{A\}$ = the set $\{A_1 \dots A_n\}$
 $\{B\}$ = the set $\{B_1 \dots B_n\}$
 $\{C\}$ = the set $\{C_1 \dots C_n\}$

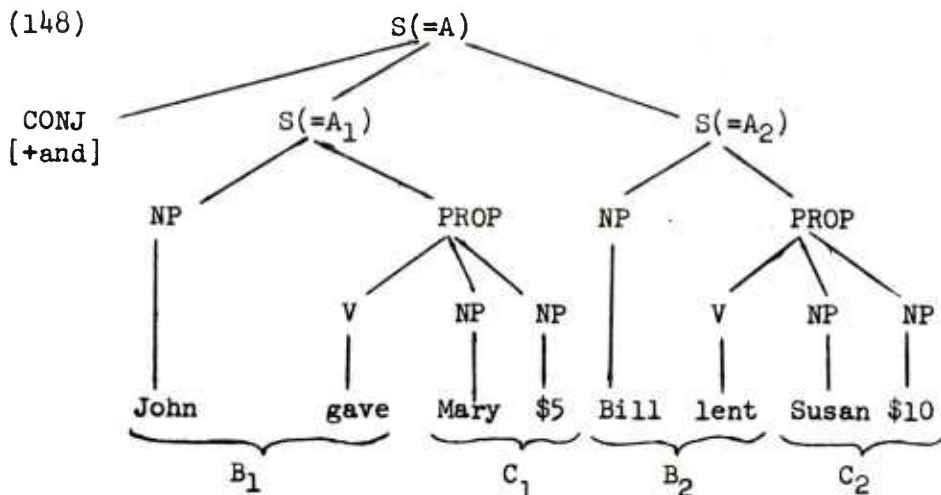
Condition (a): \widehat{BC} is a proper analysis of A, except that any node dominated by A that dominates constituents of both B and C is included in both B and C.

This condition makes a distinction between that has been called primary conjunction (in which only A dominates constituents of both B and C) and secondary conjunction (in which some node dominated by A dominates constituents of both B and C). For example, if we examine the following analysis of the tree (120) into the A's, B's, and C's of the schema:



we see that there is no node below A_1 which dominates constituents of both B_1 and C_1 and no node below A_2 which dominates constituents of both B_2 and C_2 . This is a case in which the resultant sentence (John and Bill gave Mary \$5 and lent Susan \$10 respectively) involves primary conjunction, and Condition (a) tells us that in all such cases \widehat{BC} is a proper analysis of A.

If, on the other hand, we examine the following, alternative analysis of the tree (120):



we see that there is a node below A_1 (namely, PROP) which dominates constituents of both B_1 and C_1 , and, similarly, there is a node below A_2 (again PROP) which dominates constituents of both B_2 and C_2 . This is a case in which the resultant sentence (John gave, and Bill lent, Mary \$5 and Susan \$10 respectively) involves secondary conjunction, and Condition (a) tells us that in all such cases $B\hat{C}$ is not strictly a proper analysis of A, since there is a single node dominated by A (the node that dominates constituents of both B and C) which must be included in both B and C. In the case of the application of the schema to (148), Condition (a) is responsible for the occurrence of the PROP node four times in the derived tree (123) (cf. p. 41) where it was present only twice in the underlying tree ((120) or (148)). The condition thus ensures, for example, that after Node Relabeling has applied to (123), Mary \$5 (and) Susan \$10 will be identified as a derived PROP consisting of two conjoined (partial) PROP's, Mary \$5 and Susan \$10. This, in turn, permits the proper insertion of and between the two conjoined PROP's, by means of the Conjunction Spreading schema.

In the case of the application of the schema to (147), on the other hand, Condition (a) ensures that the derived tree (122), has no more occurrences of nodes included in B and C than does the underlying tree.

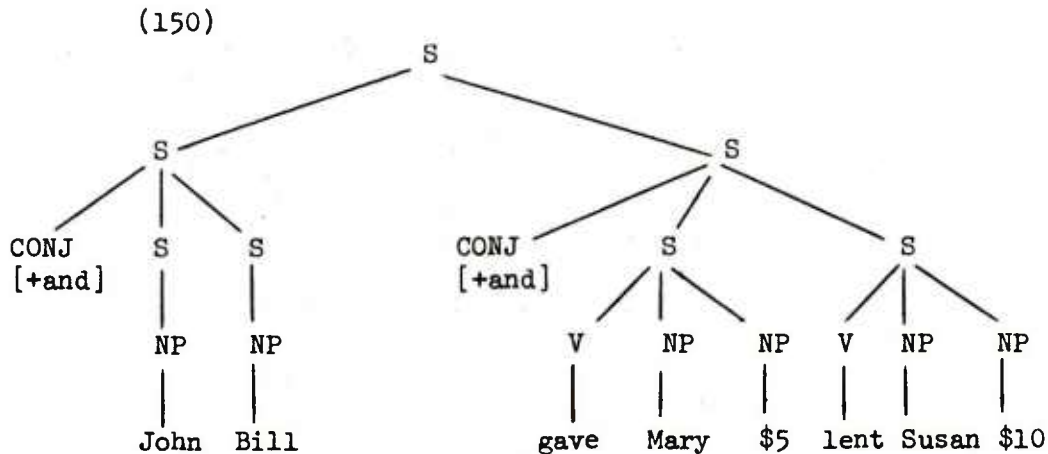
Condition (b): $B\hat{C}$ includes all nodes of A.

While Condition (a) specifies that $B\hat{C}$ must be, with stated exceptions, some proper analysis of A, it does not in itself impose any limitations on which proper analyses of A are appropriate. Condition (b) is one of several conditions which impose appropriate limitations. For example, in applying the schema to the analysis of (120) represented in (147), one wants to ensure that the PROP nodes dominating gave Mary \$5 and lent Susan \$10 are present in the derived tree. Yet the PROP nodes need not be mentioned in a proper analysis of the A_1 or A_2 of (147). Thus (149.a) is as much a proper analysis of the A_1 of (147) as is (149.b).

(149) (a) $NP\hat{V}\hat{NP}\hat{NP}$

(b) $NP\hat{PROP}$

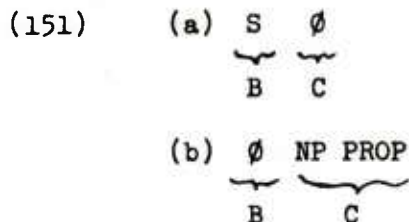
If the C's of (147) were permitted, for purposes of the Derived Conjunction schema, to be given the proper analysis $V\hat{NP}\hat{NP}$, as in (149.a), then the derived structure, instead of the appropriate (122), would be the inappropriate (150):



Given this derived structure, Node Relabeling would fail to apply to the right-hand side of the tree, so that, in the ultimate derived structure, gave Mary \$5 and lent Susan \$10 (respectively) would remain identified as an S composed of two conjoined S's, rather than, as is appropriate, a PROP composed of two conjoined PROP's. Condition (b) excludes this possibility. Similarly, in a more detailed tree than (147), John, Bill, etc. would be identified not only as NP's but as DET^N's (where DET = \emptyset). Condition (b) would exclude derived trees in which John, Bill, etc. are identified only as DET^N's and not as NP's as well.

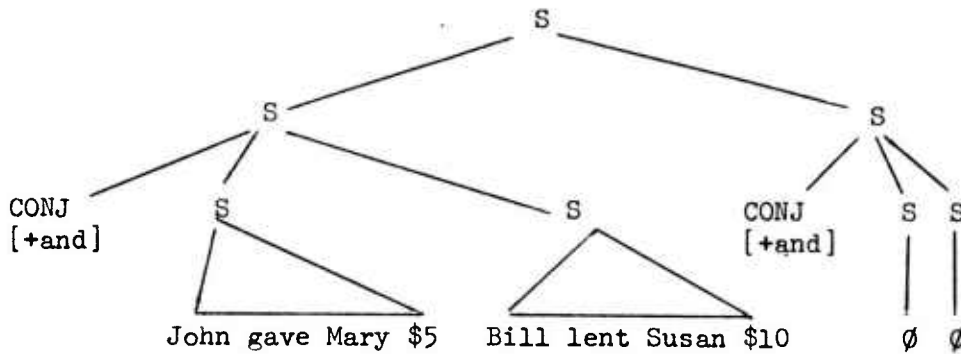
Condition (c): No B or C is null.

Without this condition, the following would be possible analyses of the A_1 or A_2 of (147) into the B's and C's of the schema:



Obviously one does not wish the schema to operate with such analyses, which would give rise to derived trees such as:

(152)



Condition (c) excludes such possibilities.

Condition (d): The members of $\{B\}$ or the members of $\{C\}$ are not totally identical.

This condition (if it is correct--see below) excludes the (ultimate) derivation of, e.g., (153.b) or (153.c) from (153.a), while permitting the derivation of (154.b) from (154.a) and the derivation of either (155.b) or (155.c) from (155.a).

- (153) (a) The man worked and the man worked.
- (b) The man worked.
- (c) The men worked.

- (154) (a) The man worked and the woman worked.
- (b) The man and the woman worked.

- (155) (a) The man worked and the man played.
- (b) The man worked and played.
- (c) The men worked and played respectively.

(Sentence (155.c) may seem questionable, but it is acceptable in a context in which the referents of the men have already been established: e.g.,

- A. What did John, Bill, and Mary do yesterday?
- B. The men worked and played respectively
(and Mary slept.)

In considering the need for this condition, we may question both whether it achieves its stated goal (i.e., whether it excludes such derivations as that of (153.b) and (153.c) from (153.a) without inappropriately excluding other derivations) and whether this goal is an altogether correct one.

As far as the exclusion of the derivation of (153.b) from (153.a) is concerned, we may note, first, that perhaps, if "totally identical" is taken to include referential as well as formal identity, then conjunctions of "totally identical" S's should be excluded on the level of deep structure. Thus, while it is possible to interpret the two occurrences of the man in (153.a) as coreferential, as in:

- (156) The man worked and the man worked, and finally he achieved his goals.

it may be the case that what is involved in (153.a), when it is interpreted in this way, and in (156), is not conjunction at all but, rather, some kind of emphatic reduplication, which, like conjunction, happens to involve and. (Note, however, that like genuine conjunction, this emphatic-reduplication structure does permit some "conjunction reduction", as in:

- (157) The man worked and worked.)

If, then, (153.a) is excluded, in its coreferential interpretation, on the level of deep structure, no special condition on derived conjunction is required to exclude the derivation of (153.b) from it.

To turn to the non-coreferential interpretation of (153.a) (an interpretation for which the insertion of other before the second occurrence of man may be obligatory), we may ask, first, whether Condition (d), in excluding the derivation of (153.c) from (153.a), also excludes certain other derivations that should be permitted, and second, whether the derivation of (153.c) from (153.a) should, in fact, be excluded.

The answer to the first of these questions is clearly affirmative. Note that, in order for Condition (d) to apply to (153.a) in its non-coreferential interpretation, "totally identical" must be taken to mean "formally identical but not referentially identical". But, with this interpretation, the condition would exclude such needed derivations as that of (158.b) from (158.a) or (159.b) from (159.a):

- (158) (a) John (Smith) worked and John (Jones) worked.
 (b) John and John both worked.
- (159) (a) I went to Washington (D.C.) and Washington (State).
 (b) I went to both Washington and Washington.

Therefore, Condition (d), if it is to exclude the derivation of (153.c) from (153.a) but permit the derivation of (158.b) and (159.b), must in any case be amended to something like:

Condition (e): The members of $\{B\}$ or $\{C\}$ are not totally identical, except where either $\{B\}$ or $\{C\}$ includes a proper noun.

But, to turn to the second question, is it correct to exclude the derivation of (153.c) from (153.a), by means of Condition (d), Condition (e), or any other condition? The reason for wishing to exclude such a derivation is that, in the present grammar, plural nouns may be introduced directly into deep structures from the lexicon. Since this is so, were we also to permit derivations like that of (153.c) from (153.a), we would be generating most plural nouns in either of two ways: by direct insertion from the lexicon, or by derived conjunction. (Some plural nouns, e.g., the men in (155.c), when interpreted as derived from the conjunction of two formally-identical singular nouns, as in (155.a), would still be derived in only one way: by conjunction.) But this would be to predict a curious kind of ambiguity for most plural nouns.

In Section II.B.2, above, we argued that, in principle, we saw nothing to lose, and much to gain, if plurals in general could be derived from underlying conjoined sentences. As we admitted in that section, however, certain practical difficulties arise in attempting to formalize this derivation of plurals, and for this reason we have permitted the direct insertion of plurals from the lexicon. This being so, we require a condition like Condition (e) to exclude unwanted ambiguous derivations.

Condition (f): The members of $\{B\}$ or the members of $\{C\}$ are identical with respect to their highest proper analysis.

This condition excludes certain inappropriate analyses of conjoined structures into the B's and C's of the schema. A case in point is the analysis (142) (repeated below), which, if permitted, would give rise to the ungrammatical (143) (*John gave and Bill Mary \$5 and lent Susan \$10 respectively).

(142) John gave Mary \$5 Bill lent Susan \$10
 B C B C

What Condition (f) requires is either that all members of the set $\{B\}$ be identical with respect to the "highest" proper analyses that characterize them, or that all members of the set $\{C\}$ be identical in this respect. (The "highest" proper analysis of a structure is that proper analysis none of whose nodes is dominated by a node that occurs in any other proper analysis of the structure. Thus in (147), S is the highest proper analysis of the structure corresponding to John gave Mary \$5, and PROP is the highest proper analysis of the structure corresponding to gave Mary \$5.) It can easily be seen that (142) does not conform to this condition. In (142), the set $\{B\}$ consists of John gave (whose highest proper analysis (cf. (147)) is $NP \wedge V$) and Bill (whose highest proper analysis is NP), while the set $\{C\}$ consists of Mary \$5 (whose highest proper analysis is $NP \wedge NP$) and lent Susan \$10 (whose highest proper analysis is PROP). Since in the analysis (31) neither all members of $\{B\}$ nor all members of $\{C\}$ are identical with respect to their highest proper analysis, Condition (f) rejects (142), and consequently blocks the derivation of (143).

Note that the condition does not block an analysis in which all members of $\{B\}$ are identical with respect to their highest proper analysis but all members of $\{C\}$ are not. Thus the structure underlying (160.a) may be analyzed into the B's and C's of the schema as in (160.b) without violating the condition:

(160) (a) We assembled and we marched for three hours.
 (b) We assembled we marched for three hours.
 B C B C

In (160.b) the B's have identical highest proper analyses (both being NP's) but the C's have different highest proper analyses (assembled being a PROP and marched for three hours a $PROP \wedge ADV$). Since the analysis conforms to condition (f), the schema is applicable to the structure underlying (160.a), the ultimate result being:

(161) We assembled and marched for three hours.

Similarly the structure underlying (162.a) may be analyzed into the B's and C's of the schema as in (162.b) without violating Condition (f):

(162) (a) John has been a good president and people expect Bill to become a good president.

(b) John has been a good president

B

C

people expect Bill to become a good president

B

C

In (162.b), although the B's have different highest proper analyses, the C's have identical highest proper analyses. Consequently (162.b) conforms to Condition (f), and the structure underlying (162.a) may undergo derived conjunction, the result being:

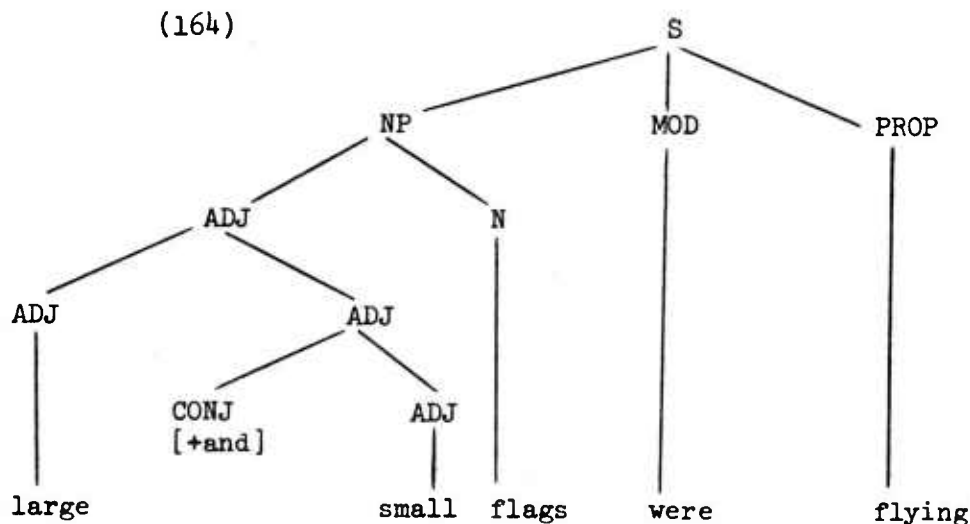
(163) John has been, and everyone expects Bill to become, a good president.

Condition (f) does not, of course, prevent the schema from applying when both all members of the set $\{B\}$ and all members of the set $\{C\}$ have identical highest proper analyses, as is the case, for example, with the B's and C's of (147), where the B's are NP's and the C's are PROP's.

Condition (g): The first (or only) constituent of the highest proper analysis of B is an immediate constituent (IC) of A.

This condition, and Condition (h), below, are intended to prevent the assignment of incorrect derived structures to certain types of grammatical strings. In both cases, the effect of the conditions is to give a certain preference to primary conjunction (the conjunction of whole single constituents) over secondary conjunction (the conjunction of non-constituents).

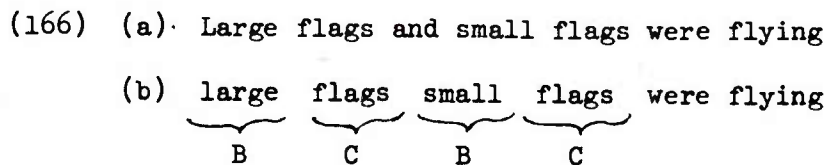
An example pertinent to Condition (g) is the derivation of (146) (Large and small flags were flying) from the structure underlying (144) (Large flags were flying and small flags were flying). The correct derived structure for (146) is, roughly:



Such a structure is derived by analyzing the structure underlying (144) as follows:



From this, we ultimately derive the structure underlying (166.a), part of which may, in turn, be analyzed into the B's and C's of the schema as in (166.b):



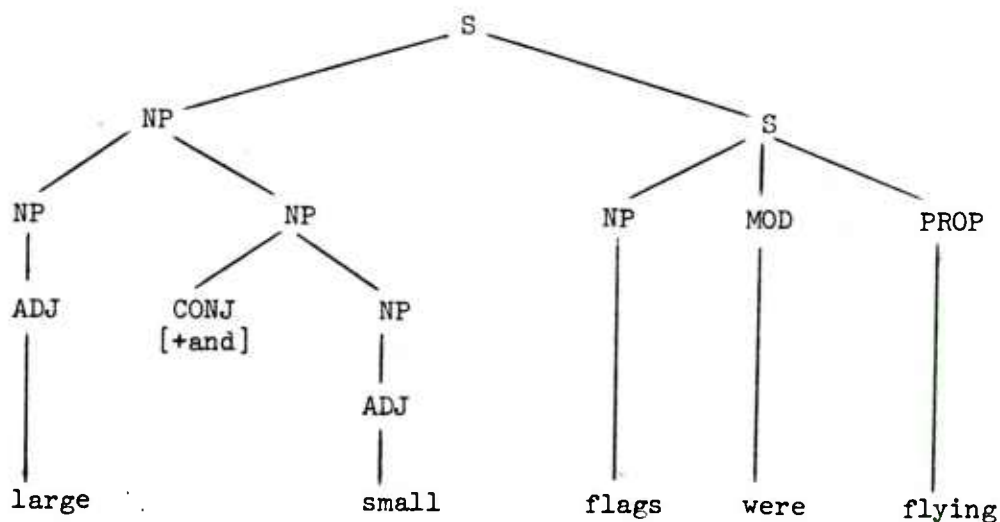
Application of conjunction schemata and rules to the analysis (166.b) ultimately yields (146) with the derived structure (164).

But if we were permitted to analyze the structure underlying (144) as in (145) (repeated below):

(145) large flags were flying small flags were flying
 B C B C

application of the Derived Conjunction schema, etc. would ultimately generate (146) with the incorrect derived structure (167):

(167)



Condition (g), by preventing analyses like (145) (in which the first constituent of the highest proper analysis of each member of $\{B\}$ --i.e., ADJ in (145)--is not an IC of $\{A\}$), blocks the generation of derived structures like (167).

Note that, given a structure like that underlying (168):

(168) Yesterday large flags were flying and this morning small flags were flying.

Condition (g) does not prevent the analysis (169):

(169) yesterday large flags were flying this morning small
 B C B
 flags were flying
 C

This is because, even though the members of the set $\{B\}$ are not IC's of $\{A\}$, the first constituent of the highest proper analysis of each B is an IC of A . (That is, the ADV's yesterday and this morning are IC's of their respective S's.) As a result, the analysis (169) is permitted, and the sentence (170) is generated with a derived structure in which the highest IC break comes between small and flags:

(170) Yesterday large, and this morning small, flags were flying.

It is also evident that we do not wish to impose upon the set $\{C\}$ restrictions similar to those imposed upon the set $\{B\}$ by Condition (g): i.e., we do not wish to require that the last (or only) constituent of the highest proper analysis of C be an IC of A . Were such a restriction to be imposed, there would be no way of deriving, e.g., (171.c) from the structure underlying (171.a) via the analysis (171.b):

(171) (a) John likes Jim and Bill tolerates Jim.

(b) John likes Jim Bill tolerates Jim
 B C B C

(c) John likes, and Bill tolerates, Jim.

The Jim's of (171.b) do not include the last IC's of their respective S's, but the above derivation is nonetheless permissible.

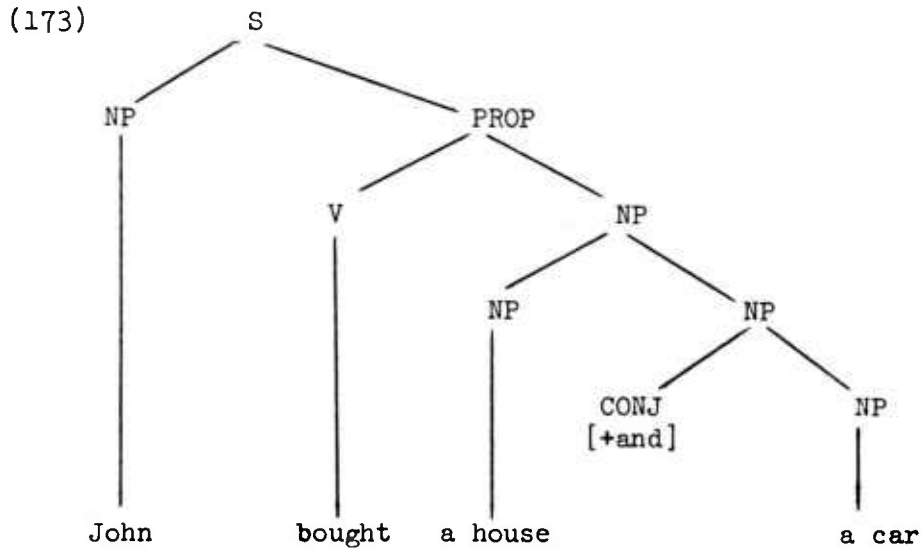
Condition (h): If $\{B\}$ does not consist of single IC's of $\{A\}$, then:

- (a) the members of $\{B\}$ are not totally identical;
- (b) the constituents of $\{B\}$ that follow the first IC of $\{A\}$ are not totally identical.

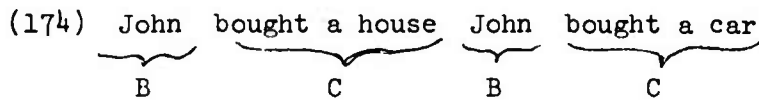
An example pertinent to Condition (h.a) is the derivation of (172.b) from (172.a):

- (172) (a) John bought a house and John bought a car.
- (b) John bought a house and a car.

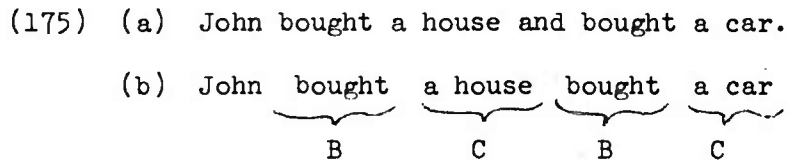
Presumably, the correct derived structure for (172.b) is, roughly:



To derive (172.b) with the structure (173), we begin by analyzing the structure underlying (172.a) as follows:



Various conjunction schemata and rules operate upon the structure so analyzed to derive the structure underlying (174.a), part of which may, in turn, be analyzed into the B's and C's of the schema as in (175.b):

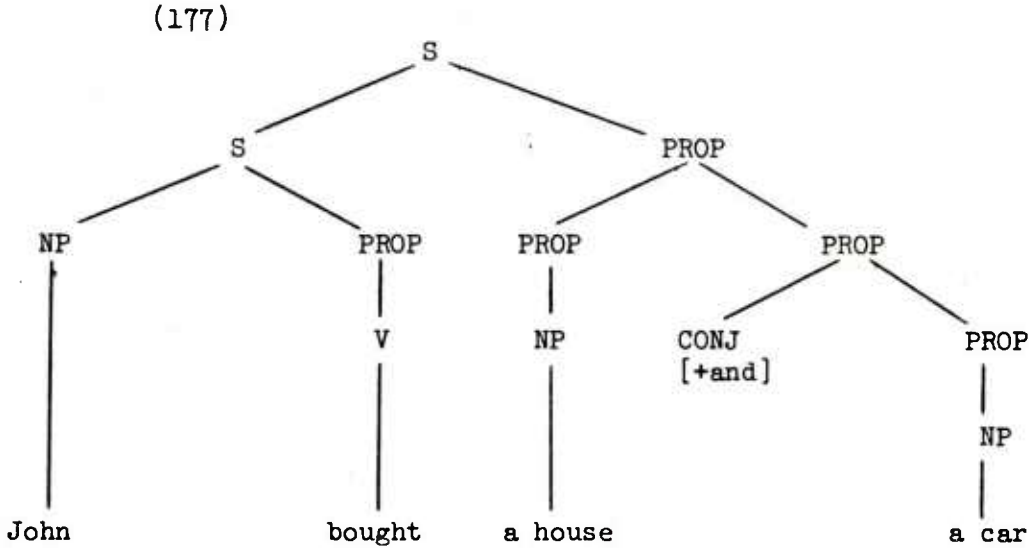


Application of conjunction schemata and rules to the analysis (175.b) ultimately yields (172.b) with the correct derived structure (173).

However, suppose we were permitted to analyze the structure underlying (172.a) as follows:

(176) John bought a house John bought a car
 B C B C

In this case we would ultimately generate (172.b) with the incorrect derived structure (177):

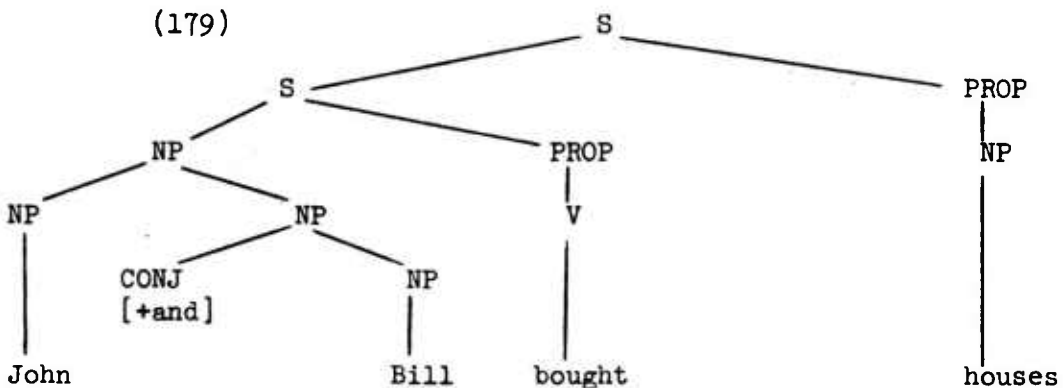


Condition (b.a) prevents analyses like (177) (in which the members of the set $\{B\}$ are not single IC's of $\{A\}$ but are totally identical), and therefore blocks the generation of derived structures like (177).

An example pertinent to Condition (h.b) is the derivation of (178.b) from (178.a):

(178) (a) John bought a house and Bill bought a house.
 (b) John and Bill bought houses.

Condition (h.b) prevents the derivation of (178.b) with the incorrect derived structure (179):



It does this by prohibiting an analysis like (180) of the structure underlying (178.a):

(180) John bought a house Bill bought a house
 B C B C

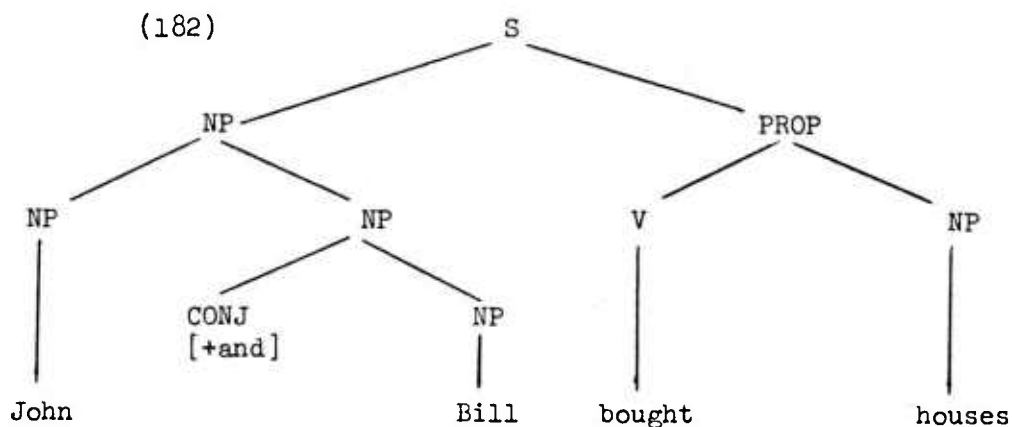
In (180), the $\{B\}$'s are not single IC's of their respective S's, and the constituents of each B (i.e., v [bought] in each case) that follow the first IC's of the two conjoined S's (i.e., NP[John] and NP[Bill] respectively) are identical. Hence (180) violates Condition (h.b).

Were the analysis (180) not blocked by Condition (h.b), various schemata and rules would derive from (180) the structure underlying (181.a), which, when analyzed as in (181.b), would generate (178.b) with the derived structure (179):

(181) (a) *John bought, and Bill bought, houses.

(b) John bought Bill bought houses.
 B C B C

Since this derivation is blocked, (178.b) can be generated only with the presumably-correct derived structure (182):

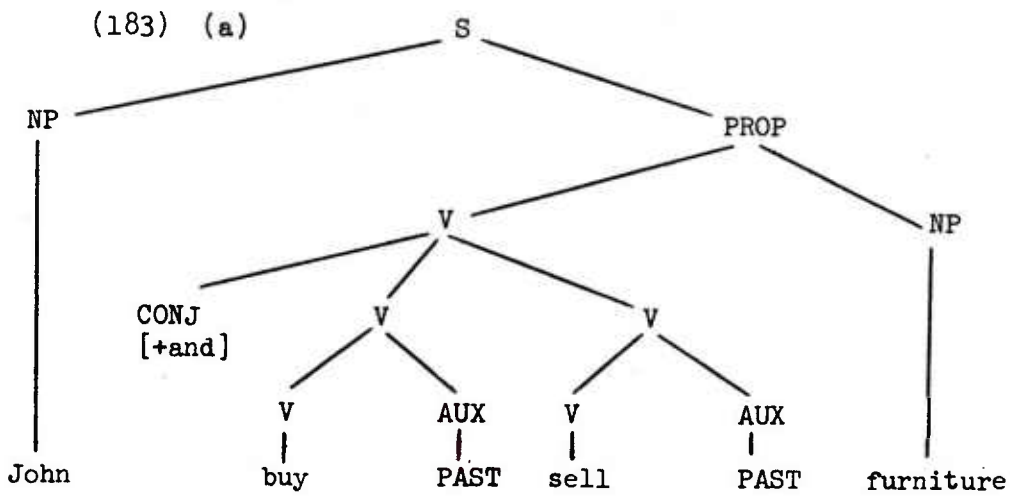


Condition (i): Neither B nor C consists of constituents of the following types:

- (a) inflectional affixes
- (b) certain derivational affixes
- (c) certain differing non-affixal AUX's
- (d) NP's marked for certain case differences
- (e) certain NP's differing only in DET's
- (f) certain differing DET's

There are certain types of constituents that are inherently non-conjoinable. (It was the non-conjoinability of some of these constituent types that was responsible for Schane's extension of the notion of "secondary conjunction" to cover all conjunctions of constituents belonging to non-major categories--cf. GEN INTRO, Section C.) Condition (i) is intended to preclude the application of the Derived Conjunction schema to sets of such constituents. (The list of non-conjoinable constituent types mentioned in Condition (i) is very likely suggestive rather than exhaustive.) The non-conjoinable constituent types mentioned in Condition (i) are discussed in turn below.

(a) The smallest units upon which derived conjunction can operate are, in general, not morphemes but words. Thus one would wish to avoid an application of the schema such as would follow from an analysis like (183.b), in which the conjoined V's of (72.i) are analyzed into the B's and C's of the schema in such a way that the C set consists of tense affixes:

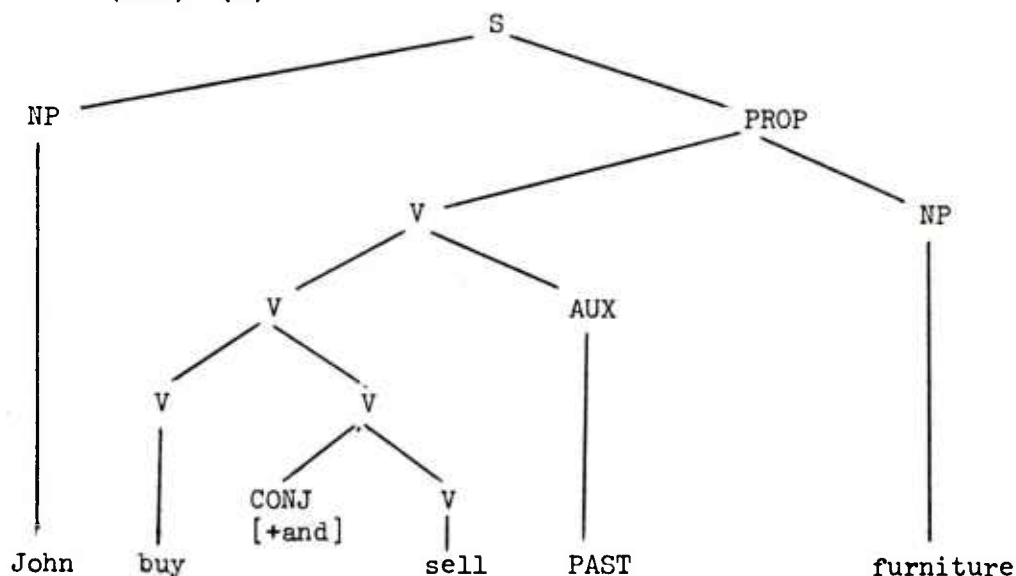


(John bought and sold furniture.)

(b) *John buy PAST sell PAST furniture
 B C B C

Were such an application permitted, the schema would operate to initiate various schemata and rules that would ultimately replace (183.a) by (184.a), which would be realized as the ungrammatical (184.b):

(184) (a)



(b) *John buy and sold furniture.

Such derivations are avoided by means of Condition (i), since the class of non-conjoinable constituent types is defined as including all inflectional affixes.

(There are several ways in which a special listing of inflectional affixes as non-conjoinable might be avoided. Of these, a promising one has to do with the possibility that, at the point in the rules at which the Derived Conjunction schema applies, the inflectional affixes are represented as features on the stems to which they ultimately attach. That is, it may be that the so-called "Affix Attachment" rule is really two separate rules, the first of which adds to stems features corresponding to the inflectional affixes, and the second of which "segmentalizes" these features as, normally, suffixes attached to the stems. Further, it may be the case that the first of these rules precedes application of the Derived Conjunction schema, but that the second follows it. If this is so, then a tree such as (183.a), in which the PAST affixes are already segmentalized, would never be a candidate for application of the schema.)

(b) Unlike inflectional affixes, some derivational affixes are at least sometimes conjoinable, as is evidenced by the examples of (185):

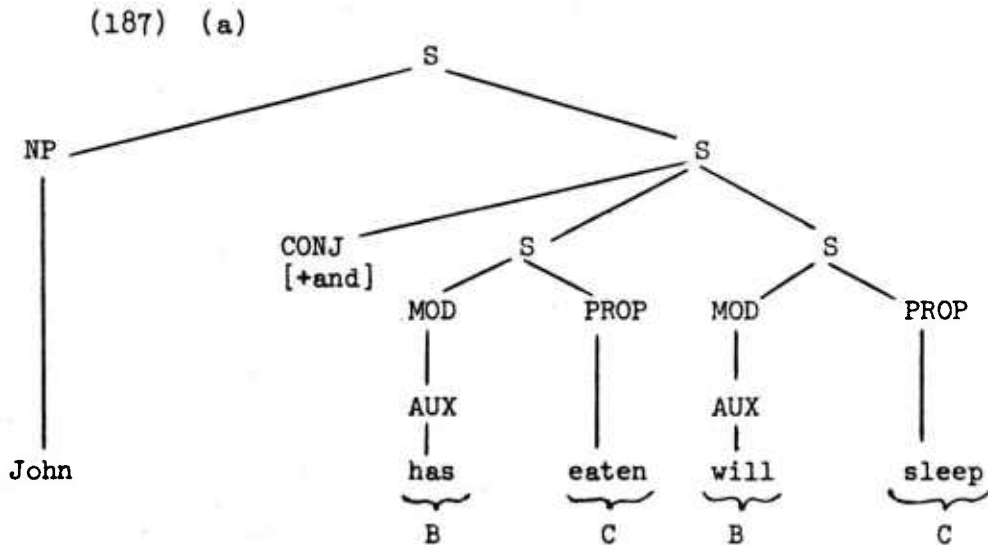
- (185). (a) pro- and anti-Castro forces
 (b) sub- and supraliminal cues
 (c) Anglo- and Franco-American relations

Such cases, if they do represent examples of affix conjunction (and it may be that pro-, anti-, etc. are full words with certain distributional restrictions), are certainly unusual, as is evidenced by examples such as:

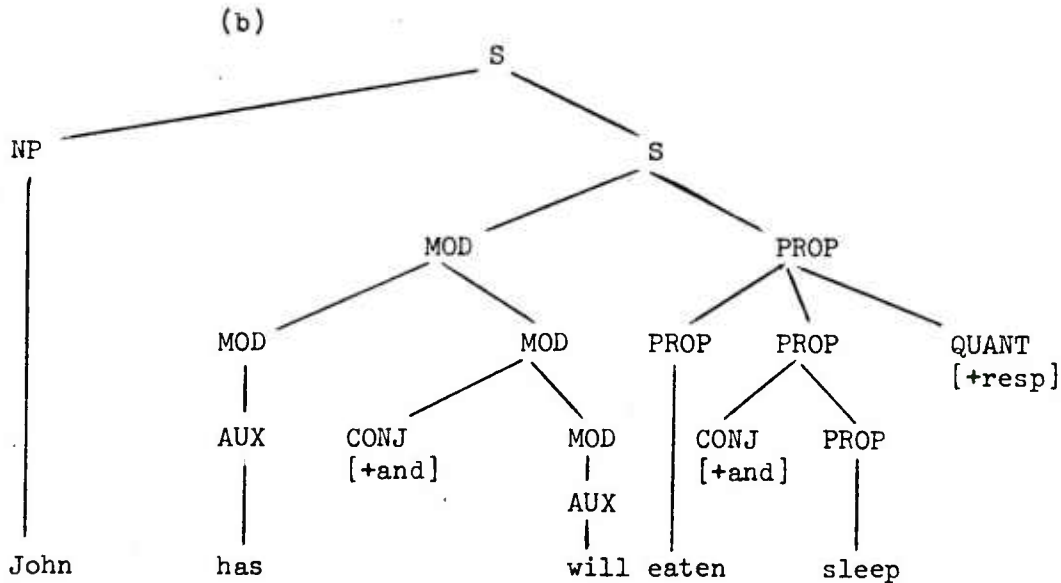
- (186) (a) *sub- and admission (cf. submission and admission)
 (b) *de- and offensive (cf. defensive and offensive)
 (c) *tolerability and -ance (cf. tolerability and tolerance)
 (d) *mannish and -ly (cf. mannish and manly)

The conjunction of most derivational affixes (including, apparently, all derivational suffixes) is prevented by Condition (i). If some or all of the examples of (185) do involve affix conjunction, they represent exceptions.

(c) Unless specifically blocked, the schema would operate upon a tree such as (187.a) to derive ultimately, (187.b), which would be realized as the ungrammatical string (187.c):



(John has eaten and will sleep.)



(c) *John has and will eaten and sleep respectively

Condition (i) blocks such undesirable derivations, since AUX's whose last IC's are not of the same type are included in the definition of non-conjoinable constituent types. Thus conjunctions where the last IC's of the AUX are both (or all) Modals, Perfects, Progressives, or Passives are acceptable, as in:

- (188) (a) He must eat and sleep.
 (b) He may and must eat and sleep respectively.
 (c) He has eaten and slept.
 (d) He has and had eaten.
 (e) He was eating and drinking.
 (f) He was and is eating.
 (g) He may have and must have eaten.
 (h) He had been and still was eating.
 (i) It could have been and should have been eaten.

But conjunctions on which the last IC's of the AUX's are a Perfect and a Modal (as in (187.c)), a Modal and a Progressive (as in (189.a)), a Perfect and a Passive (as in (189.b)), etc. are ungrammatical:

- (189) (a) *He must and is eat and sleeping respectively.
 (b) *The missionary had and was eaten.

There are some apparent exceptions to the contention that the last IC's of the AUX's must both (or all) be of the same type: e.g.,

- (190) (a) He may and must have eaten.
 (b) It could have and should have been eaten.

Such cases, however, represent two successive applications of the schema, each of them conforming to Condition (i). Thus (190.a) results from re-application of the schema, etc., to the structure underlying (188.g), analyzed as follows:

- (191) he may have must have eaten
 └───┘ └───┘ └───┘ └───┘
 B C B C

Since in (191) may and must are both Modals, and the two occurrences of have are both Perfects, application of the schema is permitted. Similarly, (190.b) results from reapplication of the schema, etc., to the structure underlying (188.i), analyzed as follows:

- (192) it could have been should have been eaten
 └──────────┘ └───┘ └──────────┘ └───┘
 B C B C

(The schema could, in fact, be reapplied to the structure underlying (190.b), as in (193.a), to derive (193.b):

- (193) (a) it could have should have been eaten
 └───┘ └───┘ └───┘ └───┘
 B C B C

- (b) It could and should have been eaten.)

It is not altogether clear whether the Progressive be and the Passive be should be considered different AUX types for the purposes under discussion. The decision depends upon the status of such strings as the following, which, though certainly odd, are perhaps not ungrammatical:

- (194) ?The missionary was eating and eaten at the same time.

(d) Fillmore (1967) and others have noted that conjunctions like the following are at least unusual, and possibly ungrammatical:

- (195) (a) ??This key and that janitor can open the door.
 (b) ??He sprayed the wall and the paint.

In a case grammar, the conjoined NP's of these sentences are marked for different underlying cases. Thus this key and that janitor in (195.a) are, respectively, Instrumental and Agentive, while the wall and the paint in (195.b) are, respectively, Locative and Neutral (or possibly Instrumental). It is possible, Fillmore has argued, that it is these case differences that account for the peculiarity of such examples.

It cannot, however, be asserted that no conjunctions of NP's in different cases are permitted, as is evidenced by such examples as:

- (196) (a) John and Mary respectively received and distributed the money.
 (b) The Giants and the Dodgers respectively beat the Phillies and were beaten by them.

In (196.a), presumably John is Dative and Mary Agentive, yet the conjunction is permissible. Similarly (196.b) involves a permissible conjunction of an Agentive (the Giants) and Neutral (the Dodgers).

It might be possible to say that application of the Derived Conjunction schema to NP's is permitted when the NP's show certain case differences but not when they show other case differences. Thus it might be that conjunction of an Agentive and a Neutral, as in (196.b), is always permitted while the conjunction of a Locative and a Neutral, as in (195.b), is never permitted. Such a condition, however, would still have to allow the schema to operate where identical NP's were marked for case differences which would exclude the operation of the schema were the NP's non-identical. Consider, for example:

- (197) (a) He sprayed the wall and (then) he tore down the wall.
 (b) He sprayed and (then) tore down the wall.
 (c) He sprayed the wall and (then) he tore down the bridge.
 (d) ?He sprayed and (then) tore down the wall and the bridge respectively.

Presumably, in (197.a) the first occurrence of the wall is Locative and the second Neutral. Yet, as the grammaticalness of (197.b) attests, the conjunction schema can operate with an analysis in which the two occurrences of the wall in (197.a) are treated as a conjoinable set. If, as seems true, (197.d) is appreciably

worse than (197.b) (i.e., if (197.d) is comparable to (196.b), then possibly Condition (h.d) could be rewritten so as to distinguish between identical and non-identical NP's.

It is also possible, however, that at least some of the odd strings that result from the conjunction of NP's marked for different cases are fully grammatical, but are anomalous because they violate the rule of surface-structure interpretation of the following general form, "If constituents are conjoined, they necessarily have a semantic relation." Thus the peculiarity of (196.a) may result from the fact that it is hard to find a semantic common denominator between this key and that janitor. If this is so, then the conjunction of these NP's should be anomalous even when they are marked for the same case. It is not clear to us whether or not this is the case: cf.

(198) ?I was looking for this key and that janitor.

In any event, such an explanation would not seem applicable to all of the examples cited. Thus, although (195.b) is questionable, it is not hard to find a semantic common denominator between the wall and the paint, and (199) seems perfectly acceptable:

(199) He stared at the wall and the paint.

It might appear that the most questionable examples involving the conjunction of NP's marked for different underlying cases, such as (196.a-b), involve underlying sentences in which the same head item (a verb in the examples) selects the different cases involved. However, (200), in which two different head items are involved, seems at least as unacceptable as (196.a).

(200) ??This key and that janitor can open and close the door respectively.

The above observations have led us to include Condition (i.d) in our present account of derived conjunction, although it is obvious that this inclusion must be regarded as tentative.

(e) This subpart of Condition (i) is intended to exclude such ungrammatical strings as:

(201) (a) *A man and (then) the man did it.
(b) *The men and (then) some men did it.

However, we must admit that excluding such strings in this way does not account for the oddity of the presumed sources of these sentences: i.e., the structures underlying, respectively:

- (202) (a) ?A man did it and (then) the man did it.
 (b) ?The men did it and (then) some men did it.

With regard to examples such as (201) and (202), Gleitman's (1965) observations regarding conjunction and stress (a subject not gone into in detail in the present account of conjunction) seem highly relevant. Gleitman convincingly argues that the rules relating to conjoined structures must provide for the introduction of stresses on certain "non-repeated" (i.e., either formally non-identical or formally identical but referentially distinct) constituents. Thus the constituents stressed in the following examples of sentence conjunction:

- (203) (a) I saw an old house and I saw a new house.
 (b) Washington (D.C.) is in the East and Washington (State) is in the West.

would not necessarily be stressed were the sub-sentences in which they occur not conjoined: cf.

- (204) (a) I saw an old house.
 (b) Washington (D.C.) is in the East.

Gleitman points out, further, that in cases where the only non-repeated constituents in conjoined structures are determiners, while examples like (201) and (202) are ungrammatical (or questionable), similar examples involving stressable determiners are quite satisfactory: e.g.,

- (205) (a) One man and (then) the other man did it.
 (b) Those men and (then) some other men did it.
 (c) One man did it and (then) the other man did it.
 (d) Those men did it and (then) some other men did it.

On the basis of such evidence, she proposes rules similar to the following (where * is an indicator of stress, inserted by rule on certain non-repeated constituents in conjoined structures):

- (206) (a) a* → one, another
 (b) some* → some, some other
 (c) the (sg.)* → this, that, the other
 (d) the (pl.)* → these, those, the others

In other words, one, and another are stressed forms of a, etc.

Were our schema extended so as to include provisions for stress placement, then, it is probable that Condition (i.e) could be eliminated.

(f) This subpart of Condition (i) is intended to exclude such ungrammatical strings as:

- (207) (a) *The and a man and woman respectively arrived.
- (b) *That and one man and woman respectively arrived.
- (c) *We bought some beans and carrot.
- (d) *We bought the beans and carrot.

Were we to consider only examples like (207.a), it might seem that Gleitman's proposals about stress in relation to conjunction might automatically handle the problem. However, it is clear from (207.b), which contains stressed counterparts of the determiners of (207.a) and is nonetheless ungrammatical, that such is not the case.

Strings like (207.c) and (207.d) are meant to show that determiners differing only in number cannot be conjoined (and ultimately collapsed by a subsequent rule into a single plural form). Thus we must avoid deriving these strings from the structures underlying, respectively:

- (208) (a) We bought some beans and a carrot.
- (b) We bought the beans and the carrot.

(The ungrammaticalness of (207.d), if it is a fact, indicates that "singular" the and "plural" the must be distinguished just as a and some must.)

Condition (i.f) on the schema is meant to block these and similar derivations. Ultimately, however, it must be so framed that, while blocking the examples of (207), it permits such probably grammatical conjunctions of determiners as occur in:

- (209) (a) This and several other arguments were presented.
- (b) These and many other men have managed it.

Condition (j): If $\{B\}$ does not consist of single IC's of $\{A\}$, then $\{B\}$ does not end with constituents of the following types:

- (a) certain derivational affixes
- (b) certain differing non-affixal AUX's
- (c) certain DET's

This condition is to "secondary conjunction" what Condition (i) is to "primary conjunction", and, like Condition (i), it is no doubt less than exhaustive. What Condition (i) does is to block the application of the Derived Conjunction schema in certain cases where, were the schema to be applied, the $\{B\}$ set would consist of the first IC of the $\{A\}$ set plus a remainder that ended in inherently non-conjoinable constituents. Examples of ungrammatical strings whose derivation is blocked by Condition (j) are:

- (210) (a) *I went on the de-, and John went on the of-, fensive.
- (b) *John has, and Bill will, eaten and sleep respectively.
- (c) *The liner sailed down the, and the tugboat chugged up the, river.

(These examples pertain to subparts (a), (b), and (c) of the condition respectively.)

As in the case of Condition (i), there are, again, certain derivational affixes, certain differing non-affixal AUX's, and certain DET's to which the condition does not apply: e.g.,

- (211) (a) ?I supported the pro-, and he supported the anti-, Castro forces.
- (b) John should, and Bill must, eat and sleep respectively.
- (c) The liner sailed down this, and the tugboat chugged up that, river.

(In the case of derivational affixes, a similar restriction, not stated in the present grammar, must be imposed upon the C set to block such derivations as (212.b) from (212.a):

- (212) (a) Mary is too mannish for Bill, and Susan is too childish for Bill.
- (b) *Mary is too man-, and Susan is too child-, ish for Bill.)

3. Derived But- and Or-Conjunction

Conjoined structures involving but and or have been accorded much less attention by transformationally-oriented grammarians than have conjoined structures involving and. The fullest investigation of but-conjunction to date, Bellert (1966), is concerned primarily with the semantics of the conjunction, and limits itself entirely to uses of but as a connector of full S's. As for or-conjunction, it has received even less in the way of systematic scrutiny, although notes on some of its properties do appear in the work of Schane and others.

The present study will do little to correct this situation. Although we shall propose a schema for derived but- and or-conjunction (in fact, the same schema proposed for and-conjunction), our account of derived but- and or-conjunction will not be highly detailed, and will remain somewhat isolated from our general account of derived conjunction, which centers around constructions involving and.

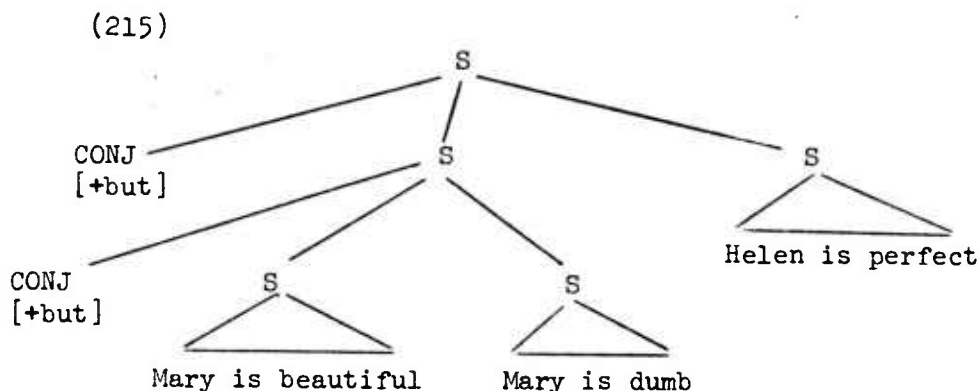
Before discussing derived constructions involving but and or, we shall offer a few observations on these conjunctions as connectors of full S's. In the first place, then, as Gleitman (1965) has observed, but, unlike and and or, cannot occur more than once in a set of conjoined S's--or, to put it another way, exactly two S's may be conjoined by but. Thus, while (213.a) and (213.b) are grammatical, (213.c) is not:

- (213) (a) John will sing and Bill will dance and
Peter will play the piano.
(b) John will sing or Bill will dance or
Peter will play the piano.
(c) *John will sing but Bill will dance but
Peter will play the piano.

It is true, of course, that more than one but may occur in a sentence: e.g.,

- (214) Mary is beautiful but (she is) dumb, but Helen
is perfect.

But in the deep structure corresponding to such a sentence, each but conjoins exactly two S's. Thus the deep structure corresponding to (214) is, roughly:



This restriction on but may be captured in a strict-subcategorization feature such as:

(216) but [- __SSS (S)*]

Other restrictions on the distribution of but, however, such as those investigated by Bellert, are difficult or impossible to capture in a syntax, since they depend upon an ideational context which may or may not be linguistically signalled. Bellert argues that in all "simple instances" of but-conjunction, both of the following conditions must be met:

- (a) the two conjoined S's differ in "the value of a variable";
- (b) one of the S's contains a negative morpheme where the other does not.

(Condition (a) means, essentially, that identical nodes occurring in identical configurations in the two S's dominate different lexical material.) Thus for Bellert the following are simple instances of but-conjunction:

- (217) (a) John went to Boston but he (↔ John) didn't go to Washington.
- (b) John went to Boston but Mary didn't (go to Boston).
- (c) John is happy but Mary is unhappy.

Bellert argues, further, that in all cases where conditions (a) and (b) are not both met in the surface sentence, there is either an

equivalent sentence or an implied sentence in which they are met. A case in which there is an equivalent sentence would be (218), which is obviously a paraphrase of (217.c):

(218) John is happy but Mary is sad.

A case in which there is an implied sentence would be (219), which implies (217.b):

(219) John went to Boston but Mary stayed home.

In some cases where simple instances of but conjunction are "implied", neither of the conjoined S's of the simple instances may actually be uttered. Thus in:

(220) John practiced the piano but Mary watched TV.

while the "implied" simple instance of but-conjunction might be one of the following:

(221) (a) John practiced the piano but Mary didn't.
 (b) John didn't watch TV but Mary did.

it might also, according to what the speaker has in mind, be one of the following:

(222) (a) John obeyed Mother but Mary didn't.
 (b) John is a chip off the old block but Mary isn't.
 (c) John is complusive but Mary isn't.
 etc., etc.

Obviously, then, Bellert's conditions (a) and (b) cannot be captured in a purely syntactic account of but-conjunction (nor, in fact, could they really be captured in any purely linguistic account).

Even greater difficulties would arise in attempting to formalize Harris's (1965) observation to the effect that but-conjunction normally requires at least two differences in the conjoined S's (to which, e.g.,

(223) (a) She is beautiful but she is dumb.
 (b) She respects him but she fears him.
 (c) She plays rarely but she plays beautifully.

constitute apparent exceptions.) While it might be possible to give some account in the semantic component of the oddity of:

- (224) (a) She is beautiful but her sister is beautiful.
 (b) She plays the piano but she plays the violin.

no such account is attempted in the present grammar, and the only restriction imposed on but-conjunction of S's (that is not also imposed on and-conjunction) is the condition on binariness expressed in (216), above.

With regard to or-conjunction of full S's, T. Diller has observed that there is, in addition to the alternative (ALT) use of or, an "ultimatum" (ULT) use of this conjunction. Consider the sentences:

- (225) (a) (Either) John will play or I will (play).
 (b) John had better play or I will (play).

While (225.a) is a simple prediction that one of two events will occur, (225.b) is a kind of threat to the effect that, unless one event occurs, another (undesirable) event will.

There are several syntactic differences between the ALT or and the ULT or. First, only the ALT or allows either to occur before the first of the conjoined S's (when exactly two S's are involved): compare (225.a) and:

- (226) *Either John had better play or I will.

Second, the ULT or always precedes a declarative sub-sentence, while the ALT or may precede a declarative, interrogative or imperative sub-sentence. On the other hand, while the ALT or is always preceded and followed by sentences in the same mood, the ULT or, although followed by a declarative, may be preceded by an imperative. Consider:

- (227) (a) (Put your) hands up or I'll shoot. (ULT)
 (b) Will John play or will Bill (play)? (ALT)
 (c) Say something sensible or be quiet. (ALT)

Finally, only the ALT or permits derived conjunction, as in:

- (228) (Either) John or I will play.

In this connection, note that, while (229.a) may be interpreted as involving either the ALT or the ULT or, (229.b) allows of the former interpretation only:

- (229) (a) There will be a settlement or there will be trouble.
 (b) There will be (either) a settlement or trouble.

Since the ULT or does not permit derived conjunction, it is not given any further attention here.

To turn now to derived but- and or-conjunction, we may begin by noting an important difference between, on the one hand, but- and or-conjunction and, on the other, and-conjunction, with respect to the range of conjoined sentences that are potential candidates for derived conjunction. As we have seen, in the case of and-conjunction there is no requirement of identity between parts of the conjoined sentences in order for the Derived Conjunction schema to apply. Thus the schema can apply to (230.a) just as it can to (230.b):

- (230) (a) Mary is beautiful and John is strong.
 (b) Mary is beautiful and Mary is strong.

with the ultimate results being (among others), respectively:

- (231) (a) Mary and John are beautiful and strong respectively.
 (b) Mary is both beautiful and strong.

In the case of but- and or-conjunction, on the other hand, there is a requirement of identity between parts of the conjoined sentences in order for derived conjunction to be possible. Thus, while both (232.a) and (232.b) are grammatical instances of but-conjunction of full S's, only (232.b) can undergo derived conjunction, the ultimate result being (232.c):

- (232) (a) Mary is beautiful but John is strong.
 (b) Mary is beautiful but Mary is strong.
 (c) Mary is beautiful but strong.

Similarly, of the or-conjoined full S's of (233.a) and (233.b), only those of (233.b) are subject to derived conjunction, the ultimate result being (233.c):

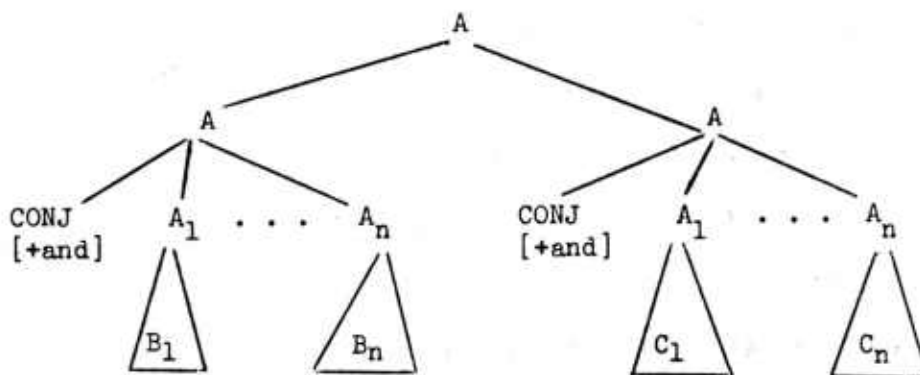
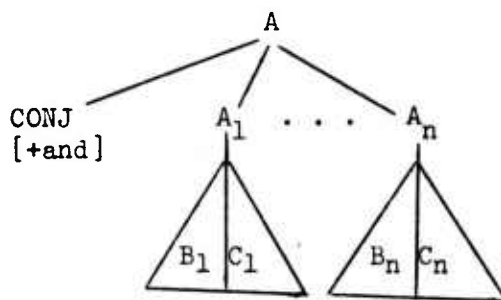
- (233) (a) Mary is beautiful or John is strong.
 (b) Mary is beautiful or Mary is strong.
 (c) Mary is beautiful or strong.

Another way of stating the difference under discussion is the following: respectively does not occur in conjoined structures derived from underlying but- or or-conjoined S's, and there is no process in derived but- or or-conjunction similar to the process of respectively insertion in derived and-conjunction.

In spite of this difference, it nonetheless seems desirable to postulate an essentially uniform process for all derived conjunction, whether the underlying conjunction is and, but, or or. This may, in fact, be done quite easily by placing an appropriate condition on the Derived Conjunction schema, to preclude the application of the schema in certain instances in which the underlying conjunction is but or or. Before we state this condition, however, it may be helpful to repeat the Derived-And-Conjunction schema at this point, and to show how the schema may be modified so as to apply when the underlying conjunction is but or or.

The And-Conjunction schema, then, has the form:

(234)



Now in order to generalize this schema, we need only replace the [+and] under CONJ by [+X], where X is a variable ranging over and, but, and or, and where all X's in any one application of the schema have the same value. Then, in order to ensure that the proper identity conditions for derived but- or or- conjunction are met, we need only add a condition to the following effect:

- (235) Condition: where [+X] ≠ [+and], either all members of the set {B₁...B_n} are totally identical or all members of the set {C₁...C_n} are totally identical.

Such a condition automatically precludes the application of the schema to the structures underlying such sentences as (232.a) or (233.a). In the case of (232.b) or (233.b), on the other hand, the condition is met, so the schema may apply. (Since, by means of the condition stated in (235) the members of one of the sets of conjuncts involved in derived but- or or-conjunction will always be totally identical, the Identical-Conjunct Collapsing schema will always be applicable in such cases, with the result that the CONJ associated by the schema with this set will always be deleted--cf. Section III.C, below.)

Some special account is needed of sentences such as (236.a-b) which, presumably, are derived from the structures underlying (236.c-d) respectively:

- (236) (a) He saw not John but Bill.
 (b) He saw John but not Bill.
 (c) He did not see John but he saw Bill.
 (d) He saw John but he did not see Bill.

It is clear that, e.g., (236.a) cannot be derived from (236.c) if the structure underlying the latter is analyzed into the B's and C's of the Derived Conjunction schema in such a way as to conform with the condition stated in (235). The structure underlying (236.c) can be analyzed into the B's and C's of the schema, in conformity with the condition, as follows:

- (237) he did not see John he saw Bill
 B C B C

This analysis would result, ultimately, in:

- (238) He did not see John but saw Bill.

If, however, we attempt to analyze the structure underlying did not see John/saw Bill in (238) into the B's and C's of the schema, we get:

(239) PAST NEG see John saw Bill
 └───┬───┘ └──┘ └──┘ └──┘
 B C B C

But the analysis (239) does not conform with the condition stated in (235), and hence (236.a) should not be directly derivable from this analysis.

Perhaps what is required is a special rule of NEG-attraction in but-conjunction that converts a structure such as that underlying the string of (239) into a structure that is analyzable into the B's and C's of the Derived Conjunction schema in such a way as to conform with the condition of (235): i.e.,

(240) saw NEG John saw Bill
 └──┘ └──┬──┘ └──┘ └──┘
 B C B C

Such a rule could also account for the derivation of (236.b) from the structure underlying (236.d) in some such way as follows:

(241) (a) he saw John but he PAST NEG see Bill
 ⇒ (by Derived Conjunction)
 (b) he saw John but PAST NEG see Bill
 ⇒ (by NEG-Attraction)
 (c) he saw John but saw NEG Bill
 ⇒ (by Derived Conjunction)
 (d) he saw John but NEG Bill
 (He saw John but not Bill.)

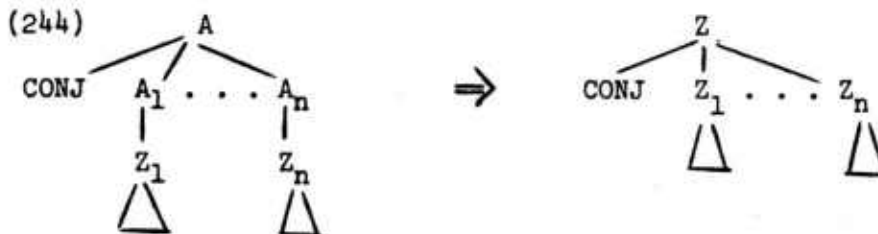
Since we have not attempted to formulate such a NEG-attraction rule in the present grammar, however, the derivation of sentences like (236.a-b) remains unaccounted for.

Of the various conditions proposed in Section III.A.a, above, on application of the Derived Conjunction schema when the underlying conjunction is and, we have not investigated which also apply when it is but or or. It seems likely that all of them do apply, and that possibly other special conditions, in addition to (235), must be included so as to properly restrict derived structures with but or or. It may be noted, in any case, that but and or, like and, occur in a very wide range of structures involving derived conjunction, including structures that involve "secondary conjunction". Some pertinent examples are:

- (242) (a) I considered the sausage but chose the spaghetti.
 (b) He hinted at, but refused to admit, his part in the plot.
 (c) Hazel has small but conspicuous spots on her dress.
 (d) He studies intelligently but sporadically.
 (e) Bill likes, but Wallace dislikes, long hair.
 (f) Mother gave Ruth a dime but Marie a quarter.
- (243) (a) She'll watch television or go to the movies.
 (b) She'll broil or fry the steak.
 (c) John or Bill will help you.
 (d) He'll come today or tomorrow.
 (e) (Either) Bill likes, or Wallace dislikes, long hair.
 (f) Mother gave Ruth a dime or Marie a quarter.

B. The Node Relabeling Schema (obligatory)

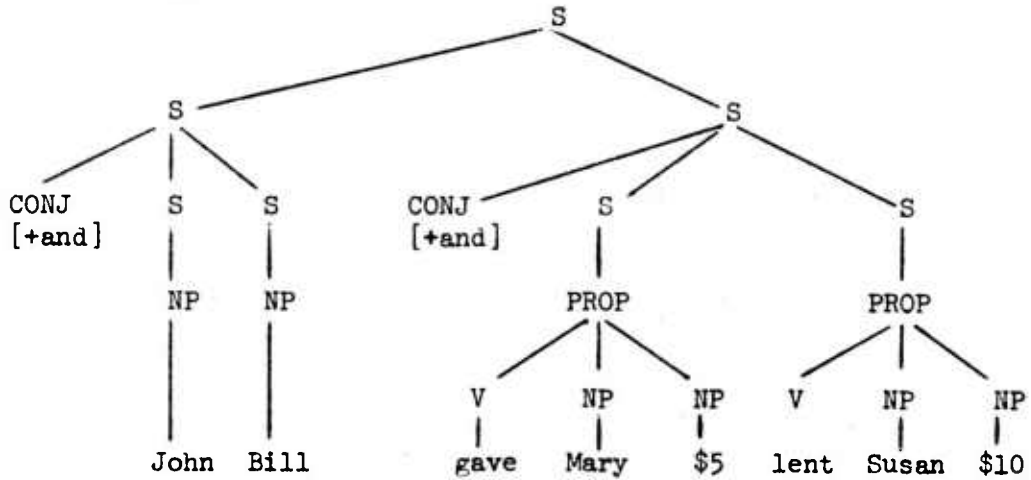
The Node Relabeling schema has the following form:



Where the nodes $Z_1 \dots Z_n$ are the only daughters of $A_1 \dots A_n$ respectively

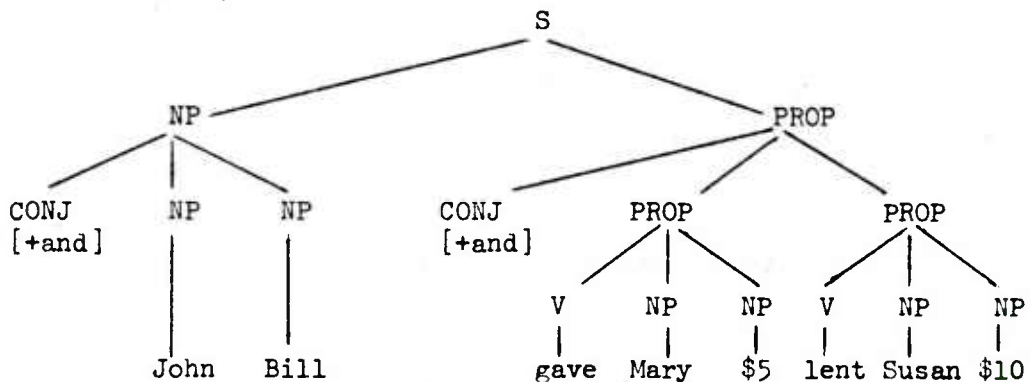
Its effect is to eliminate certain nodes introduced by the Derived Conjunction schema. Where application of the Derived Conjunction schema results in primary conjunction, Node Relabeling always applies both to the set of conjuncts $\{B_1...B_n\}$ and to the set $\{C_1...C_n\}$. For example, where application of the Derived Conjunction schema results in the tree:

(245)

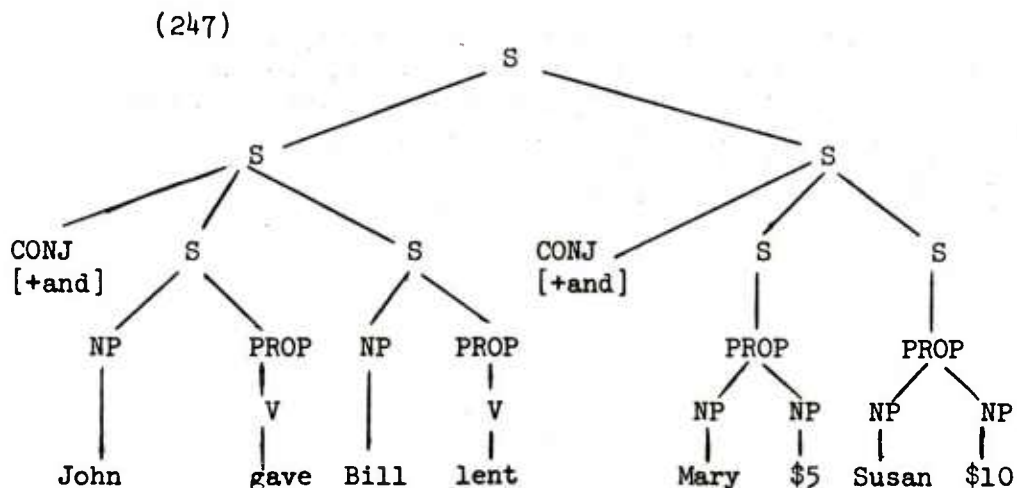


the Node Relabeling schema relabels both the S nodes over the conjoined NP's and those over the conjoined PROP's. Thus after application of the Node Relabeling schema to (245), the tree has the form:

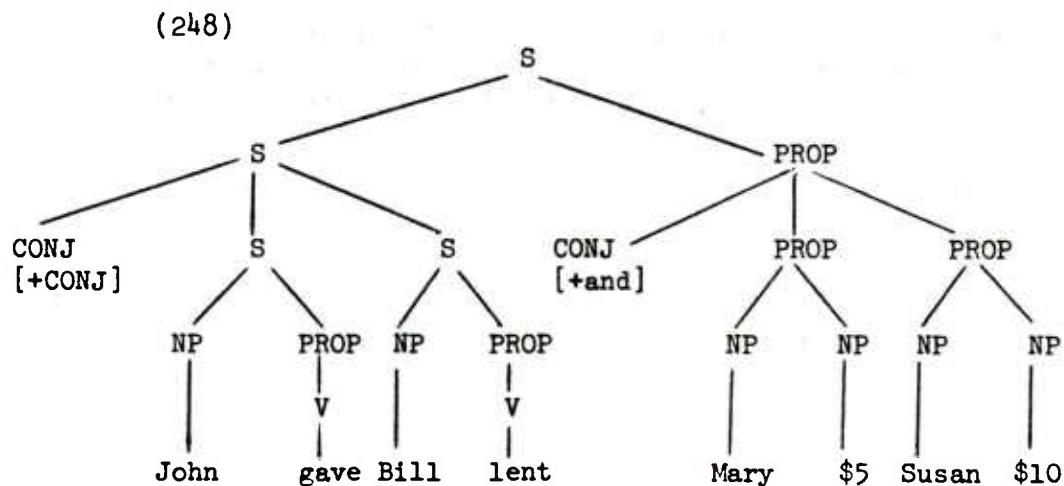
(246)



When, on the other hand, application of the Derived Conjunction schema results in secondary conjunction, Node Relabeling fails to apply to that set of conjuncts whose members are not single constituents. For example, where application of the Derived Conjunction schema results in the tree:

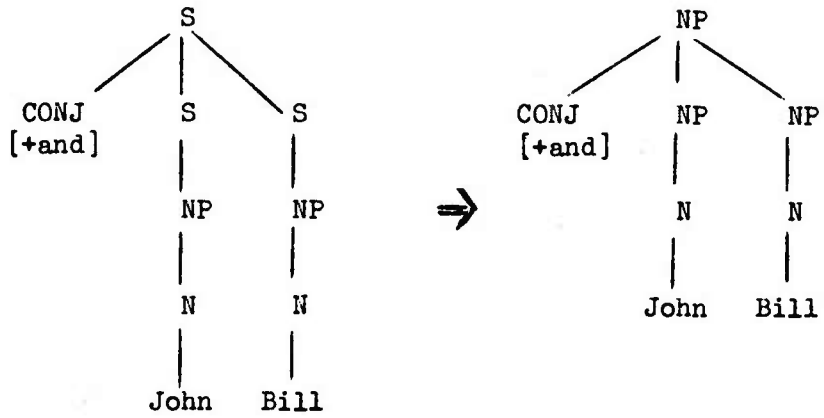


the Node Relabeling schema relabels the S nodes over the right-hand set of conjuncts (each of which is a PROP), but fails to apply to the left-hand set of conjuncts (each of which is a NP PROP, and hence not a single constituent). Thus after the application of the Node Relabeling schema to (247), the tree has the form:



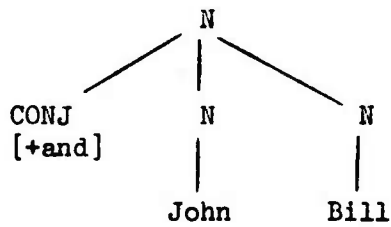
Node Relabeling never reapplies to a structure that is the immediate result of Node Relabeling. For example, if Node Relabeling has applied to change the subtree (249.a) to the subtree (249.b):

(249)



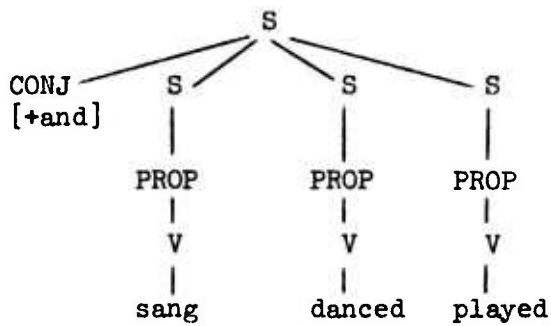
it cannot reapply to change (249.b) to (250):

(250)



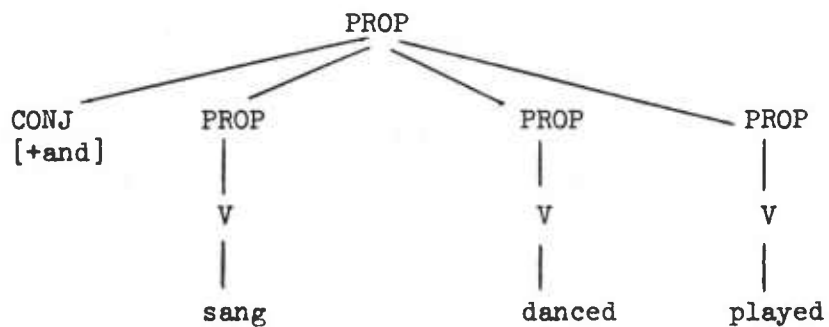
Similarly, operating upon a subtree such as:

(251)

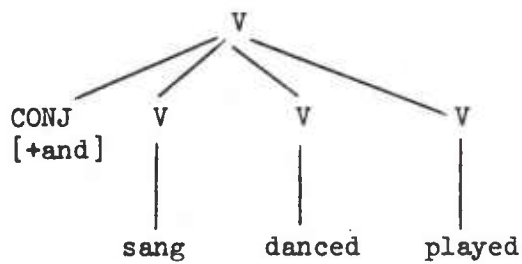


node relabeling results in (252.a) rather than (252.b)

(252) (a)

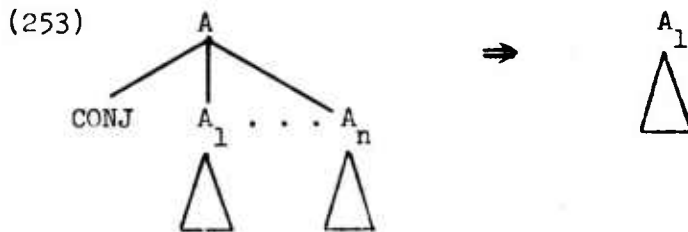


(b)



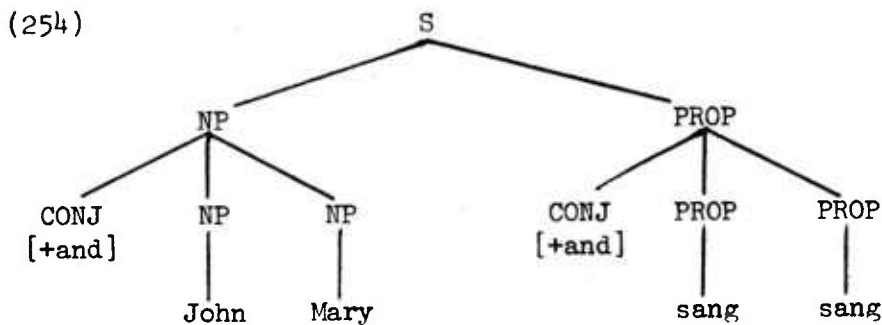
C. Identical Conjunct Collapsing (partly optional)

The Identical-Conjunct Collapsing schema has the form:

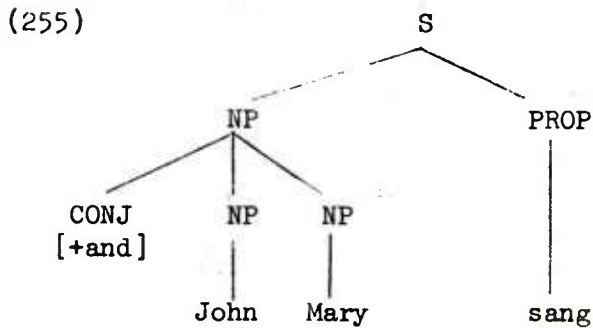


- Conditions: (1) $A_1 \equiv A_2 \equiv \dots A_n$
 (2) Optional if A_1 includes an occurrence of NP; otherwise obligatory.

This schema operates in cases where application of the Derived Conjunction and Node Relabeling schemata has resulted in the derivation of a set of totally identical conjuncts. Its effect is to replace the set of identical conjuncts by a single number of the set, and to delete the conjunction. Thus it operates, for example, upon the right-hand set of conjuncts of:

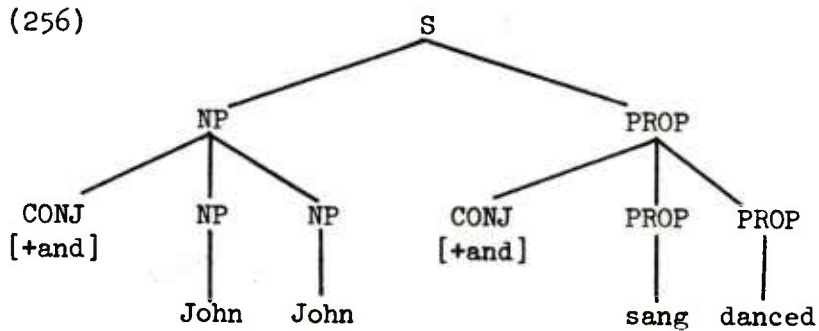


to derive:

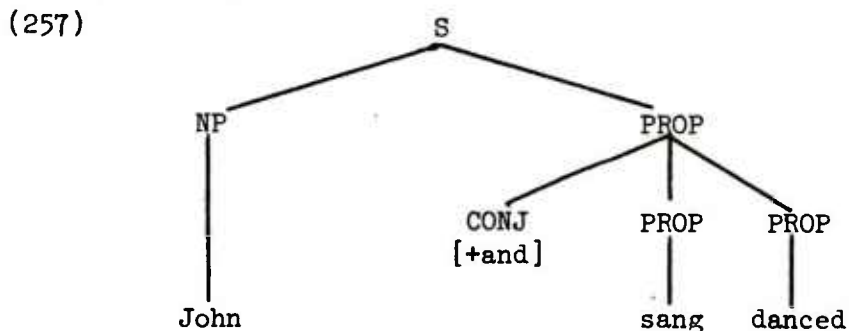


The second condition on the schema, to the effect that application is optional if the totally identical conjuncts include NP's reflects our decision not to include referential indexing in the syntax, and thus to make all rules that depend upon referential identity optional (as discussed in PRO). Formally identical structures that include NP's may behave under conjunction either like other identical structures or like non-identical structures (according to whether or not the NP's are referentially, as well as formally, identical).

Thus given a tree such as:



the Identical Conjunct Collapsing schema may or may not be applied. If it is applied, the result is:



(Ultimately: John (both) sang and danced.)

If it is not applied, the ultimate result is (258.a) or (258.b)

- (258) (a) John and John respectively sang and danced.
 (b) John and John sang and danced respectively.

As presently stated, the condition on the schema making application optional if the totally identical conjuncts include NP's is too strong. That is, there are some formally identical NP's which must, because of their meanings, be referentially identical as well, and in such cases application of the schema is obligatory. Among the NP's of which this is true are I and NP's with generic determiners. Thus from the structure underlying:

- (259) I sang and I danced.

may be derived (260.a) but not (260.b)

- (260) (a) I (both) sang and danced.
 (b) *I and I sang and danced respectively.

Similarly from the structure underlying (261.a) may be derived (261.b) but not (261.c)

- (261) (a) John likes dogs and Bill likes dogs.
 (b) John and Bill (both/each) like dogs.
 (c) *John and Bill like dogs (and dogs) respectively.

(In (261.c), and dogs appears in parentheses, since, if the structure underlying dogs and dogs were to be generated, the Plural Collapsing schema--cf. Section G, below--would obligatorily apply to it, reducing it to dogs. Since (261.c) is ungrammatical with or without and dogs, this point is rather academic.)

Ultimately, then, when more is known about just which formally-identical NP's are necessarily referentially identical as well, the second condition on the Identical-Conjunct Collapsing schema must be revised so as to make application of the schema obligatory in the appropriate cases.

D. Set Marking (obligatory)

It has usually been assumed that conjoined NP's must be specified as "plural" (i.e., assigned the feature [+Plural]) in

order to account for, e.g., the "plural" number agreement and "plural" anaphoric pronominalization found in such sentences as:

- (262) (a) Peter, Paul, and Mary sing very well,
don't they?
(b) His son and daughter have left, and they
aren't coming back.

There are, however, several arguments that can be offered against such an assumption. In the first place, if [+Plural] is the feature responsible for the occurrence of the plural affix (usually the suffix -(e)s) in nouns, it is clear that this affix is not present in the conjoined NP's of sentences such as (262). Thus, in (262.b) his son and daughter is not changed to his son(s) and daughters, even though the sentence does involve "plural" number agreement and anaphora. Furthermore, there are conjoined NP's (of a type that we do not deal with in detail in this analysis) that do involve plural affixes but that do not require "plural" number agreement or anaphora: e.g.,

- (263) Bacon and eggs is a popular breakfast, isn't it?

Moreover, if we look elsewhere in the language, at the collective nouns, we find that the occurrence of a plural affix is, in the case of such nouns, by no means required in order for "plural" number agreement and anaphora to be possible. Thus in many dialects the even-numbered sentences of (264) are fully as grammatical as the odd-numbered sentences:

- (264) (a) The group sings very well, doesn't it?
(b) The group sing very well, don't they?
(c) His family has left, and it isn't coming
back.
(d) His family have left, and they aren't
coming back.

Such evidence points to a conclusion that there is no necessary relation between the occurrence of a [+Plural] feature specification within a Noun Phrase and the occurrence of "plural" number agreement and anaphora. The latter phenomena, we would maintain, have nothing at all to do, at least directly, with the [+Plural] specification of Nouns, but depend, instead, upon a feature of entire Noun Phrases. This feature, which we adopt from McCawley (1967a), we shall call [+Set].

It is suggested the [+Set] feature be optionally assigned to NP's headed by a singular noun with the feature [+Collective], as well as being obligatorily assigned to and-conjoined NP's (other than the bacon-and-eggs and a-gentleman-and-a-scholar types, which are not discussed here) and to NP's headed by a plural noun. Our formulation of the Set Marking rule here, however, is limited to and-conjoined NP's.

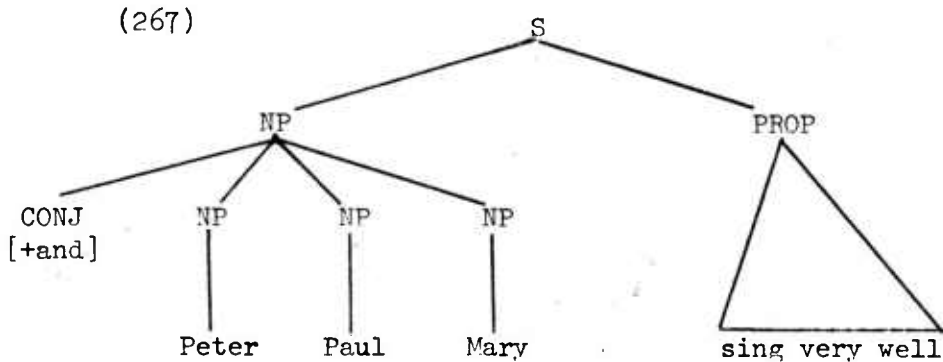
(265) SD: X [-CONJ X] X
 NP [+and]
 1 2 3

SC: Add [+Set] as feature of 2

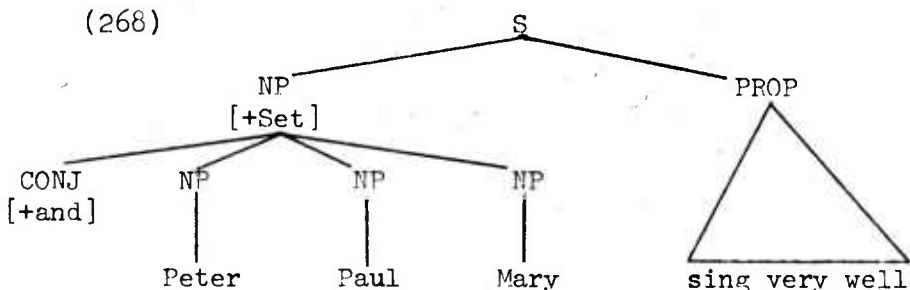
(Set marking of or-conjoined NP's, not dealt with here, requires a different rule, in which, for most dialects, the [+Set] feature is added to the NP dominating the or-conjoined set if any one of the conjuncts is headed by a plural noun: e.g.,

- (266) (a) Either John or the children don't like fish.
- (b) Either the children or John don't like fish.
- (c) Either John or Bill doesn't like fish.)

The rule operates upon, e.g.:



to derive:

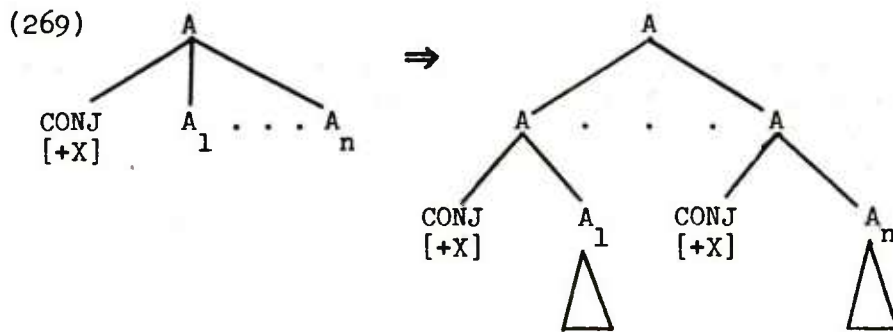


(Ultimately: Peter, Paul, and Mary sing very well.)

It should be noted that this formulation of the Set Marking rule presupposes that those rules that depend upon the presence or absence of the [+Set] feature on an NP--i.e., number agreement and pronominalization--follow derived conjunction, and are, in fact, last-cyclic. (For a discussion of the ordering of number agreement in relation to other rules, cf. RULE ORDERING.)

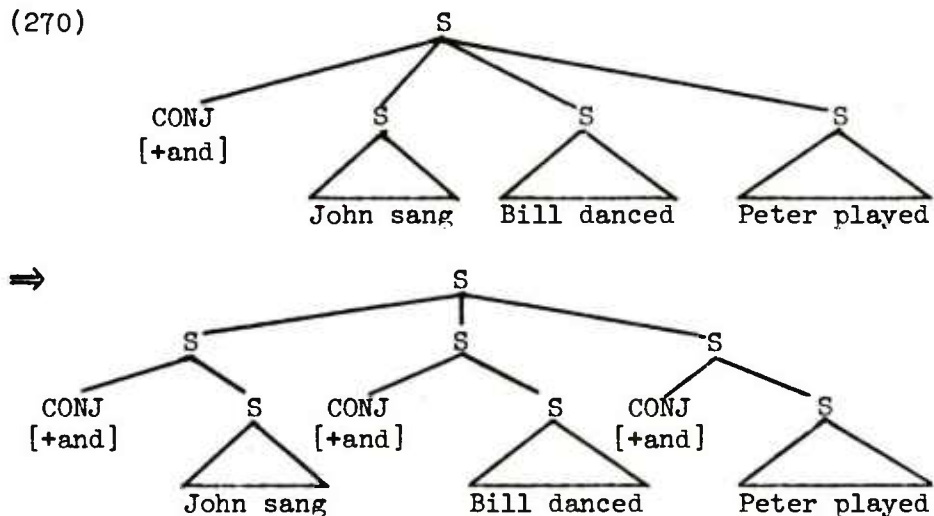
E. Conjunction Spreading (obligatory)

The Conjunction-Spreading schema has essentially the form proposed in Lakoff and Peters (1966):

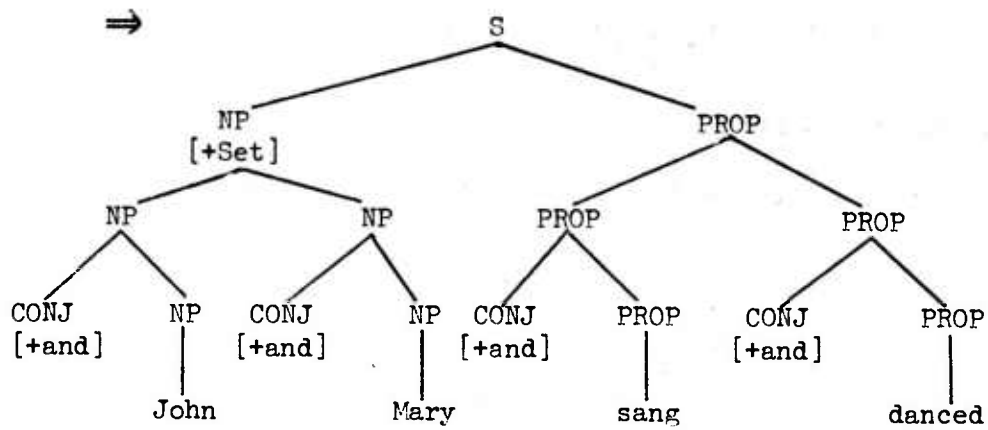
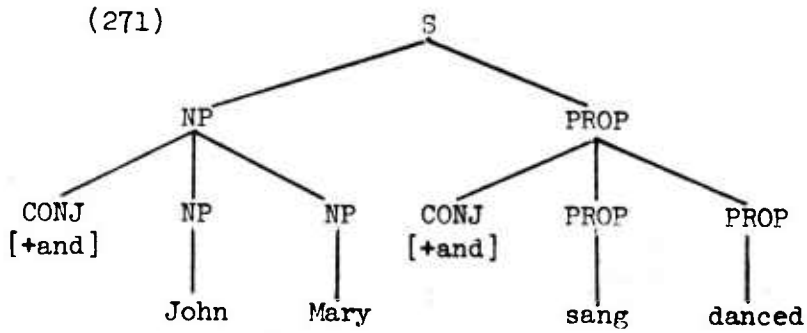


Where [+X] = [+and], [+but], or [+or].

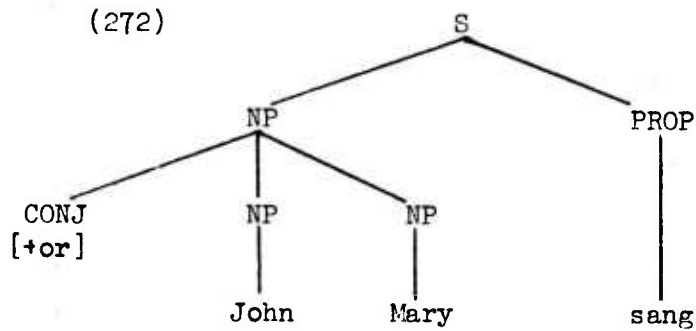
Some examples of the application of the schema are:

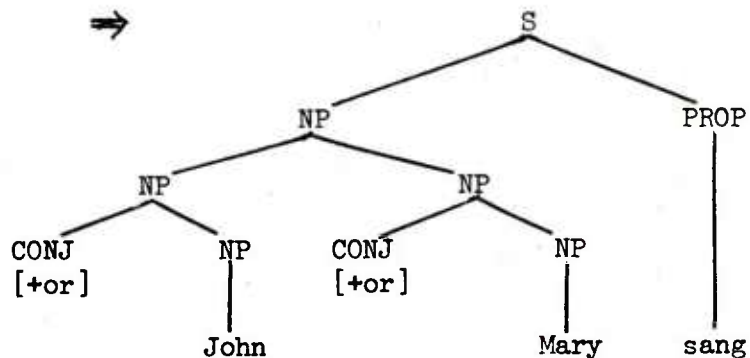


(Ultimately: John sang and Bill danced and Peter played.)



(Ultimately: John and Mary sang and danced respectively.)



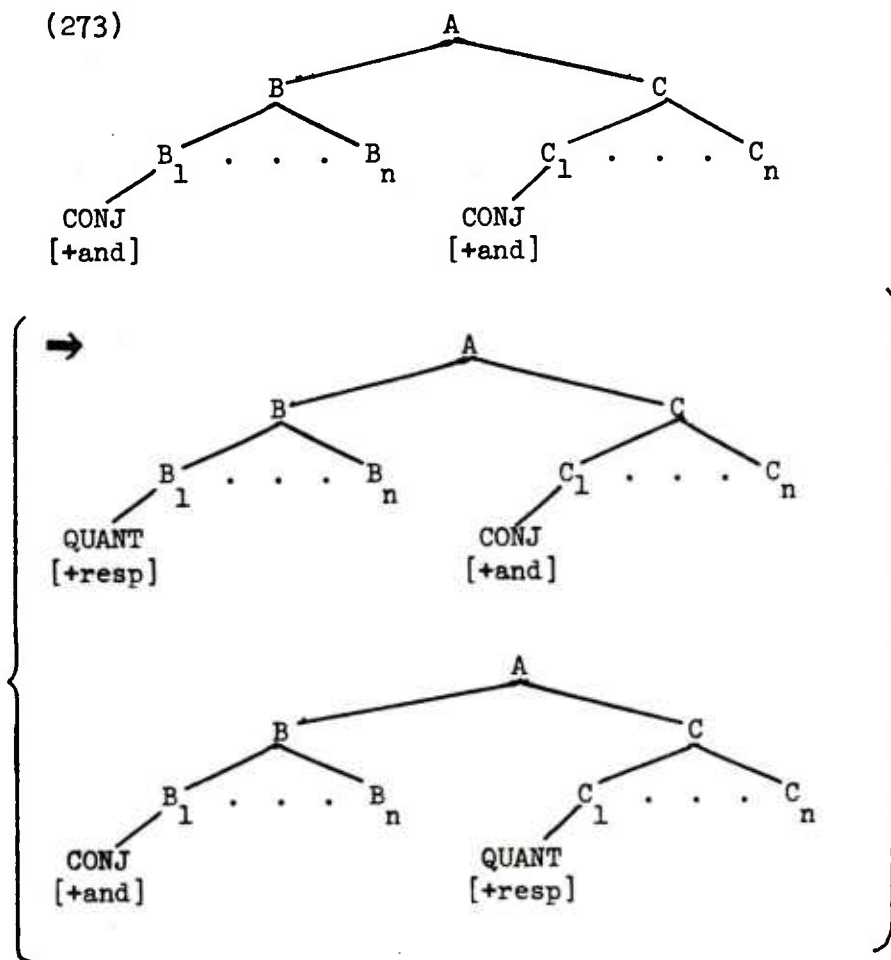


(Ultimately: (Either) John or Mary sang.)

F. Respectively Insertion (obligatory)

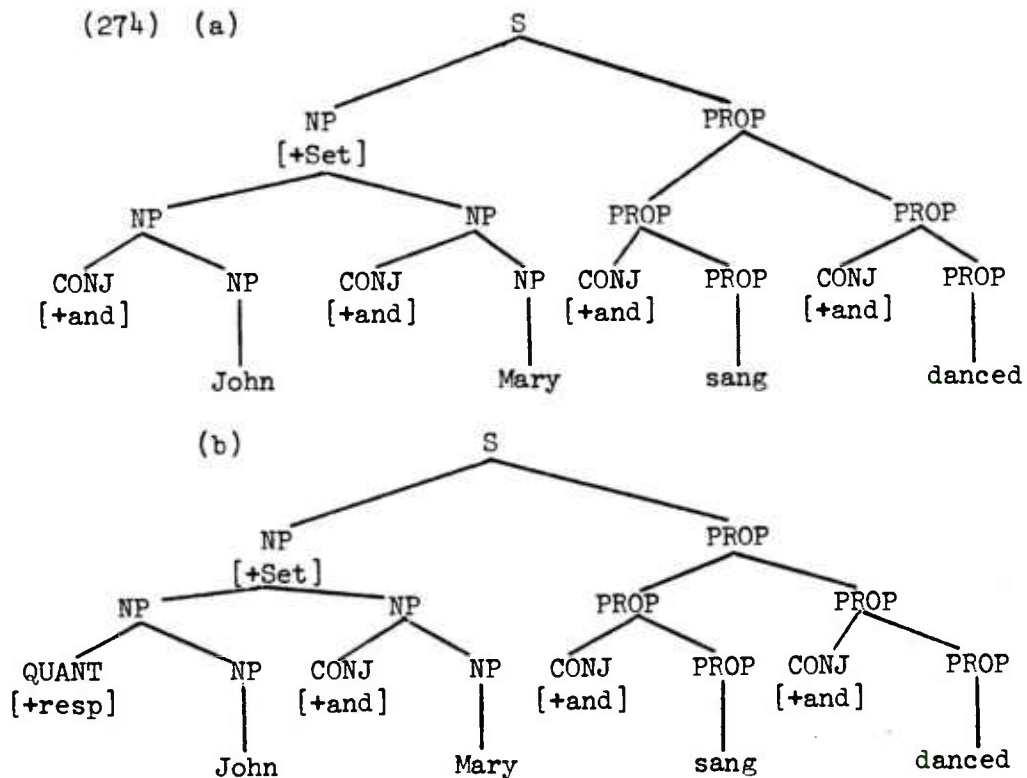
The Respectively Insertion schema has the following form:

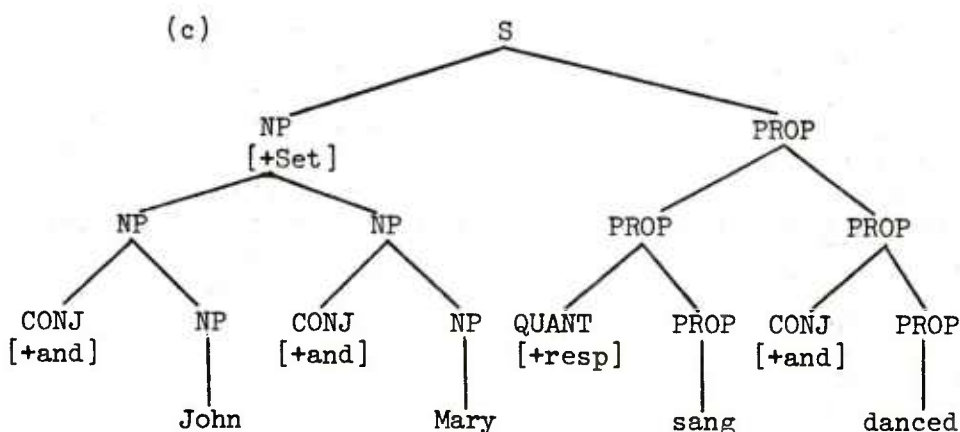
(273)



It operates upon derived and-conjoined structures in which neither of the sets of conjuncts has undergone Identical-Conjunct Collapsing (cf. III.C, above). (If either set of conjuncts has undergone Identical-Conjunct Collapsing, the structure will fail to conform with that of the left-hand tree of (273) and Respectively Insertion will be inapplicable.) The schema operates to replace the initial and of either the first or the second set of conjuncts by respectively (which, at this point in the derivation, is represented by a complex of features [+QUANT(ifier),+resp(ectively)]). Later, the Quantifier Movement rule (cf. Section III.M) obligatorily moves respectively to the end of the set of conjuncts into which it has been inserted, or, in some cases, into certain other sentence positions.

The Respectively-Insertion schema operates, for example, upon (274.a) to derive either (274.b) or (274.c):





Ultimately, (274.b) and (274.c) result in (275.a) and (275.b) respectively:

- (275) (a) John and Mary respectively sang and danced.
 (b) John and Mary sang and danced respectively.

As McCawley (1967b) has pointed out, more than one respectively may occur in a sentence, though the number of respectively's must always be at least one less than the number of and-conjoined sets. Thus we find sentences such as (276.a) but not sentences such as (276.b):

- (276) (a) John and Bill went to New York and Chicago respectively on Monday and Wednesday respectively.
 (b) *John and Bill respectively went to New York and Chicago respectively on Monday and Wednesday respectively.

In our view, the occurrence of more than one respectively in a sentence merely indicates that the Derived Conjunction schema, etc. have been applied more than once in such a way as to result in structures that meet the conditions for the Respectively Insertion schema. For example, the derivation of (276.a) is something like the following:

- (277) John went to New York on Monday, and Bill went to Chicago on Wednesday.
- ⇒ John went to New York, and Bill went to Chicago, on Monday and (on) Wednesday respectively.
- ⇒ John and Bill went to New York and (went to) Chicago respectively on Monday and (on) Wednesday respectively.

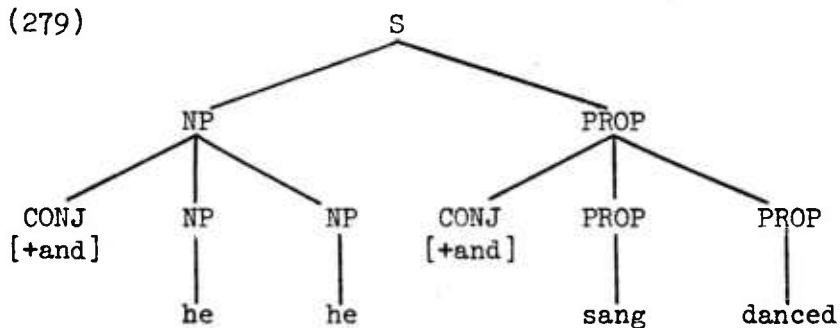
The limitation of the number of respectively's to at least one less than the number of and-conjoined sets is accounted for automatically by the fact that the Respectively Insertion schema never permits respectively to be inserted into both the first and the second of two sets of conjuncts that are ICs of the same structure.

G. Plural Collapsing (partly optional)

The Identical-Conjunct Collapsing schema (cf. III.C, above) operates to replace sets of totally identical conjuncts by a single member of the act. When the totally identical conjuncts are NP's, application of the schema is, with certain exceptions, optional. Exercise of the option is equivalent to treating the identical NP's as referentially identical, as well as formally identical. Failure to exercise the option is equivalent to treating the identical NP's as referentially distinct. Thus given a structure such as that underlying:

(278) He sang and he danced.

if the Derived Conjunction schema, etc. are applied to derive:



application of the Identical-Conjunct Collapsing schema results, ultimately, in:

(280) He (both) sang and danced.

in which case, clearly, the two occurrences of he in the underlying structure have been treated as referentially identical. On the other hand, if the Identical-Conjunct Collapsing schema is not applied to (279), one wishes the resultant sentence to be:

(281) They sang and danced respectively.

in which case the two occurrences of he in the underlying structure have been treated as referentially distinct.

Examples like the derivation of (281) from (279) involve the "collapsing" of a set of and-conjoined personal pronouns into a single plural pronoun. Such collapsing may occur not only when the conjoined pronouns are formally identical, but in other cases as well, e.g.,

- (282) (a) He and she sang and danced respectively.
→ They sang and danced respectively.
- (b) He and they sang and danced respectively.
→ They sang and danced respectively.
- (c) He and I sang and danced respectively.
→ We sang and danced respectively.

The (partly optional) schema which replaces a set of and-conjoined personal pronouns by a single plural pronoun is presented in the PRO Section. In the present section, we shall present a similar schema that is needed for certain sets of and-conjoined NP's that are headed by count nouns.

Consider the sentences:

- (283) (a) Those men sang and danced respectively.
- (b) John and Bill (both) married beautiful women.

Sentence (283.a) may derive from the structure underlying any of the following:

- (284) (a) That man sang and that man danced.
- (b) Those men sang and those men danced.
- (c) That man sang and those men danced.
- (d) Those men sang and that man danced.

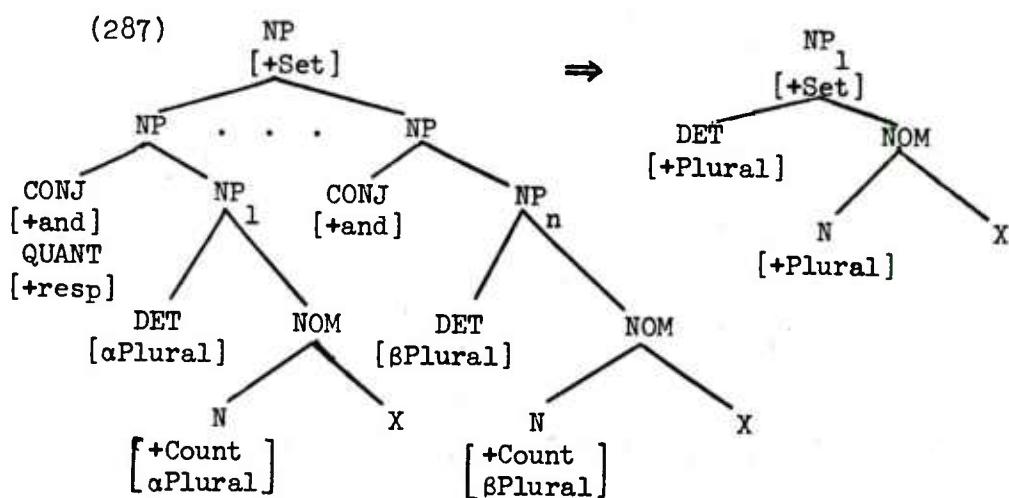
Similarly (283.b) may derive from the structure underlying any of the following:

- (285) (a) John married a beautiful woman and
Bill married a beautiful woman.
- (b) John married beautiful women and
Bill married beautiful women.
- (c) John married a beautiful woman and
Bill married beautiful women.
- (d) John married beautiful women and
Bill married a beautiful woman.

(In the case of (284.a-b) and (285.a-b), it would also have been possible to treat the formally identical NP's as referentially identical, and to apply the Identical-Conjunct Collapsing schema so as to derive, ultimately:

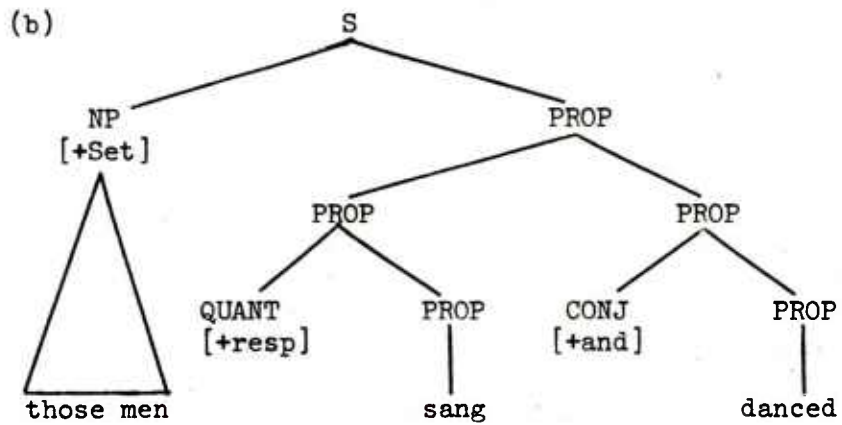
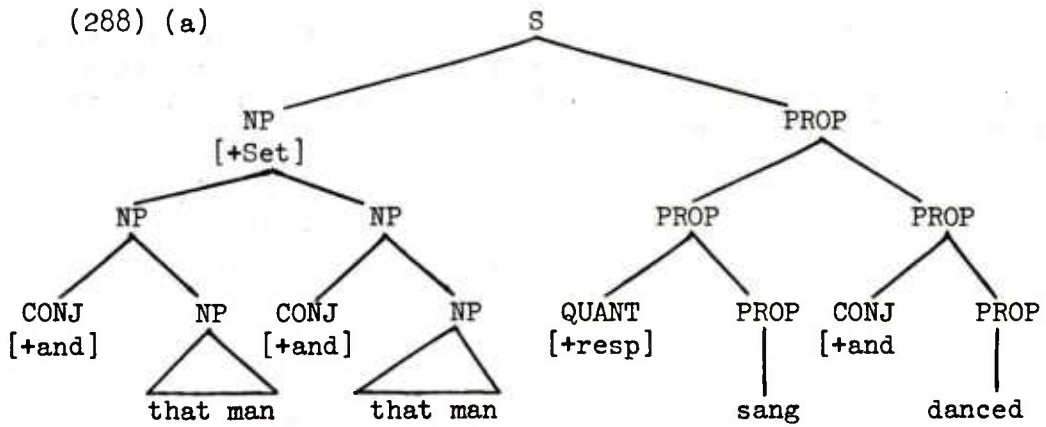
- (286) (a) That man (both) sang and danced. (←(284.a))
- (b) Those men (both) sang and danced. (←(284.b))
- (c) John and Bill (both) married a beautiful woman. (←(285.a))
- (d) John and Bill (both) married beautiful women. (←(285.b))

What is needed, then, is a schema that operates to replace a set of count-noun-headed NP's that are either totally identical, or identical except for the number specification of the nouns (and determiners, etc.), by a single NP headed by a plural noun. This schema may be stated as follows:



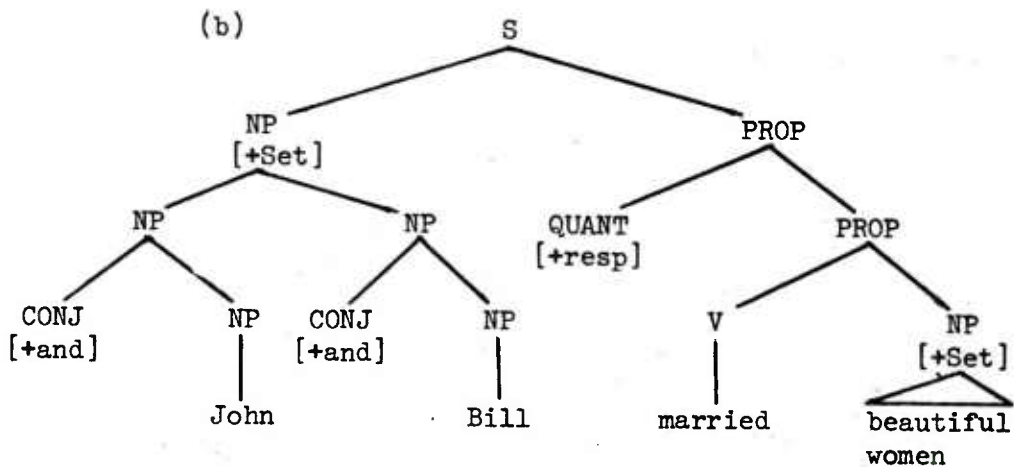
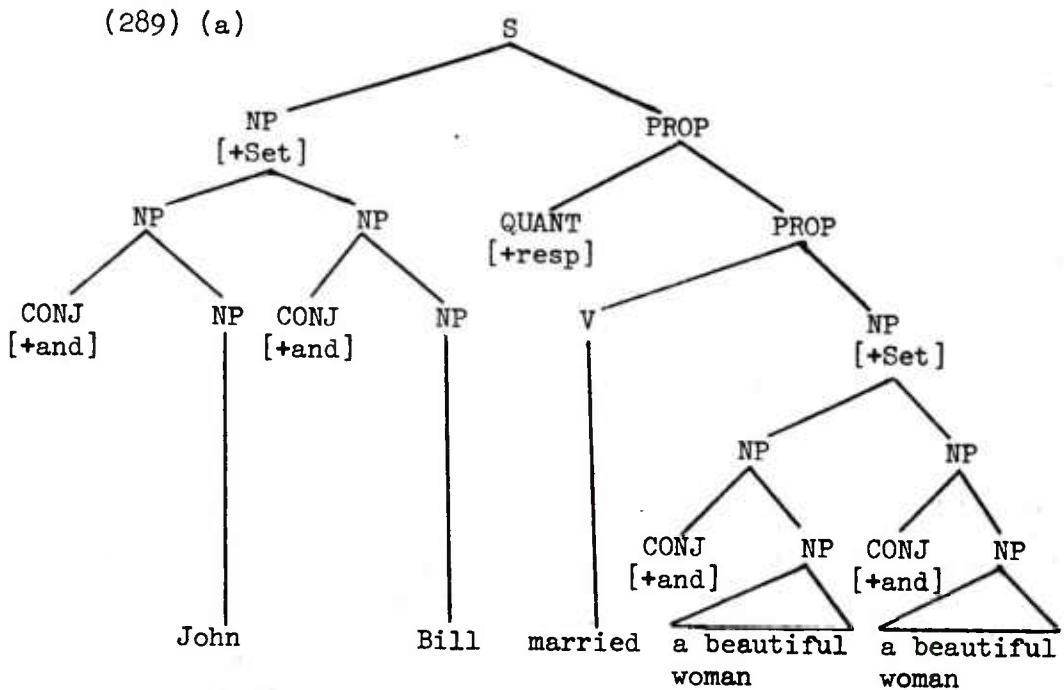
Condition: $NP_1 \equiv NP_2 \equiv NP_n$, except that the specifications for [Plural] may differ

The schema applies, for example, to change (288.a) to (288.b):



(Ultimately: Those men sang and danced respectively.)

Similarly, it applies to change (289.a) to (289.b):



(Ultimately, after deletion of QUANT [+resp]--cf. Section III.H--below--etc.: John and Bill (both) married beautiful women.)

It is necessary that the Plural Collapsing schema follow the Respectively Insertion schema in order to account for the occurrence of respectively in sentences such as (283.a). On the other hand, it is necessary that the Identical-Conjunct Collapsing schema (cf. Section III.C, above) precede the Respectively Insertion schema in order to account for the non-occurrence of respectively in sentences such as (286.b) (Those men (both) sang and danced.).

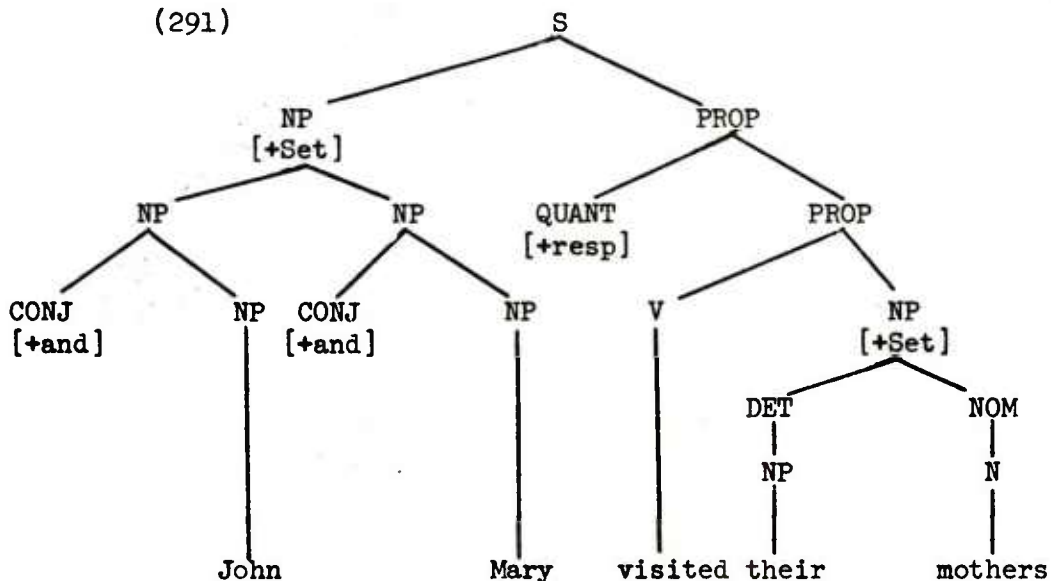
Since the application of the Identical-Conjunct Collapsing schema may result in the occurrence of a common-noun-headed plural NP corresponding to a set of underlying conjoined NP's, and since application of the Plural Collapsing schema always results in the occurrence of an NP of this type, the ordering of these two schemata in relation to the Respectively Insertion schema is crucial in accounting for just when respectively may occur and when it may not.

- H. Respectively → Respective (obligatory);
Respectively Deletion (obligatory)

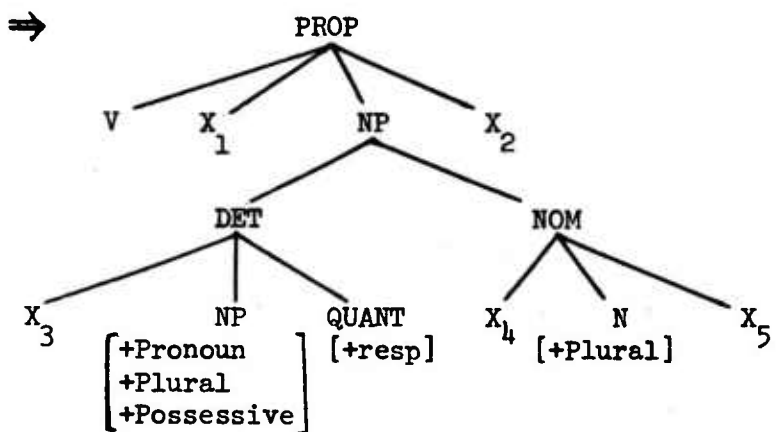
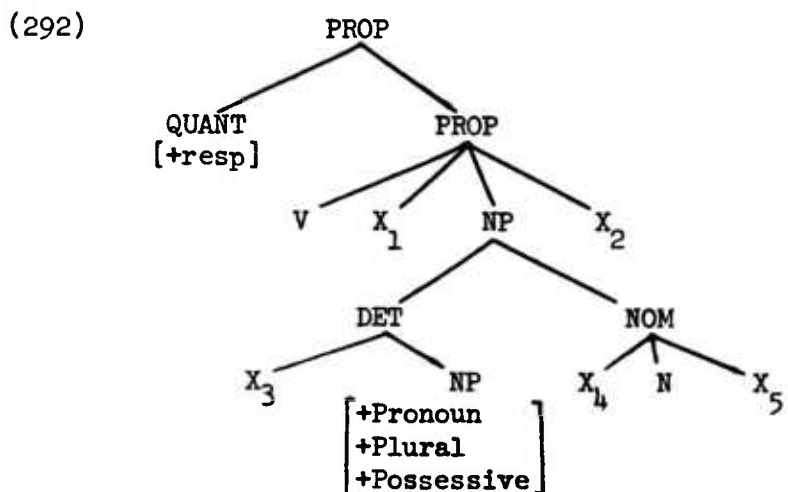
In some cases the Respectively Insertion schema, the Plural Collapsing schema, and the conjoined pronoun rule apply in such a way as to result in a tree in which QUANT [+resp] occurs as left sister to a PROP within which a plural head noun is modified by a plural possessive pronoun. For example, from the structure underlying:

- (290) John visited his mother and Mary visited her mother.

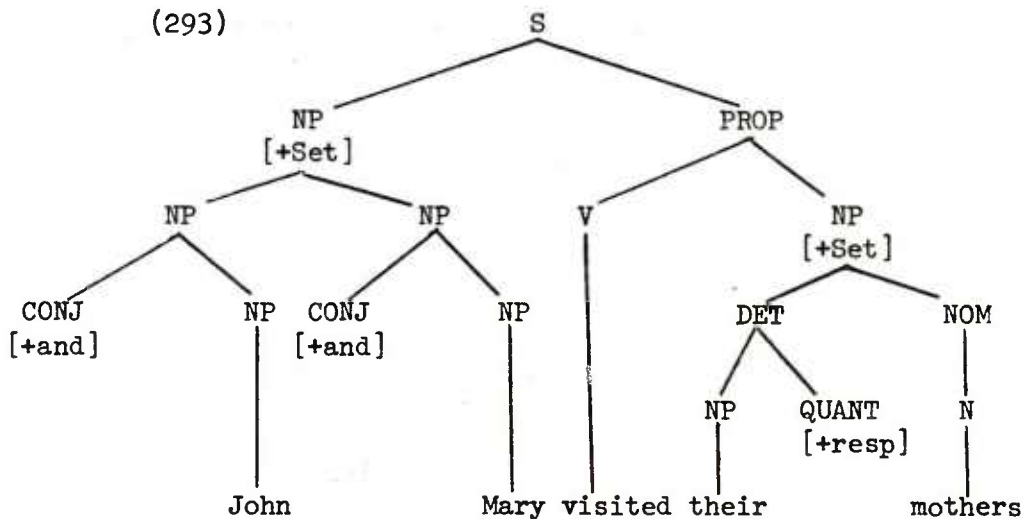
the following tree may be derived:



Trees like (291) are subject to a schema which moves QUANT [+resp] into the determiner of the NP after the possessive pronoun. This schema may be stated as follows:



Application of (292) to (291) results in (293):



In the Second Lexicon, QUANT [+resp] is listed as respective when it is dominated by DET(erminer). (It is listed as respectively in other cases.) Therefore (293) is ultimately realized as the sentence:

(294) John and Mary visited their respective mothers.

Other examples reflecting the operation of the Respectively → Respective schema (292) are:

- (295) (a) Have you and John visited your respective mothers?
 (b) John and I visited our respective mothers on Monday and Tuesday respectively.

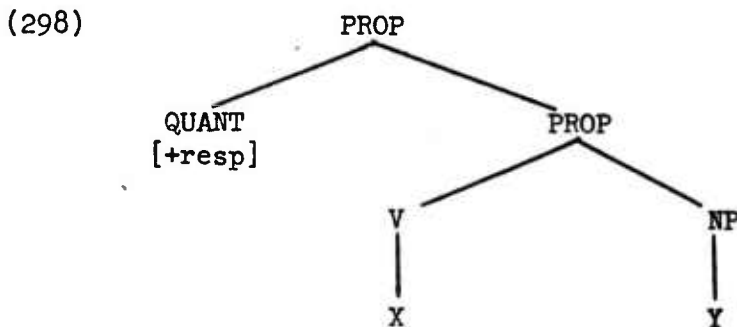
(The structures from which (295.a) and (295.b) are derived are those which, had the Derived Conjunction schema, etc. not been applied, would have resulted in the sentences (296.a) and (296.b) respectively:

- (296) (a) Have you visited your mother, and has John visited his mother?
 (b) John visited his mother on Monday, and I visited my mother on Tuesday.)

In Section III.G, above, we noted, in connection with tree (289.b), that, as a result of the application of the Respectively Insertion and Plural Collapsing schemata, structures may be derived which involve an occurrence of QUANT [+resp] that must be deleted. If QUANT [+resp] were not deleted from tree (289.b), for example, the ultimate result would be the ungrammatical (297.a), rather than the grammatical (297.b).

- (297) (a) *John and Bill respectively married beautiful women.
 (b) John and Bill (both) married beautiful women.

It might seem at first that respectively should be deleted whenever the Respectively Insertion and Plural Collapsing schemata result in subtrees of the shape:



where neither X nor Y is a conjoined structure, and where the Respectively → Respective schema is inapplicable. Consider, however, exchanges such as:

- (299) (a) A: Who married Susan and Helen?
 B: John and Bill respectively married them.
 (b) A: Who bought the Rodin, the Matisse, and the Picasso?
 B: Charles bought the sculpture, and John and Bill respectively bought the paintings.

If, as seems to be the case, (299.a.B) and (299.b.B) are grammatical, then the ungrammaticalness of (297.a) cannot be attributed to the obligatory deletion of QUANT [+resp] from all subtrees of the shape (298). Rather, it appears that the deletion of QUANT [+resp] from a subtree of the shape (298) is obligatory just in those cases in which the NP does not include a definite (and non-generic) determiner.

To put it another way, the occurrence of respectively with a structure that involves a "collapsed" plural NP always pre-supposes a context in which the referents of the several NP's underlying the plural NP have been distinguished and ordered. Thus a sentence such as:

(300) They live in New York and Chicago respectively.

can be used only in a context in which it is known to what two people (or groups of people) they refers, and in what order these two people (or groups) are being referred to. Thus a possible context for (300) is in answer to a question such as:

(301) Where do John and Bill live?

But if the use of respectively with a "collapsed" plural NP requires that the several referents of the NP be known, it is entirely consistent that we should find that the NP must have a [+Definite,-Generic] determiner, since the meaning of such a determiner is something very much like "referent known".

We may note, in this connection, that deletion of respectively is required not only in cases such as (289.b), in which a "collapsed" plural NP whose determiner is not [+Definite,-Generic] is dominated by PROP, but also in cases in which such an NP occurs as the subject. Thus from the structure underlying (302.a) we wish to derive (302.b) rather than (302.c):

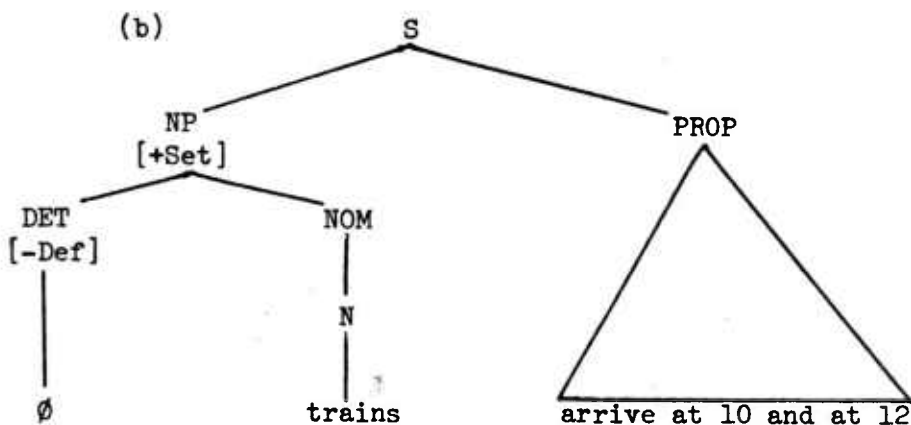
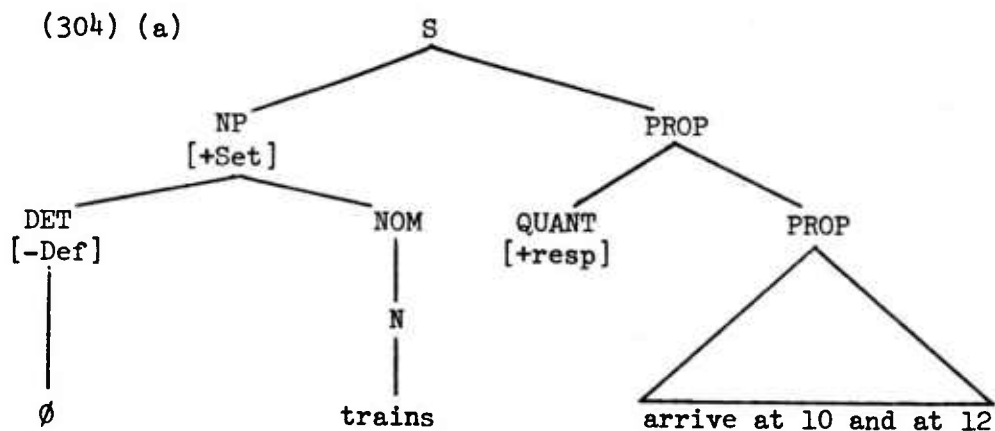
- (302) (a) A train arrives at 10 and a train arrives
at 12.
(b) Trains arrive at 10 and at 12.
(c) *Trains arrive at 10 and at 12 respectively.

In order to block the generation of ungrammatical strings such as (302.c) and (297.a), we propose the following Respectively-Deletion rule.

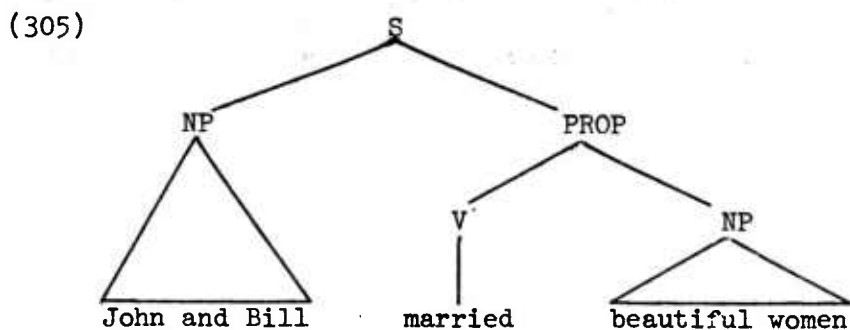
- (303) SI: NP - [-QUANT - X] - X
 PROP [+resp]
- 1 2 3 4 5
- SC: (a) Delete 2
(b) Delete 3

Conditions: Either: (a) 1 does not include CONJ [+and]
 or DET [+Def,-Gen]
 or: (b) 4 does not include CONJ [+and]
 or DET [+Def,-Gen]

This rule will apply through Condition (a), to a structure such as (304.a), changing it to (304.b):

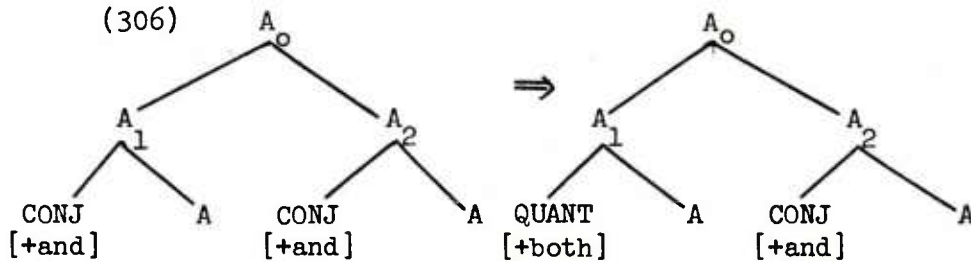


Similarly, it will apply, through Condition (b), to a structure such as (289.b), changing it to, roughly, (305):



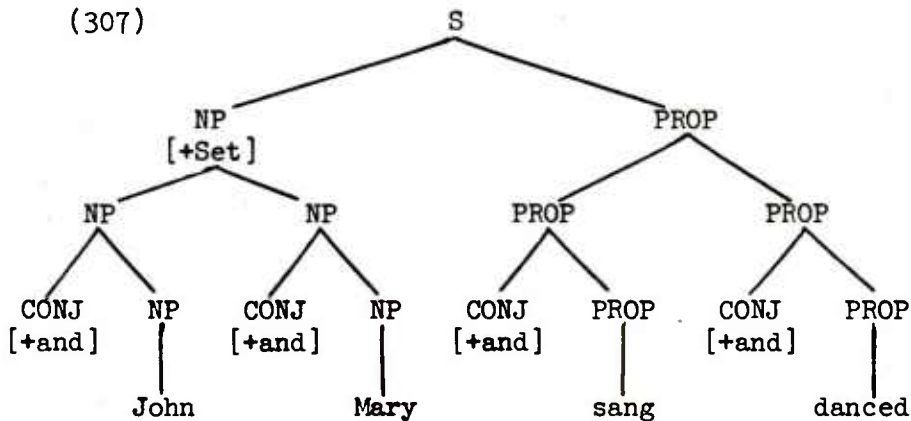
I. Both Insertion (optional)

The Both Insertion schema has the following form:



- Conditions:
- (1) A_1 and A_2 are the only daughters of A_0
 - (2) $A \neq S$
 - (3) The sentence of which A is a constituent does not include a $QUANT^0$ [+resp] introduced in the same cycle.

Given a structure that conforms to the conditions on the schema, the schema operates, optionally, to replace the initial CONJ [+and] of the structure by QUANT [+both]. The tree (307), for example, includes two structures, the topmost NP and the topmost PROP, that conform to the conditions on the schema:



Operating upon (307), the schema may replace the initial CONJ [+and] of the NP, that of the PROP, or both, by QUANT [+both]. The ultimate results of the operation of the schema upon (307) are therefore any of the following:

- (308) (a) Both John and Mary sang and danced.
- (b) John and Mary both sang and danced.
- (c) Both John and Mary both sang and danced.

(In its written form, (308.b) is ambiguous. That is, it may represent the result of application of the Quantifier Movement rule (cf. Section III.M, below) to the structure immediately underlying (308.a), or it may, as is intended here, represent the result of the application of the Both Insertion schema to the PROP, rather than the NP, of (307). In speech, (308.b) would usually be unambiguous, since stress and intonation would usually differentiate the two possible derivations.)

Some other examples of products of the Both Insertion schema are:

- (309) (a) John is both intelligent and handsome.
- (b) I gave both a nickel to the boy and a dime to the girl.
- (c) John came here both yesterday and the day before yesterday.
- (d) He answered the questions both quickly and correctly.
- (e) She both can and will finish the job today.

The first condition on the schema prevents the insertion of both in cases where there are more than two conjuncts. Thus it blocks such strings as:

- (310) (a) *Both John and Mary and Bill sang.
- (b) *John both sang and danced and played.

(The strings (310.a) and (310.b) are, however, grammatical given an appropriate hierarchical organization of the conjoined structures. For example, (310.a) is grammatical if it is paraphrasable as 'John and both Mary and Bill sang' or 'Bill and both John and Mary sang.' Such cases, of course, do not represent a violation of Condition (1) on the schema.)

The second condition on the schema prevents the insertion of both when the two conjuncts are dominated by S. Thus it blocks such strings as:

- (311) (a) *Both John sang and Mary danced.
- (b) *Both John gave, and Bill lent, some money to Susan.

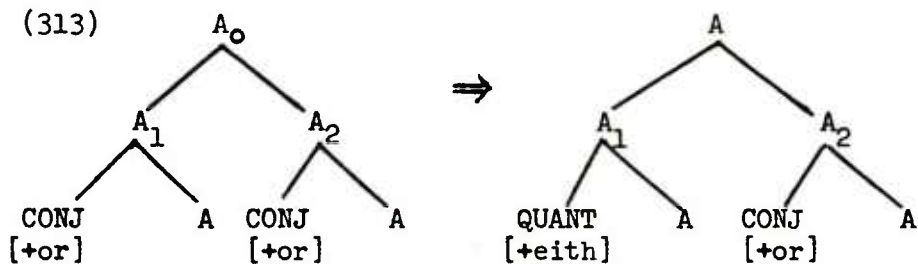
(The ungrammatical (311.b) may be compared with the grammatical (309.b). As (309.b) shows, both insertion is not excluded in general in cases of "secondary conjunction", but it is excluded in cases of secondary conjunction such as (311.b), in which the conjuncts are not subject to Node Relabeling (cf. Section III.B), and hence are identified as S's at the point at which the Both Insertion schema applies.)

The third condition on the schema, to the effect that Both Insertion is not permitted if the sentence includes an occurrence of QUANT [+resp] (i.e., respectively or respective) that has been introduced in the same cycle, blocks strings such as (311.a) or (311.b), but permits grammatical (if awkward) sentences such as (311.c) or (311.d), in which both and respectively or respective have been introduced in different cycles:

- (312) (a) *Both John and Mary sang and danced respectively.
- (b) *Both John and Mary visited their respective mothers yesterday.
- (c) Both John and Mary tutored Billie and Susie in reading and arithmetic respectively.
- (d) Both John and Mary tutored Billie and Susie in their respective weak subjects.

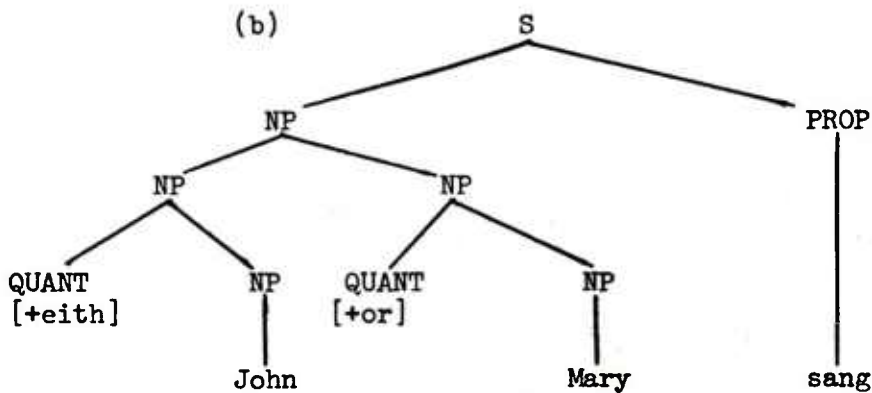
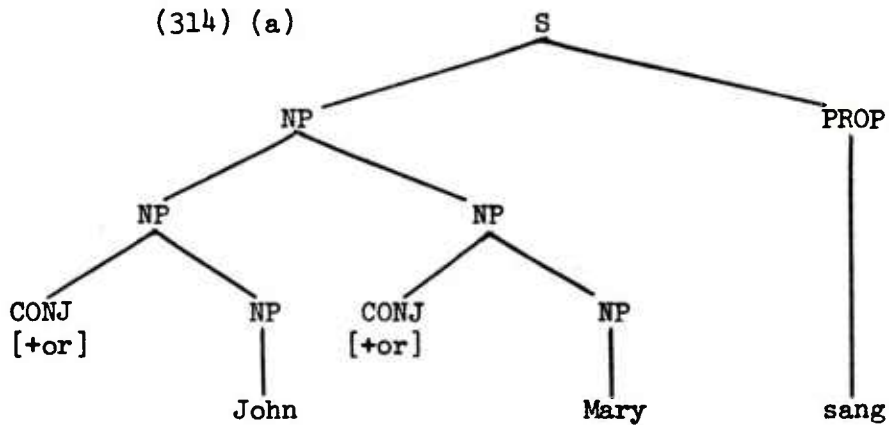
J. Either Insertion (optional)

The Either Insertion schema (313) is quite similar to the both Insertion schema (306), but has fewer conditions on it:



Condition: A₁ and A₂ are the only daughters of A₀

The schema operates, for example, to change (314.a) to (314.b):



(Either John or Mary sang.)

Further examples of products of the Either Insertion schema are:

- (315) (a) John either sang or danced.
- (b) Bill is either lazy or stupid.
- (c) He gave either a nickel to the boy or a dime to the girl.
- (d) John came here either yesterday or the day before yesterday.
- (e) Either John sang or Mary danced.
- (f) Either John gave, or Bill lent, some money to Susan.

As is evidenced by (315.e) and (315.f), either, unlike both, may occur at the beginning of a conjoined structure in which the conjuncts are S's. Like both, however, either is, at least in the dialect described here, limited to occurrence in conjoined structures with exactly two conjuncts. Thus there is a condition on the Either Insertion schema which prevents the derivation of strings such as (316):

- (316) (a) *Either John or Bill or Helen sang.
 (b) *John either sang or danced or played.

(As in comparable cases involving both--e.g., (310)--strings like (316) are grammatical if they reflect a hierarchical organization such that the condition in question is not violated. Thus (316.a) is grammatical if it is paraphrasable by 'John or either Bill or Helen sang' or 'Helen or either John or Bill sang.')

K. All Insertion (optional)

Unlike both (and either), all can, in general, be introduced only as a constituent of an NP. Thus, while (317.a) is grammatical, (317.b) and (317.c) are not:

- (317) (a) John and Bill and Harry all sang.
 (b) *John sang and danced and played all.
 (c) *John is rich and handsome and intelligent all.

A further constraint on all, at least when it is a constituent of an NP involving conjunction, is that the NP of which it is a constituent cannot be sentence-final (or clause-final). Thus (318.a) is grammatical but (318.b) is not:

- (318) (a) I gave John and Bill and Harry all presents.
 (b) *I gave presents to John and Bill and Harry all.

(It is not this latter constraint that is responsible for the ungrammaticalness of (317.b) and (317.c) however, since all generally cannot occur as a constituent of a structure other than an NP regardless of whether or not this structure is sentence-final.) (It may be noted that all does occur as a constituent of a sentence-final NP headed by a personal pronoun: e.g.,

- (319) I gave presents to them all.)

In conjoined NP's, all and both are in complementary distribution, all occurring only if there are three or more conjuncts, both only if there are exactly two conjuncts. All is further differentiated from both by the fact that the Quantifier Movement rule (cf. III.M, below), which is optional for both, is obligatory for all in a conjoined structure. Thus:

- (320) (a) *All John and Bill and Harry passed.
 (b) John and Bill and Harry all passed.
 (c) Both John and Bill passed.
 (d) John and Bill both passed.

(When all occurs in an NP that does not involve conjunction, however, Quantifier Movement is optional:

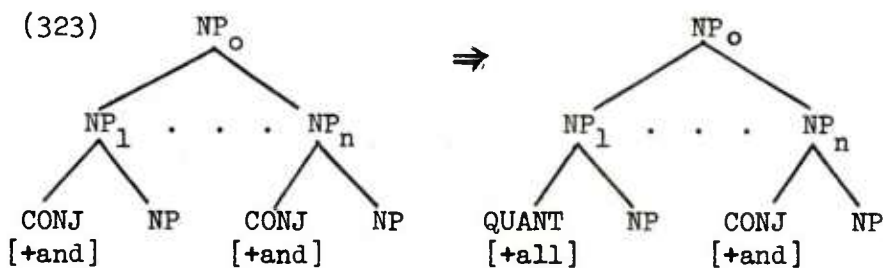
- (321) (a) All (of) the students passed.
 (b) The students all passed.)

There is one constraint that is common to All Insertion and Both Insertion: all, like both, cannot be inserted into a structure that includes an occurrence of respectively or respective that has been inserted in the same cycle. Thus the following are ungrammatical:

- (322) (a) *John and Bill and Harry all sang and danced and played respectively.
 (b) *John and Bill and Harry all visited their respective mothers yesterday.

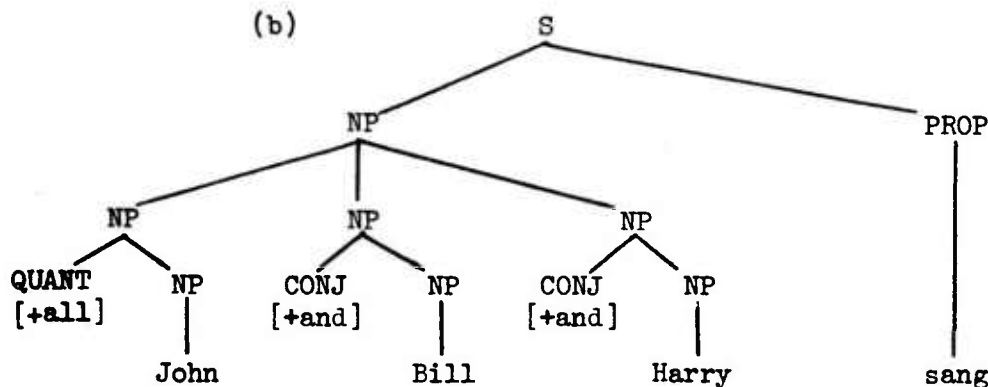
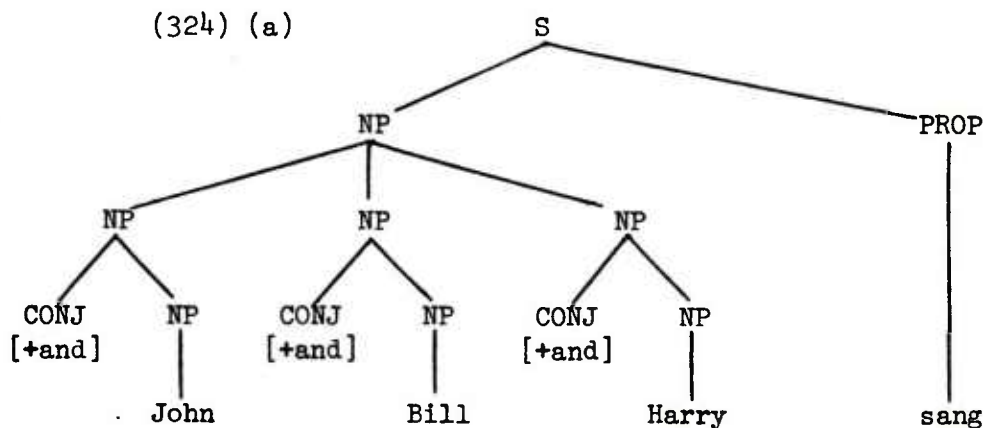
(There may be differences of opinion about the grammaticalness of (322.b). If such examples are judged to be grammatical, the third condition on the All Insertion schema (323) below can be revised so as to permit All Insertion in a sentence that includes a QUANT [+resp] dominated by DET(erminer)--i.e., respective--but still exclude All Insertion when QUANT [+resp] is not so dominated.)

Except for the obligatory application of the Quantifier Movement rule, which must be treated in connection with that rule itself, all of the above observations concerning all in conjoined structures are incorporated into the following statement of the All Insertion schema:



- Conditions:
- (1) $n \geq 3$
 - (2) NP_0 is not immediately followed by # (sentence boundary).
 - (3) The sentence of which NP_0 is a constituent does not include a QUANT [+resp] introduced in the same cycle.

The schema operates, for example, to change (324.a) to (324.b):



(Ultimately: John and Bill and Harry all sang.)

L. Each Insertion

The conditions for Each Insertion are quite similar to those for All Insertion. Like all, each must generally be a constituent of an NP. Thus (325.a) is grammatical but (325.b) and (325.c) are not:

- (325) (a) John and Bill each sang.
 (b) *John sang and danced each.
 (c) *John is rich and handsome each.

Again like all, each cannot be a constituent of a sentence-final NP. Thus while (326.a) is grammatical, (326.b) is not: *

- (326) (a) I gave John and Bill each a present.
 (b) *I gave a present to John and Bill each.

A further similarity between each and all (and, in this case, both as well) is seen in the restriction of Each Insertion to sentences that do not include an occurrence of respectively or respective introduced in the same cycle. Thus the following are ungrammatical:

- (327) (a) *John and Bill each sang and danced respectively.
 (b) *John and Bill each visited
 {their respective mothers.}
 {his respective mother. }

(One final similarity between each and all is that Quantifier Movement is obligatory for both each and all when they occur as constituents of conjoined structures. Thus, like (322.a), the following are ungrammatical:

- (328) (a) *Each John and Bill sang.
 (b) *I gave each John and Bill a present.)

Each differs from all in that it may occur as a constituent of an NP involving only two conjuncts, as well as of an NP involving three or more conjuncts. Thus:

- (329) John and Bill (and Harry) each sang.

A further difference between each and all is that Each Insertion, unlike All Insertion (or Both Insertion), is restricted to sentences in which the Plural Collapsing schema (cf. III.G) has not applied in the same cycle. Consider the sentences:

- (330) (a) John and Bill and Harry all bought cars.
- (b) John and Bill and Harry each bought cars.

Sentence (330.a) might be derived from, among other sources, the structure underlying either (331.a) or (331.b):

- (331) (a) John bought a car and Bill bought a car
and Harry bought a car.
- (b) John bought cars and Bill bought cars
and Harry bought cars.

Sentence (330.b), on the other hand, can, at least in some dialects, only be derived from the structure underlying (331.b). (For a contrary opinion, cf. Dougherty (1967b).)

A problem arises in connection with the derivation of sentences such as:

- (332) John and Bill each bought one car.

Presumably this sentence is derived from the structure underlying:

- (333) John bought one car and Bill bought one car.

After the Derived Conjunction and Node Relabeling schemata have applied to the structure underlying (333), the Identical-Conjunct Collapsing schema results in a structure which, if the Each Insertion schema is not applied, is ultimately realized as:

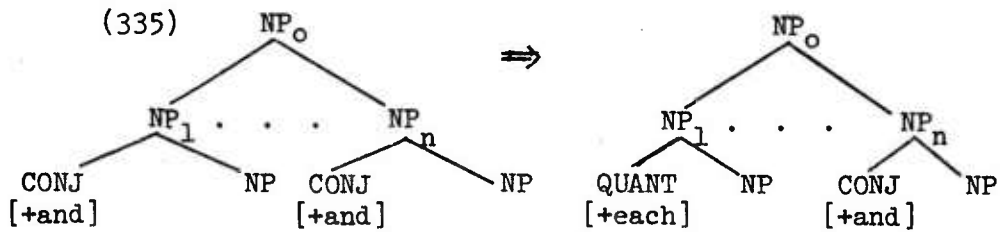
- (334) John and Bill bought one car.

But if we compare (334) with (332), it is clear that the sentences have different meanings. In the interpretation of (334) only a single car is involved, while in that of (332) two different cars are involved.

In discussing the Identical-Conjunct Collapsing schema (cf. III.C), we noted that application of this schema to a set of formally identical NP's was equivalent to treating the NP's as referentially identical. Thus the interpretation of one car in (334) is the expected result of application of the Identical-Conjunct Collapsing schema, while the interpretation of one car in (332) is an unexpected result. We shall say that the interpretation of (332) depends upon the meaning of each itself, which involved some such notion as "distributive", and which overrides

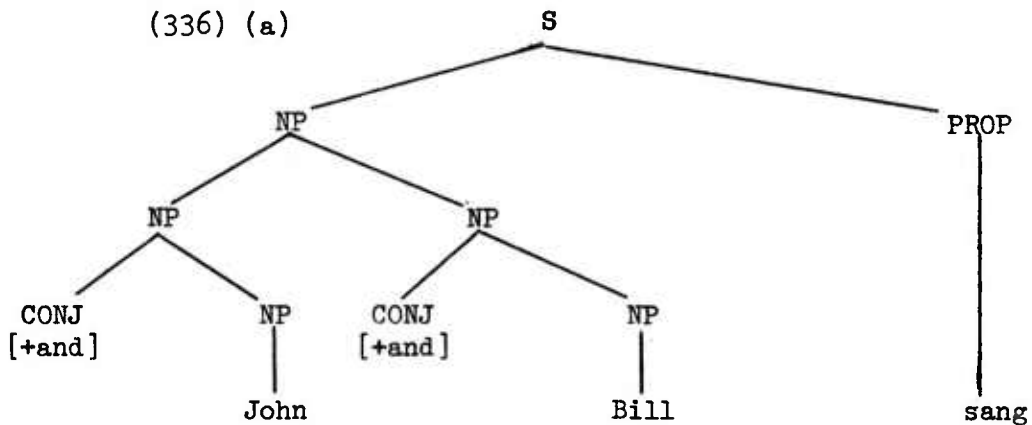
the usual interpretation of singular NPs as having a single referent. Therefore, the statements made in Section III.C concerning the interpretation of NP's that result from Identical-Conjunct Collapsing must be qualified so as to exclude those cases where Each Insertion has also applied.

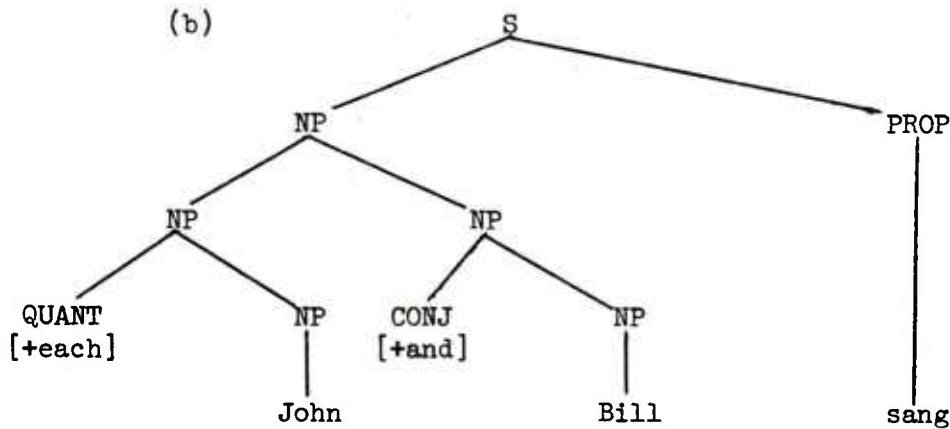
The Each Insertion schema may be stated as follows:



- Conditions:
- (1) NP_0 is not immediately followed by # (sentence boundary)
 - (2) The sentence of which NP_0 is a constituent does not include a $QUANT [+resp]$ introduced in the same cycle.
 - (3) The Plural Collapsing schema has not been applied in the same cycle.

The schema operates, for example, to change (336.a) to (336.b):





(Ultimately: John and Bill each sang.)

M. Quantifier Movement (partly optional)

Schemata have been presented for introducing five quantifiers--respectively, both, either, all, and each--as initial constituents of certain conjoined structures. With the exception of either, each of these quantifiers is subject to a rule that moves the quantifier to the end of the constituent into which it has been introduced, or, in some cases, into certain other positions in the sentence. Since this rule also applies, in the cases of both, all, and each, to occurrences of the quantifiers as constituents of non-conjoined structures, the rule itself is presented elsewhere in this text (cf. DETERMINERS). In the present section, we shall simply summarize some of the special characteristics of Quantifier Movement in cases where the quantifiers have been introduced by one or another of the conjunction schemata.

When both occurs as a constituent of a conjoined structure, then, application of the Quantifier Movement rule is optional. Thus all of the following are grammatical:

- (337) (a) Both John and Mary both sang and danced.
- (b) John and Mary both both sang and danced.
- (c) Both John and Mary sang and danced both.
- (d) John and Mary both sang and danced both.

When, on the other hand, respectively, all, or each, occurs as a constituent of a conjoined structure, application of the Quantifier Movement rule is obligatory. Compare the ungrammatical strings of (338) with the grammatical sentences of (339):

- (338) (a) *Respectively John and Mary sang and danced.
 (b) *John likes, and Mary dislikes, respectively meat and fish.
 (c) *All John and Bill and Harry passed.
 (d) *Each John and Bill bought a car.
- (339) (a) John and Mary respectively sang and danced.
 (b) John likes, and Mary dislikes, meat and fish respectively.
 (c) John and Bill and Harry all passed.
 (d) John and Bill each bought a car.

(Example (338.d) is grammatical in the sense 'Each John and each Bill bought a car,' but it is ungrammatical as a paraphrase of (339.a).)

While the Quantifier Movement rule applies obligatorily to respectively, it should be noted that the rule never applies to respective. Thus (340.a) is grammatical but (340.b) is not:

- (340) (a) John and Mary visited their respective mothers.
 (b) *John and Mary visited their mothers respective(ly).

As was explained in Section III.H, respectively and respective are both represented in the (second) lexicon as [+QUANT,+resp], but are distinguished on the basis of the configurations in which they occur, respective being the item that corresponds to an occurrence of [+QUANT,+resp] that is dominated by DET(erminer), respectively the item that corresponds to all other occurrences of [+QUANT,+resp]. Although respectively and respective are not distinct with respect to their inherent features, there is no problem in blocking the application of the Quantifier Movement rule in the case of respective, since this is an automatic consequence of the position of the quantifier. That is, the Quantifier Movement rule applies only to quantifiers that are the initial constituents of structures, and occurrences of [+QUANT,+resp] that are to be realized as respective are, as a result of the Respectively → Respective schema (cf. III.H), never in initial position at the point in the rules at which Quantifier Movement applies.

N. Initial-Conjunction Deletion (obligatory)

As a result of the Conjunction Spreading schema (cf. III.E), a conjunction that is left sister of a set of conjuncts is copied as left sister of each member of the set, including the initial member. In some cases the conjunction that is left sister of the

initial conjunct is replaced by a quantifier: thus an initial and may in appropriate cases, be replaced by respectively, both, all, or each, and an initial or may be replaced by either. In other cases, the Plural Collapsing schema (cf. III.G) deletes an initial and (together with all other occurrences of and in the affected structure).

When an initial conjunction has not been replaced or deleted by previous schemata, it is obligatorily deleted by the Initial-Conjunction Deletion rule, which has the form:

(341) SI: X - CONJ - X

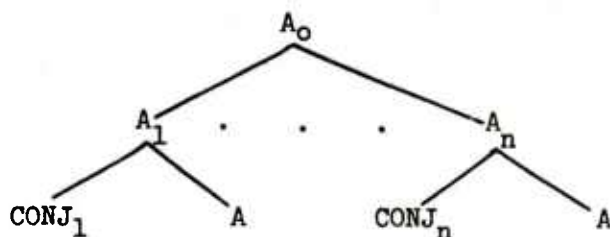
1 2 3

SC: Delete 2

Condition: 2 is the first daughter of a non-immediately dominating constituent

The condition on (341) assures that only an initial conjunction is deleted. This is because, at the point at which Initial-Conjunction Deletion applies, all conjoined structures in which the initial conjunction has not been replaced by a quantifier have the form:

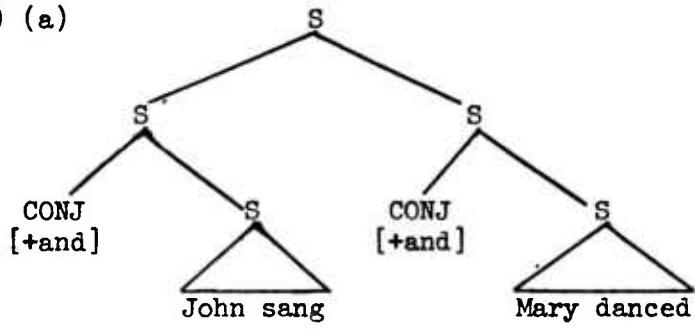
(342)



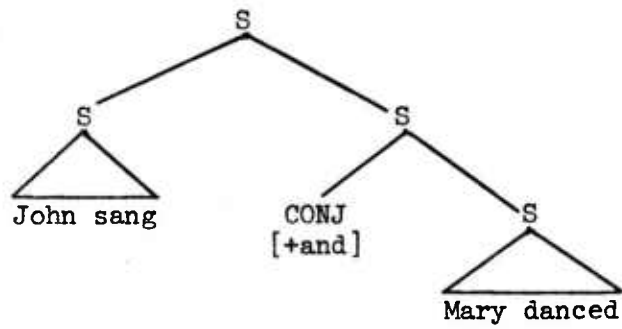
It is clear from (342) that only CONJ₁ is the first daughter of a non-immediately dominating constituent: namely, A₀. CONJ_n, on the other hand, while it is the first daughter of an immediately dominating constituent, A_n, is not the first daughter of any other constituent.

The Initial-Conjunction Deletion rule, in combination with a (here-unstated) "pruning" rule, operates, for example, to change (343.a) to (343.b), (343.c) to (343.d), and (343.e) to (343.f):

(343) (a)

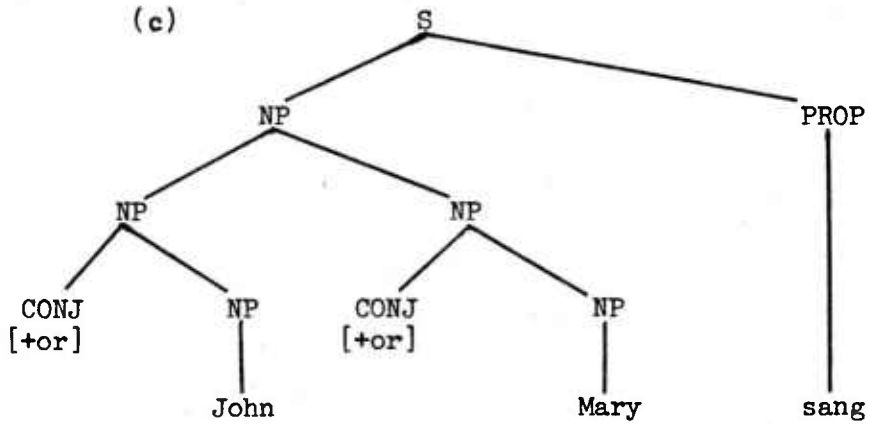


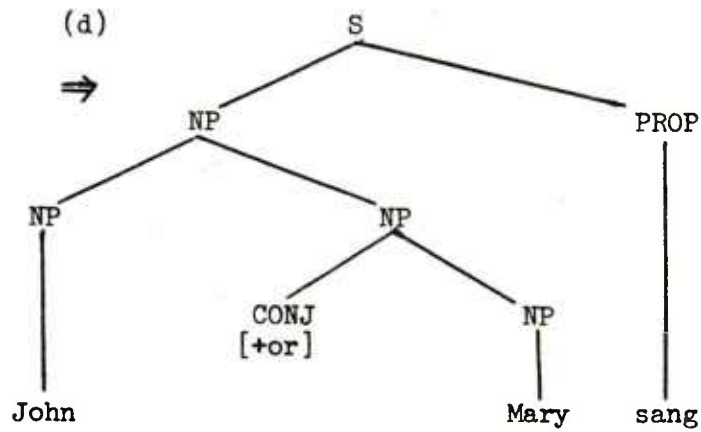
(b)



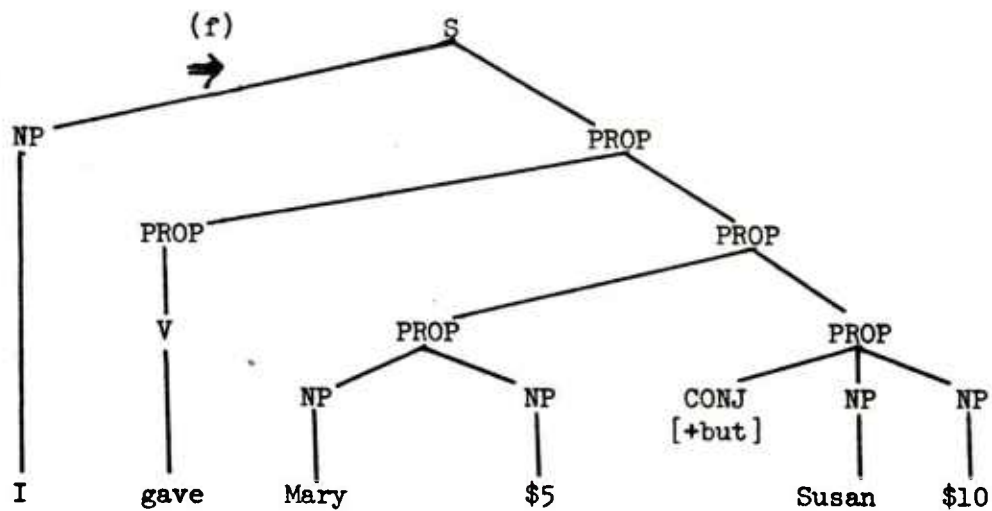
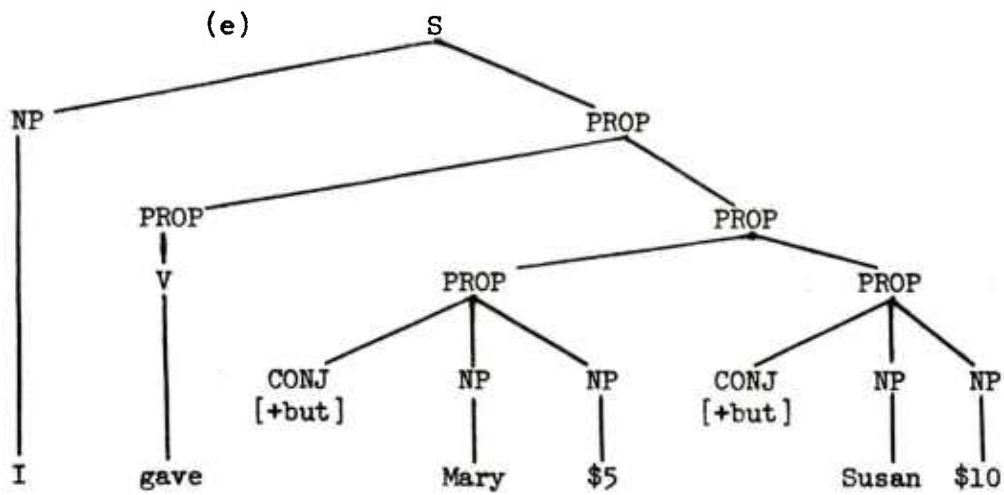
(John sang and Mary danced.)

(c)





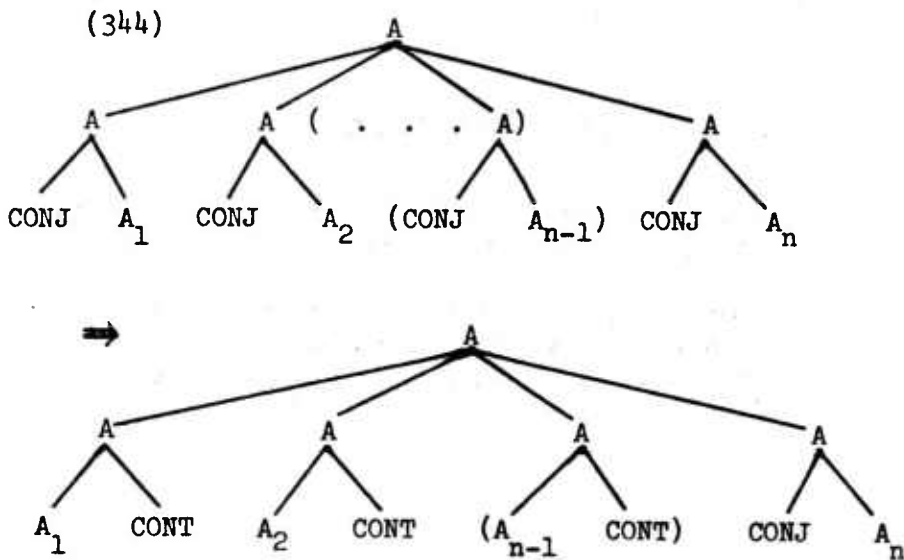
(John or Mary sang.)



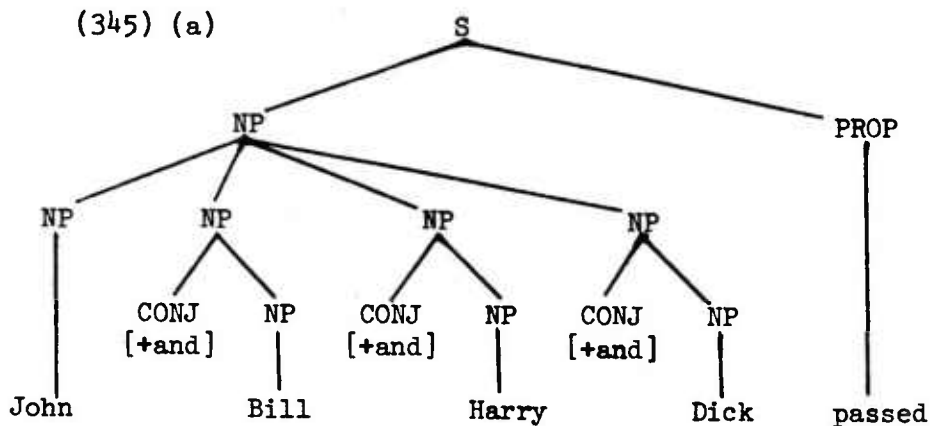
(I gave Mary \$5 but Susan \$10.)

O. Medial-Conjunction Deletion (optional)

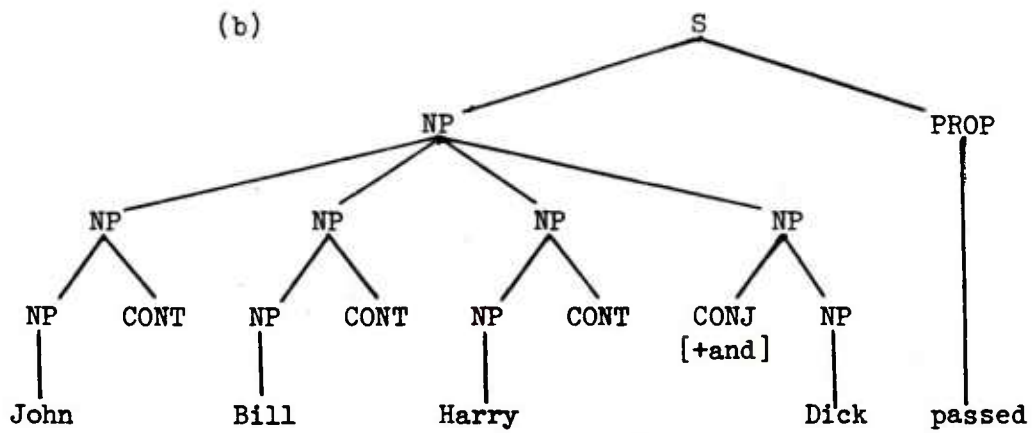
The Medial-Conjunction Deletion schema operates optionally upon conjoined structures that include three or more conjuncts. (Since, as was pointed out in Section III.A.3, but always occurs with exactly two conjuncts, the schema is necessarily restricted to structures that involve and- or or-conjunction.) The schema operates to delete all but the last conjunction from the structure, and to Chomsky-adjoin a marker of rising intonation (CONT for "continuing") to all but the last of the conjuncts. The schema may be stated as follows:



An example of its operation is the change of (345.a) to (345.b)



(John and Bill and Harry and Dick passed.)



(John, Bill, Harry, and Dick passed.)

Some further examples of sentences that reflect the operation of the Medial-Conjunction Deletion schema are:

- (346) (a) John sang, Bill danced, and Harry played.
- (b) John will sing, dance, and play.
- (c) John sang, Bill danced, or Harry played.
- (d) John will sing, dance, or play.

September 1968

RELATIVIZATION

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II. INTRODUCTION

A sentence embedded as modifier of an NP, the embedded sentence having within it a WH-pronominal replacement for an NP which is in some sense identical with the head NP, is a relative clause. Relative clauses are of at least two types: restrictive and appositive (or non-restrictive). It may well be useful to discriminate a third type, pseudo-relative clauses, which appear only in generic noun phrases and are perhaps related to conditional sentences. These are taken as a type of restrictive relative clause in the analysis presented in this paper.

Appositive relative clauses are not analyzed in detail in the body of this paper. Ross (1967c) and others have proposed that appositive relatives derive from conjoined sentences, with the second conjunct inserted into the first, as in (1):

- (1) (a) The plane finally crashed, and it had never flown well anyway.
 (b) The plane, which had never flown well anyway, finally crashed.

The difficulty with this proposal (pointed out by Ross, 1967c, Section 6.2.4.1) is that although a declarative cannot be conjoined with an interrogative or an imperative, relatives do occur within interrogatives and imperatives: Is even Clarence, who is wearing mauve socks, a swinger? [Ross, 1967c, 6.158] Ross therefore proposes, rather unhappily, that appositive relatives may come not from conjoined sentences but from the corresponding sequence of two independent sentences: Is even Clarence a swinger? He is wearing mauve socks. [6.160]

Appositive relative clauses differ from restrictive relatives in many ways:

Appositives, but not restrictives, require comma intonation after the head NP.

Restrictives, but not appositives, permit that as a relative pronoun.

Appositives, but not restrictives, may modify proper nouns that have no determiners: *John, that came early, also left early.

Restrictives, but not appositives, may modify any + N.
*Any plane, which crashes, is a failure.

Appositives, but not restrictives, may modify an entire proposition (He said he would resign, which I thought was a good idea.)

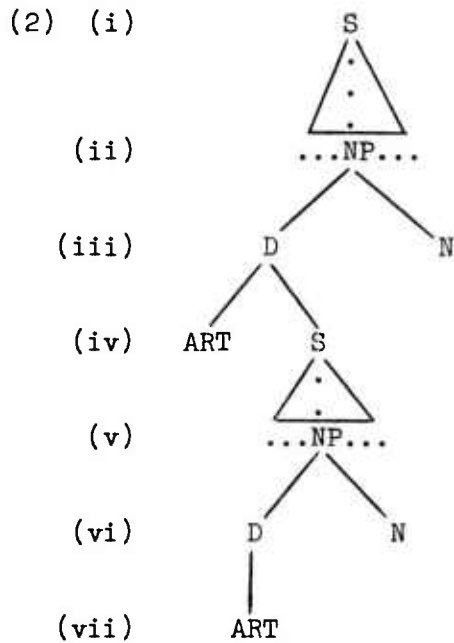
The constraints which determine what can be fronted along with the shared NP in the relative clause are not the same in the two types: cf. The crimes, over which his anguish was intense, were less serious than he thought; but not *The crimes over which his anguish was intense were less serious than he thought.

The present discussion is devoted exclusively to restrictive relative clauses.

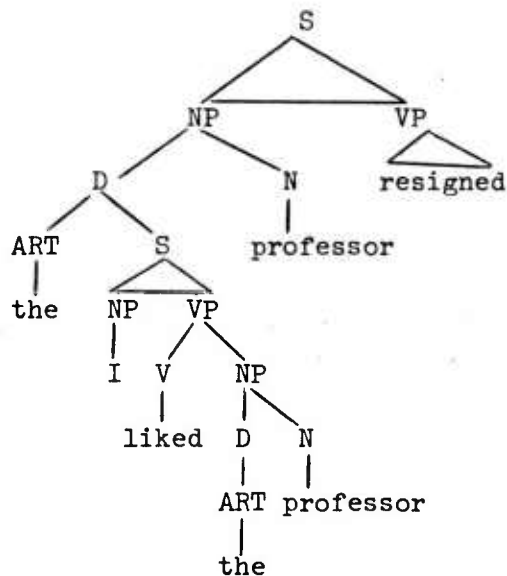
A. The Art-S Analysis

1. Structure

The earlier formulations of the deep structure of restrictive clauses (notably, Smith, 1964), continuing into several recent formulations including that of Chomsky's Aspects of the Theory of Syntax, analyzed these clauses as sentences embedded in the Determiner constituent of the noun phrase. This formulation is referred to as the ART-S analysis, having the P-marker of (2):



E.g.



"The professor that I liked resigned"



(3) (a) The S horse won the race.

The S horse finished fast.

The horse started late.

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

Terence Moore (1967) has argued that sentences of the type thus generated by the ART-S analysis are clearly ungrammatical. That is, they are not merely difficult to interpret because of performance considerations, as can be plausibly argued in some types of self-embedding: e.g., when both the shared NP's are subjects we get the ungrammatical result of (3), but when one is an object and the other a subject, the result is grammatical, as in (4):

(4) (a) I saw the S film.

The S director made the film.

John knows the director.

(b) I saw the film that the director that John knows made.

There are other familiar types of self-embedding, not involving relativization, that quickly become difficult at the performance level but that are clearly grammatical, as in (5):

(5) The fact that the evidence that Nick was guilty was interesting led to the wrong conclusion.

A condition which would block both (3) and (4) would have to be a general condition against self-embedding, and it would have to extend to other cases in the grammar such as (5). This is clearly wrong, so that other grounds must be found to reject (3) but retain (4).

The identity condition $N = N$ should probably be rejected anyway in view of the fact that the notion the identity condition seeks to capture is that of coreferentiality, which holds only between definite NP's, not between two occurrences of the same N. The evidence that the relative pronouns who/which/that are in fact definite pronouns (like he, she, it), and therefore coreferential in whatever way and to whatever extent he/she/it are (see PRO), is the same evidence that suggests they belong in the determiner: namely that restrictive relative clauses correlate precisely, in their cooccurrence potential, with demonstratives: *...in a manner, *...in the manner, ...in a manner that I admire, ...in that manner.

And since demonstratives have the features [+DEM] [+DEF] (see PRO), it would appear that if the coreferential NP of the relative clause is not at least definite (and possibly even deictic), the identity condition could not be met in these instances.

b. If, in order to capture the notion coreferentiality which holds only between NP's, and therefore is lost under the proposal (a) that identity is $N = N$, the identity condition is stated to hold between the NP of (2.ii) and the NP of (2.v), then no relative clauses whatever can be generated, since the NP of (2.ii) contains an embedded sentence, namely the S of (2.iv), whereas the NP of (2.v) cannot contain that S. Clearly, then, identity between NP's, unless defined in such a way as to exclude the embedded S which is to be relativized, is impossible under the ART-S analysis.

c. If coreferentiality is stated to hold between the article and its head noun, on the one hand, and the article and its head noun in the embedded S (i.e. between the ART of (2.iv) with its head noun (2.iii), and the ART of (2.vii) with its head noun (2.vi)), then the problem of (b) is removed. Notice, however, that the self-embedding of (3) is stacked -- i.e., the higher relative clause (The horse finished fast) must be interpreted as modifying the head plus the lower relative clause (The horse that started late). As a rough paraphrase, Of the horses that started late, the one that finished fast won the race. For some speakers such stacking is grammatical in the form (6):

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

For other speakers the sense of (6) is possible only in the form (7):

- (7) (a) The horse that started late and that finished fast won the race.
 (b) The horse that started late and finished fast won the race.

For speakers of the dialect represented by (7), a constraint against stacking would automatically serve to disallow the ungrammatical (3). Such a constraint is statable by specifying that there be no S embedded within the coreferential NP of the relative clause (i.e. by a constraint specified in the structure index of the relative clause transformation itself). The question of stacking is viewed in this analysis as a matter of dialect differentiation, and the kinds of sentences on which different judgments are made by speakers of different dialects are discussed under the analyses below that are more appropriate to the generation of stacked relative clauses like (6).

It turns out, in fact, that the relative-clause-positioning rule (which moves the relative clause to the right of the head noun) can be stated in such a way as to preserve a stacked interpretation even under the ART-S analysis. See rule IX.C. in this paper.

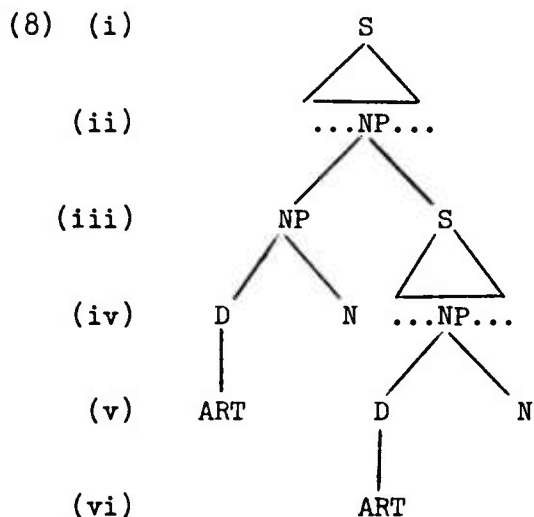
General constraints on relativization, such as those proposed by Ross (1967c), are shared with both NP-S and NOM-S, and are discussed subsequently in this presentation.

B. The NP-S Analysis

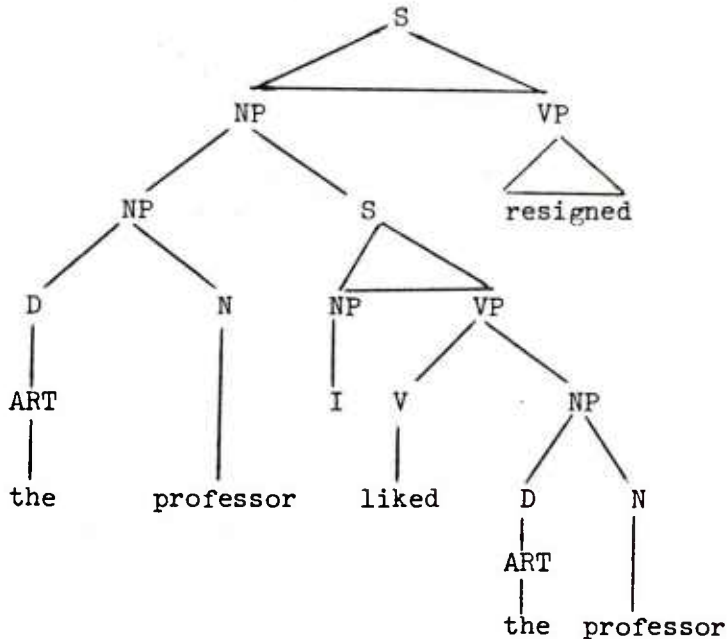
1. Structure

Because of the grammaticality (for some dialects) of examples like (6), and the ungrammaticality for all dialects of examples like (3), a different analysis of restrictive relative clauses has been widely assumed (though not in fact extensively discussed or defended in the available literature), e.g. by Ross (1967c).

This formulation is referred to as the NP-S analysis, having the P-Marker of (8):



E.g.



"The professor that I liked resigned"

The putative advantage of this analysis is that the identity condition can be stated on the shared NP's without having the derivation block (see Section (A.1.b.) above). Since the shared NP of the relative clause is pronominalized by the head NP, and since the pronominalized forms who/which/that appear to be definite pronouns (like he, she, it, derived from definite articles), which involve the strongest possible identity condition -- namely, coreferentiality -- WH-pronominalization is assumed to require coreferentiality also.

2. Problems

a. Relativization with Generic NP

From the requirement of coreferentiality under the NP analysis many problems follow. A different source for relative clauses in generic NP's has to be devised, since sentences like the second one in each set below are not entailed by the first one:

- (9) (a) Every linguist who reads Chomsky can learn about transformational theory.
 (b) Every linguist reads Chomsky.
- (10) (a) All students who can spell decently will pass the course.
 (b) All students can spell decently.
- (11) (a) No missile that has insufficient velocity can escape the earth's gravitational field.
 (b) No missile has insufficient velocity.
- (12) (a) Dogs that are mammals eat more than dogs that are serpents.
 (b) Dogs are mammals. Dogs are serpents.

From (12) it appears that a general constraint against relativization is needed if the shared NP of the relative clause is generic. That is, while the head NP can be generic, the shared NP of the relative clause cannot be, since a generic paraphrase cannot be entailed by the shared NP of any relative clause. In the sentences below, neither (b), (c), nor (d) is entailed by (a), even though the head NP and the NP as a whole are clearly generic in the first example:

- (13) (a) A lion that doesn't have enough to eat is a dangerous animal.
 (b) There exists some lion that doesn't have enough to eat.
 (c) Some lions don't have enough to eat.
 (d) Lions don't have enough to eat.

In fact, the only correct paraphrase of relative clauses on generic heads seems to be if...then:

If a lion doesn't have enough to eat, it is a dangerous animal.

The attempt to derive relative clauses on generic heads from conditional sentences has difficulties of its own, but it nevertheless appears to be the correct direction to go. Jackendoff (1968f) refers to an unpublished paper on generics by Bowers (1964), which we have not seen, that makes the same claim. The difficulty pointed out by Jackendoff is that there are generic sentences like (14) for which there is no obvious conditional paraphrase:

- (14) (a) A beaver builds dams. [83]
 (b) If something is a beaver, it builds dams. [84]

But it is not necessary to claim that all generic sentences have conditional paraphrases, or that all conditional sentences have relative clause paraphrases. The only claim is that sentences of the form

If Generic NP_i VP_m then Generic NP_i VP_n

are the source of relative clauses of the form

Generic NP_i that VP_m VP_n

Jackendoff proposes that the paraphrase relationship that holds between relative clauses in generic NP's, and conditional sentences, is a consequence of a general interpretative rule that holds for both presentences (conditionals) and determiners (relative clauses, under the ART-S analysis).

Another problem is that of deriving a relative clause on a generic head which is itself within a conditional sentence:

- (15) (a) If this store carries a pipe that is made of briarwood, I'd like to see one/it.
 (b) If this store carries pipes that are made of briarwood, I'd like to see them.

One possibility is to consider these as coordinate conditionals:

- (16) (a) If this store carries a pipe and if it is made of briarwood, I'd like to see it.
 (b) If this store carries pipes and if they are made of briarwood, I'd like to see them.

Some speakers claim that (15) and (16) are not paraphrases, however; if indeed they are not, (15) poses an apparently insurmountable obstacle to the proposal to relate relative clauses on generic heads to underlying conditional structures.

The "generic quantifiers" every/all/no/any yield reasonably well to the same analysis. Thus corresponding to (9), (10), (11) there are (9'), (10'), (11'):

- (9') (a) If he reads Chomsky, every linguist can learn about transformational theory.
 (b) Every linguist can learn about transformational theory, if he reads Chomsky.
- (10') (a) If they can spell decently, all students will pass the course.
 (b) All students will pass the course, if they can spell decently.
- (11') (a) If it has insufficient velocity, no missile can escape the earth's gravitational field.
 (b) No missile can escape the earth's gravitational field, if it has insufficient velocity.

The other generic quantifiers few and each do not yield quite as well to this analysis, with the if-clause in initial position, but the paraphrase relation holds when the if-clause follows the main clause:

- (17) (a) Few scholars who ignore their predecessors succeed well.
 (b) (?) If they ignore their predecessors, few scholars succeed well.
 (c) Few scholars succeed well if they ignore their predecessors.
- (18) (a) Each apple that falls from the tree is ripe.
 (b) (?) If it falls from the tree, each apple is ripe.
 (c) Each apple is ripe if it falls from the tree.

Although few is generic, a few is an indefinite quantifier, and as with other indefinite quantifiers that cannot be interpreted as generic the paraphrase relation between the head NP and the REL-NP is retained:

- (19) (a) A few men who went to bed early failed to see the aurora borealis.
 (b) A few men went to bed early.
 [Or, with definitivization of the shared NP, "The few men went to bed early."]
 (c) Several men who left early missed the fun.
 (d) Several men left early.

The contrast between (19.a), which entails (19.b), and (20.a), which does not entail (20.b), provides reasonable motivation for the claim that the surface structure of relative clauses derives from two distinct sources -- the ordinary relative from embedding of an S within non-generic NP's [whether as in (2) or as in (8)], and the pseudo-relative from reduction of a conditional sentence that contains a shared generic NP in the two halves:

- (20) (a) Few men who go to bed early get to see the aurora borealis.
 (b) Few men go to bed early.

For reasons not understood, with few (generic) the conditional clause must follow the matrix, not precede it.

- (21) (a) Few men get to see the aurora borealis if they go to bed early.
 (b) (?) If they go to bed early, few men get to see the aurora borealis.

Evidence favoring the conditional proposition as the source of what appear superficially to be relative clauses in generic NP's, other than the considerations of entailment outlined above, is thin but indicative: the tense constraints that have been investigated for conditional sentences [Barbara Hall (1964a)] include a constraint against simple predictive will in the if...portion of the condition.

- (22) (a) *If any train will arrive on time, it will be greeted by a marching band.
 (b) If any train arrives on time, it will be greeted by a marching band.

This constraint carries over to the pseudo-relative clause:

- (23) (a) *Any train that will arrive on time will be greeted by a marching band.
 (b) Any train that arrives on time will be greeted by a marching band.

b. Definitivization

One of the motivations of the NP-S analysis is to enable the identity condition of the shared NP's to be stated in the strong form of whole NP coreferentiality; in order to allow relativization

on indefinite NP's, as in (24), and yet guarantee that WH-pronominalization will apply to a definite NP, an intermediate step of definitivization is needed within the relative clause.

- (24) (a) The car struck a child that ran out into the street.
 (b) The child ran out into the street.

Under this analysis, then, the shared NP of the constituent sentence either is definite in the deep structure, or becomes definite in the course of the derivation. Definitivization of the coreferential NP of the matrix sentence as proposed by Beverly Robbins (1963), on the other hand, can only be made optional or dependent upon presence of a constituent determiner uniqueness feature, as in Dean (1966), in view of contrasts like (25.a,b):

- (25) (a) The boy who lives next door is eight feet tall.
 (b) A boy who lives next door is eight feet tall.

In (25.b) there is definitivization of the shared NP of the relative clause, but the matrix NP remains indefinite specific. With one class of nouns, however, the occurrence of the definite article is possible ONLY IF the NP has a relative clause:

- (26) (a) *I prescribed the way/manner/place.
 (b) I prescribed a [certain] way/manner/place in which she was to do it.
 (c) She did it in the/a way/manner/place that I prescribed.

That is, the form the in (26.c) must be the result of definitivization on the basis of the following relative clause. This generalization appears to be correct for all non-pronominalizable nouns, an observation due to S.-Y. Kuroda (1968). See further discussion of this general topic in DET and PRO.

c. Quantifiers

The quantifiers all/every/no can appear either in generic NP's or in non-generic ones. The sentences (9, 10, 11, 17, 21) are instances of these quantifiers in generic NP's, where the interpretations and constraints on relativization are like those of generic NP's in general. Sentences (27) are instances of these quantifiers in non-generic NP's, where as with the generics it is clear that the quantifier is not entailed in the shared NP of the relative clause:

- (27) (a) All the boys who left early missed the fun.
 (b) [Not entailed] All the boys left early.
 (c) Every boy who left early missed the fun.
 (d) [Not entailed] Every boy left early.
 (e) No boy who left early missed the fun.
 (f) [Not entailed] No boy left early.

The sentences (27) do not differ on the surface from those of (9), (10), (11) except in tense; yet it is clear that the relevant NP's do not receive a generic interpretation in (27) but do in (9), (10), (11). Genericness, then, is somehow a sentence-level interpretation. That the sentences (27) are different (i.e. non-generic) from those of (9), (10), (11) is supported by the fact that the sentences (27) have no conditional sentence paraphrase. Quantifiers which cannot be interpreted as generic do, however, allow the interpretation that they are present in the shared NP of the relative clause:

- (28) (a) Both boys who left early missed the fun.
 (b) Both boys left early.
 (c) Several boys who left early missed the fun.
 (d) Several boys left early.
 (e) A few boys who left early missed the fun.
 (f) A few boys left early.
 (g) Many boys who left early missed the fun.
 (h) Many boys left early.
 (i) Some other boys who left early missed the fun.
 (j) Some other boys left early.

The quantifiers of (27) cannot appear in the shared NP of the relative clause. A satisfactory solution of this problem in the NP-S analysis is not known at this time. Lakoff (1965) has suggested that these quantifiers must come from a higher sentence. Partee (1968) has argued against the Lakoff view.

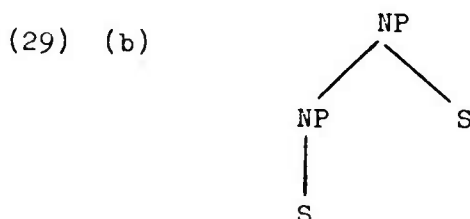
d. Nominalization

The NP-S analysis presents one special problem which it does not share with ART-S or NOM-S. As discussed in NOM and in GEN INTRO, relative clauses can never appear with true nominalizations

(i.e. gerundive, infinitival, and clausal nominalizations, as distinct from derived nominals like proposal, insistence, claim,...). True nominalizations have the structure



If the NP-S analysis of relative clauses is accepted, then structures like



will have to be blocked by some ad hoc condition. But under ART-S or NOM-S, no structure with a relative clause on a nominalization can be generated because of the disjunction, in the base rules, between S and either D NOM or D N as alternative expansions of NP.

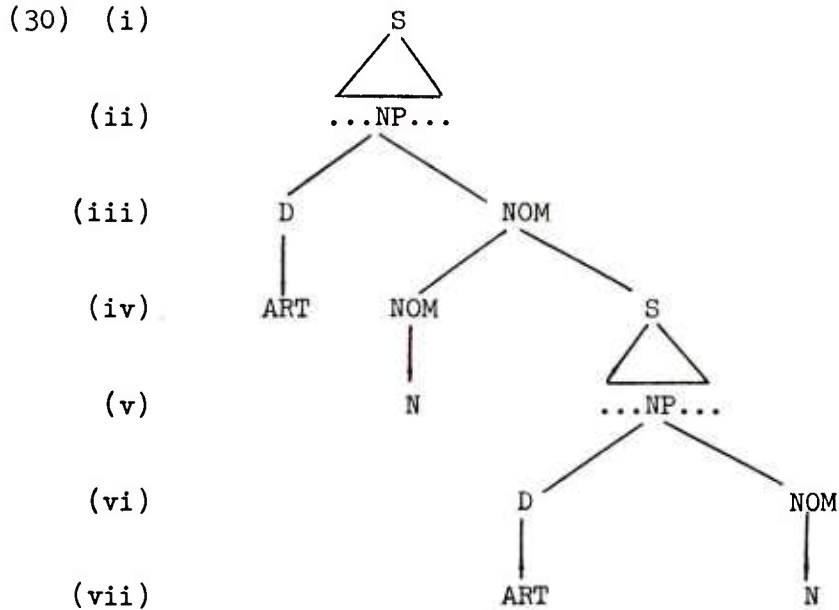
The NP-S analysis, in sum, provides for stacking (to be discussed below), allows the identity condition of coreferentiality to be stated on the shared NP's provided that there is a process of definitivization available and provided that relativization on generics and on certain quantifiers are treated as different processes, the generic pseudo-relative deriving from conditional propositions. The other constraints needed are shared with both ART-S and NOM-S, and are discussed subsequently in this presentation, except for the special constraint against relative clauses with nominalizations, discussed under (d) above.

C. The NOM-S Analysis

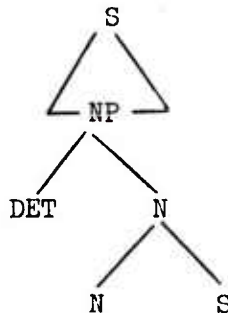
1. Structure

The analysis of the relative clause which was originally proposed by Paul Schachter and which was the basis for the relativization rule with which the grammar presented in UESP (1967) functioned is the NOM-S Analysis.

The NOM-S analysis has the P-Marker (30):



Janet Dean's (1967) analysis is very similar to the NOM-S analysis and has the basic form:

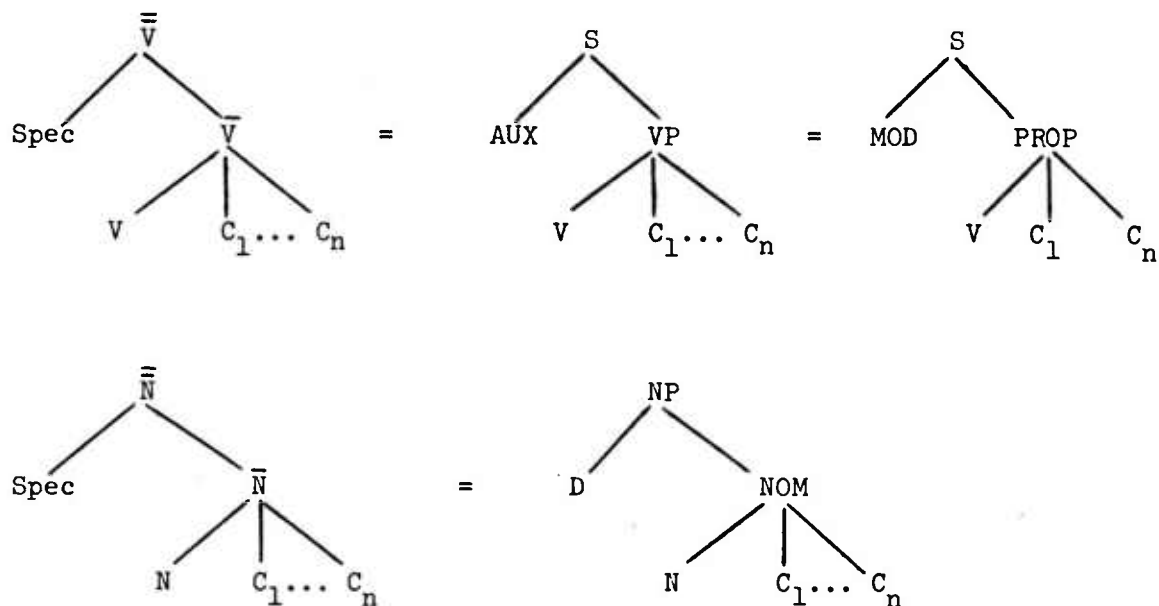


Her main argument for this structure is that relative clauses appear to modify the matrix noun, not the matrix NP as a whole, a point which she argues on the basis of entailment, much as in the NOM-S argument presented below. For example, sentences (31.a) and (32.a) would imply (31.b) and (32.b) respectively in the NP-S analysis.

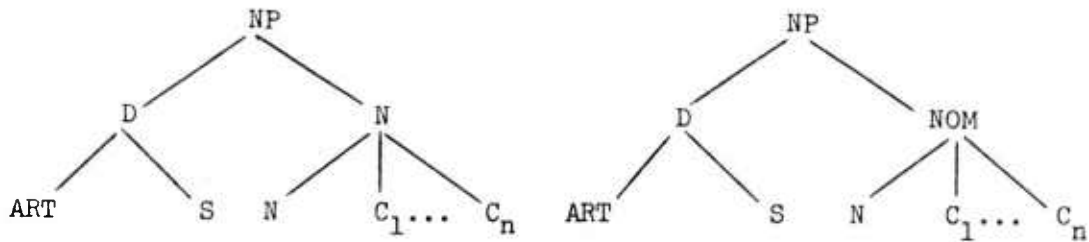
- (31) (a) Mary knows few boys who enjoy knitting.
 (b) Mary knows few boys.
- (32) (a) Mary knows no boys who enjoy knitting.
 (b) Mary knows no boys.

This argument can, of course, be interpreted as an argument against NP identity and/or including quantifiers in identity.

From the point of view of the Deep Case hypothesis, Dean's (1967) notation with N as a recursive symbol would create a problem. In order to maintain the X-Bar parallelism (see GEN INTRO), there needs to be one auxiliary symbol besides NP and N within the NP hierarchy:



To allow N to expand either to N + S (for the relative clause) or to N + $C_1 \dots C_n$ (for the actants of N) would allow the possibility of expanding in either order, generating *Some advocates who are particularly militant of that position demand annihilation, whereas in fact the REL must modify the head noun with all its cases: Some advocates of that position who are particularly militant demand annihilation. This additional symbol need not be NOM, of course - any convenient symbol would do as well. For relativization, on the NOM-S analysis, what is needed is some symbol below NP which includes all of NP except the determiner; for case grammar, what is needed is some symbol below NP which includes all of NP except the determiner but which is not the head noun with its associated cases. These two needs converge on NOM. Under the ART-S analysis, there is no independent need for NOM, and the structures diagramed above for NP could just as well be either of these:



Under the NOM-S proposal the ART of (30.vii) must be [-DEF, +SPEC, -WH]. Identity is required between the NOM of (30.vi) and the NOM of (30.iii). The question of coreferentiality is simply put aside under this analysis, since the identity condition is not met between shared NP's but only between NOM's. The motivations for the requirement of the indefinite [+SPEC] determiner are the following:

a. Relativization must be blocked on predicate nominals. Thus the sentences (33.b,d) are ungrammatical:

- (33) (a) That man is a lawyer
 (b) *The lawyer that that man is always leaves work early.
 (c) The sun is the source of energy on earth.
 (d) *The source of energy on earth which the sun is cannot be inexhaustible.

Since NP's containing a determiner with the features [-DEF, +SPEC] cannot appear as predicate nominals in English, the assumption that relativization depends on the presence of these particular features explains in a natural way why relativization of indefinite predicate nominals is ungrammatical.

b. If relative clauses on generic NP's are assumed to be true relatives, not pseudo-relatives from conditional sentences as discussed above, then there is a natural explanation of the fact that the shared NP of the relative clause on a generic NP cannot be interpreted as generic. Thus the sentence (34.a) is in no way semantically anomalous, but the sentence (34.b) clearly contains an anomaly:

- (34) (a) Cats are mammals.
 (b) Some cats are mammals.

Some cats, in (34.b), is taken as [-DEF, +SPEC]. Precisely the same anomaly is seen in (34.c):

(34) (c) Cats which are mammals are dangerous.

The fact that the semantic anomaly of (34.b) is contained in the relative clause of (34.c) argues that the deep structure determiner of the relative clause should be assigned whatever features are appropriate to the determiner some in (34.b).

c. At least an interim solution to the problem of deriving relative clauses on both generic NP's and NP's containing quantifiers is provided by constraining the determiner to [-DEF, +SPEC].

- (35) (a) Some cats are mammals.
 (b) Cats which are mammals are dangerous.
 (c) Some/certain boys left early.
 (d) All the boys who left early missed the fun.
 (e) I think up some example.
 (f) No example that I think up works right.

d. This constraint provides a natural account of the interpretation of proper nouns with determiners. (36.a) implies (36.b), not (36.c):

- (36) (a) I know a Mary Smith who plays bridge.
 (b) A [certain - [+SPEC]] Mary Smith plays bridge.
 (c) Mary Smith plays bridge.

In general, the NOM-S analysis resembles NP-S without the disadvantages of NP-S: the problem of relativization on nominalizations does not arise as it does with NP-S (see B.2.d above); and the problem of quantifiers with the identity condition for relativization is eliminated by the claim that there is only a single point at which the quantifiers are generated (the topmost determiner).

2. Problems

Arguing against motivations (b) and (c) above are the facts which relate generics to conditionals, in particular the fact that (37.a) cannot be said to entail (37.b):

- (37) (a) Any man who does that is a fool.
 (b) Some man does that.

If the arguments for the pseudo-relative discussed under B.2.a above are solid, then the motivations C.1.a and C.1.b are spurious. (a) is still solid, and if the NOM-S analysis is to be rejected in favor either of ART-S or NP-S, then some other way of disallowing relativization on predicate nominals must be sought. One possibility is to show that the predicate nominal is really not an NP, because it lacks the full set of possibilities of expansion of other NP's. This remains an uninvestigated area for this paper, however.

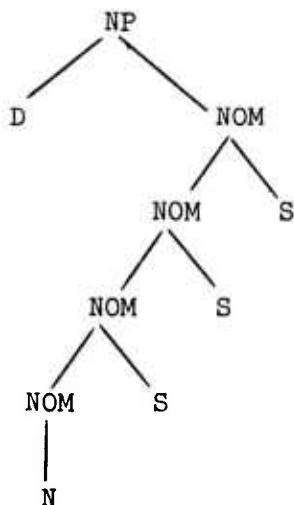
D. Deep-Structure Conjunction Analysis

It has also been proposed recently by several authors (Annear (1967), (1968a), (1968b), Brame (1968), and Postal (1967)) that relative clause sentences are, in the deep structure, conjoined sentences of some type. Unfortunately, these papers were received too late to do the analysis full justice in discussion, so that we presently can only bring the reader's attention to their existence. In any case, Annear (1968a) has rejected her earlier proposal to derive restrictive relatives directly from conjoined sentences: she now posits a more abstract structure like that proposed by Bach (1967a), which is the deep structure of conjunction also. This structure is a propositional logic of the form There exist 3x such that x equals boy, I know x, and x has a beard, underlying the sentence I know three boys who have beards. For this proposal, Annear rejects all stacking of relative clauses (see III below) and also assumes only indefinite articles in deep structure, with definitivization depending on linguistically external contextual information: i.e. definite articles depend on "the speaker's judgment of what the hearer knows, which varies with the situation" (Annear 1968a, MS p.7). Given our more conservative frame of reference, it is impossible to adopt her proposal directly, since we allow a choice between definite and indefinite in the determiner - a choice which in turn is no doubt governed by factors of the non-linguistic type she discusses.

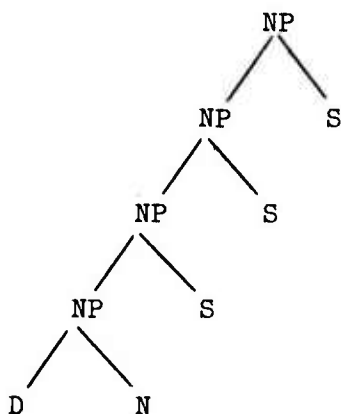
III. THE QUESTION OF STACKED RELATIVE CLAUSES

Relative clauses are said to be stacked if a structure exists such that the first clause modifies the head noun, the second modifies the head noun as already modified by the first clause, the third modifies the head noun as already modified by the first clause as in turn modified by the second clause, and so on. Recursion either on NP or on NOM (i.e. (12) or (1)) provides for such stacking, if we ignore for the moment the problem of stating identity conditions adequately:

(38) (a)



(b)



Prepositioned modifiers of nouns may be interpreted either as stacked or coordinate:

(39) (a) The Short Happy Life of Francis Macomber
 [Stacked, but derived from non-restrictive structure: That part of his life which was happy, which was short.]

(b) That sure is a small large glass of milk.
 ["For a large glass of milk, which is what I ordered, that sure is a small one."]

- (c) A good tall man always beats a good small man. [The stacked reading of this requires compound stress on TALL man and SMALL man.]
- (d) The short, happy life of Francis Macomber [coordinate]
- (e) She had a short, blue, cashmere coat. [coordinate]
- (f) Those ten square black Chinese paper boxes on the table are worth more than you think. [Stacked: boxes which are made of paper, which originated in China, which are black in color, which are square in shape, which are on the table."] But note that it is impossible to provide an acceptable (or grammatical?) paraphrase with relative clauses that gives the stacked interpretation.]

When the stacking is in the normal post-nominal position of relative clauses, however, the differences of interpretation are not clear, and perhaps real differences between the internalized grammars of speakers of English must be postulated to explain the fact that stacking is for many speakers not an acceptable interpretation -- indeed, many claim that more than a single relative clause after a head noun, except by conjunction, is ungrammatical. The underlying relative clause structure of (39'.b) is a contradiction, though (39.b) is not:

(39') (b) *A large glass of milk which is small...

Sandra Annear (1968a, Appendix) argues explicitly against our earlier view of stacking (UESP, 1967), claiming in particular that given two modifiers (either a sequence of postnominal relative clauses, or of prenominal adjectives), the one which is stressed (which in turn is governed by extra - linguistic factors, usually contrast with some alternative, stated or implied) is interpreted as of higher rank than the other one, regardless of order. There has not yet been sufficient discussion of her views to speak of any kind of convergence within the UESP research group; and in any case the group never achieved unanimity on the question of stacking.

In the clearest cases of what appears to be stacking, there are two possible head nouns to which the apparently stacked relative clauses can be related:

- (40) Those of the many men that died that were Americans were shipped back to the states.

(40) seems much more acceptable than (40'), a fact which requires some account that a stacking analysis cannot provide:

(40') Many men who died who were Americans were shipped back to the states.

For some speakers, (40') is ungrammatical without conjunction: ...who died and who were Americans... Similar disagreements occur even in respect to (41), which are examples that approach acceptability in dialects that generally find stacked relative clauses ungrammatical:

- (41) (a) I want to buy a watch that keeps good time that's cheap.
 (b) The colt that our stallion sired that grew up in Indiana won the Derby.
 (c) Any car that costs less than a hundred dollars that won't break down after a hundred miles would be a bargain.
 (d) The students who followed the march who evaded the police caused the trouble, though the ones that the police caught might have participated, had they had the chance.

The problem in interpreting (41) as stacked, distinct from conjoined, is that the reference of a noun restricted by two or more stacked relatives, and the reference of the same noun restricted by the same two relatives in a conjoined construction, would not be distinct. The claim of those who believe they have stacked relatives in their grammars is that although the reference is the same, the meaning is different. The claim of those who do not believe they have stacked relatives in their grammars is that the sentences of (39) are ungrammatical without conjunction, though perhaps derivatively possible by some kind of conjunction deletion. The non-stackers are then in the position of having to provide some alternative explanation of stacking of prepositioned nominal modifiers, which appear to be stackable, or at least interpretable as such, in all dialects.

Some of the more difficult examples that seem to compel a stacking analysis in an Aspects format eliminate themselves automatically in a case-grammar format. In particular, many examples like (42) need not contain stacked relative clauses at all, since phrases like by Henry James are agentives directly attached to the head noun in the deep structure, not reductions of relative clauses:

- (42) John read a book by Henry James that was very long and I read one that was very short.

For the non-stacking dialects, (42') is ungrammatical:

- (42') John read a book that was by Henry James that was very long and I read one that was very short.

Similarly (43) and (43'):

- (43) (a) Have you ever seen a car with rear engine drive that holds the road well?
 (b) I want the pillow on the floor that has a torn edge.
- (43') (a) Have you ever seen a car that has rear engine drive that holds the road well?
 (b) I want the pillow that's on the floor that has a torn edge.

Alternative explanations for the stacking of prenominal modifiers, for those speakers of English who do not have a rule of relative clause stacking in their grammars, may be suggested in several directions, though it appears that none of these are as straightforward as the solution that assumes deep-structure stacking as the source of prepositioned modifier stacking. There are some facts of English which seem to suggest that semantic interpretation depends partly on surface structure, in particular on placement of items like even, just (Kuroda, 1966a); it does not seem unreasonable to suggest that an interpretation of left-to-right stacking in an adjective sequence might also be such a surface phenomenon.

There are certain classes of examples which would suggest that stacking is necessary in the grammar even though some explanation would have to be sought for the fact that (40) is better than (40'), or the fact that many speakers reject strings of relative clauses with adjectival predicates even though the same adjectives in front of the head noun can receive a stacked interpretation. The first class of these is the superlative construction:

- (44) (a) The first book that I read that really amused me was Alice in Wonderland.
 (b) The largest creature once common here which is now extinct is the brontosaurus.
 (c) The most interesting proposal made by Fillmore that is now receiving significant attention is his case grammar proposal.

In such instances, it is reasonable to argue that the superlative itself, about which we know very little and of which no detailed analysis is presented in this grammar, has an embedded S that takes the form of a relative clause on the noun head modified by the superlative adjective. That is, the deeper structure of (44) is on the order of (44'):

- (44') (a) The first-that-I-read book that really amused me...
 (b) The largest-that-was-once-common-here creature which is now extinct...
 (c) The most-interesting-that-has-been-made-by-Fillmore proposal that is now receiving significant attention...

A second class of examples where it is the case that either stacking must be permitted by the grammar or some other explanation must be found may involve restrictions on conjunction reduction:

- (45) (a) A creature that was once common here and that is now extinct...
 (b) A creature once common here and now extinct...
 (c) A creature once common here that is now extinct...
 (d) ?A creature once common here and that is now extinct...

For a grammar without stacking, (45.c) is a problem to generate, since the underlying conjunction must be deleted, though it is generally the case for such dialects that the conjunction must be retained (thus all the examples of (41) are grammatical for such dialects if conjunctions are inserted between the relative clauses). This problem is not entirely clear, however, since for non-stacking dialects (45.d) is considerably better than (40') and certainly as good as (41); but it is worse than (45.c), so that some curious facts remain to be explained.

The third class of examples appears to consist of more or less absolute counter-examples to the non-stacking position. These are examples thought up by ingenious proponents of the stacking analysis which even the most recalcitrant opponents of that position find hard to deny:

- (46) Many people whom I spoke to in Biafra who had experienced the violence of the revolution nevertheless were reluctant to leave.

Except for the third class of counter-examples, it appears that stacking of relative clauses may be a fairly deep kind of basis for dialect differentiation, such that some speakers have the ART-S deep structure (which is easily constrained against stacking), where others have some sort of N-S structure (here the distinction between NP-S and NOM-S is of no consequence).

IV. RELATIVE CLAUSES AND QUESTIONS

In Chomsky (1958) the relation of relative clauses to questions was accounted for by the fact that the interrogative transformation yielded yes/no questions, the WH- transformation yielded the relative clause constituent, and the application of both transformations resulted in WH- questions. Katz and Postal (1964b) adapted this analysis to the format presented in Integrated Theory by having WH act as a scope marker for Q in questions and generating both markers in the base. They made two further changes in Chomsky's analysis by attributing yes/no questions to a sentence with a WH attached to a sentence adverbial (so that all regular questions were WH questions) and by limiting the range of application of WH to the determiners of noun phrases (perhaps with the exception of the sentence adverbial of yes/no questions). Koutsoudas (1967) has argued that their positing of the same WH morpheme for questions and relative clauses is unjustified on any but morphological grounds and is therefore ad hoc, there being no apparent semantic equivalence of the two functions of the underlying WH. In addition, Koutsoudas pointed out difficulties in deriving both interrogative and relative pronouns from the same underlying source in the Katz and Postal analysis. Kuroda (1968) has also questioned the current treatment of the interrogative-relative relationship, since it appears to be motivated only by the fact that the common WH allows one to state WH- fronting for both interrogatives and relatives by a single rule and does not, according to him, account for the morphological identity of forms. While one might, in answer to Kuroda's criticism, reply that WH is one of a number of features which determine the morphological shape of both relative and interrogative pronouns, and that if certain of these feature complexes are identical in the surface structure, the same phonological form results, such an explanation is at best rather superficial. For interrogatives (see INTERROG) we posit an underlying WH attached to the "questioned" element(s) and no Q; for relative clauses, we do not postulate an underlying WH, but rather introduce it by transformation, so that on a deep level, we do not relate questions to relative clauses, and we must therefore claim the similarity to be one of a superficial nature. This analysis is based on relatively independent investigation of the two phenomena, and is therefore independently motivated by the facts of the two analyses, such as WH- fronting and second lexical look-up. Ross (1967c) also regards the relative and interrogative rules as quite unrelated, attributing the similarities between the constraints to which they are subject to the fact that both move constituent across variables. As Zwicky (1968) has pointed out, however, this fails to account for morphological similarities between the resulting WH- words. This criticism can equally well be applied to our analysis.

V. PROPER NOUNS AND UNIQUE REFERENCE

A fact about relativization noted by virtually all investigators is that restrictive relative clauses cannot occur with proper nouns (provided, at least, that the proper noun has no determiner). At one point in the history of our own study of relativization we proposed to explain this fact by the assumption of some determiner other than a definite one on the coreferential NP of the relative clause -- e.g., as above, the [-DEF, +SPEC] determiner. Since we assumed that all proper nouns had a zero form of the definite determiner, the requirement of [-DEF, +SPEC] in the coreferential noun automatically excluded relativization on proper nouns. However, some scholars (e.g. Postal at the Second UCSD Conference on English Syntax, and Sloat (1968)) have argued that the only fact that singles out proper nouns is that the definite article is zeroed out if there is no relative clause, so that (47.a) has the surface structure (47.b), but (47.c,d) are fully grammatical and comparable to such constructions with common nouns:

- (47) (a) *The Alice is a pleasant girl.
 (b) Alice is a pleasant girl.
 (c) The Alice I like best is the fat one.
 (d) An Alice whom I would like to meet lives
 just down the street.

The problem is uniqueness of reference: the NP that cannot be relativized on is any NP of which the referent is unique; if the NP has several possible referents, relativization is possible; if the NP is one which is normally understood to have unique reference but is being used with multiple reference, relativization is not only possible but necessary, as in (47.c,d); and finally if the NP is one which cannot be interpreted to have unique reference, then relativization is obligatory.

- (48) (a) UNIQUE:
 The sun, which is millions of miles away,
 is the source of all energy on earth.
 *The sun which is millions of miles away
 is the source of all energy on earth.
 (b) NORMALLY UNIQUE BUT USED WITH MULTIPLE REFERENCE:
 A sun which is millions of miles away is the
 source of all energy on earth.
 *A sun is the source of all energy on earth.
 (c) UNIQUE REFERENCE IMPOSSIBLE:
 Any sun which is a million miles away is the
 source of all energy on earth.
 *Any sun is the source of all energy on earth.

The same generalization holds for proper nouns. In (47.b) Alice has unique reference (in the mind of the speaker, at any rate). In (47.c) and (47.d) clearly there are several referents to whom the name Alice refers, and the relative clause sorts them out.

But notions like "unique reference" and "normally unique but used with multiple reference" are not themselves syntactic notions. All the syntax can reasonably do is provide for the various grammatical possibilities of (47) and (48) and leave it to some sort of interpretive/semantic component to guarantee that these notions, which clearly play a role in interpretation, will be sorted out there. We assume, therefore, only a rule which deletes a determiner from in front of a proper noun if that proper noun is not modified by a relative clause; otherwise, the rules apply equally to all classes of nouns.

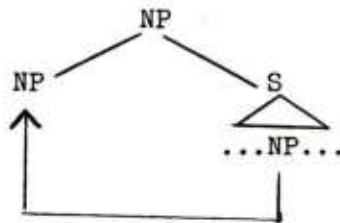
From this point on until the rules themselves, the trees drawn for illustrative purposes, and deep structures referred to, are based on the NP-S analysis, since the general constraints which Ross has discussed most fully can be so formulated as to hold equally well for ART-S, NOM-S, or NP-S.

VI. GENERAL CONSTRAINTS

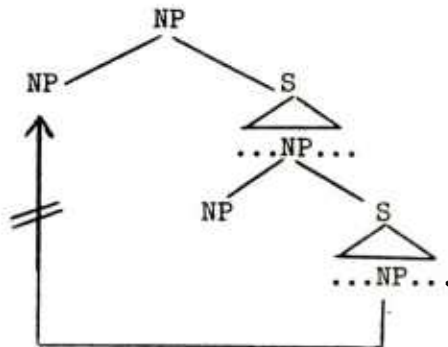
A. Complex NP Constraint

The configuration (47.a) requires relativization, given a coreferential NOM (or NP), but the configuration (47.b) does not permit it:

(49) (a)



(b)



Thus from sentences (50.a) the grammar must not derive (50.b):

(50) (a) Ruth liked the sketch S

The critic detested the artist S

The artist drew the sketch

(b) *Ruth liked the sketch that the critic detested the artist who drew.

Chomsky (1964a) accounted for the ill-formedness of sentences like (50.b) by the A-over-A principle, but this principle turns out to be too powerful, blocking the enumeration of several classes of well-formed sentences. It is possible to formulate a special condition on the relativization rule itself to block sentences like (50.b), but such a solution [utilized in UESP (1967)] is not only ad hoc but it fails to account for similar restrictions on the fronting of nominals in the interrogative construction. Ross (1967c) sets forth the COMPLEX NP CONSTRAINT which effectively blocks not only (50.b) but also certain other classes of ill-formed relativizations, in particular relativizations from fact-S discussed below. Ross's condition states:

- (51) No element contained in a sentence dominated by a noun phrase with a lexical head noun may be moved out of that noun phrase by a transformation. [(4.20)]

Thus it permits (49.a) but not (49.b). Similarly coreferential nouns within fact-S constructions are blocked from relativization (as long as the head noun fact is still present):

- (52) (a) I believed the claim that Otto was wearing the hat. [Ross (4.17.a)]
 (b) *The hat which I believed the claim that Otto was wearing is red. [Ross (4.18.a)]
 (c) The evidence that Nick committed the murder was inconclusive.
 (d) *The murder which the evidence that Nick committed was inconclusive horrified the public.

The Complex NP Constraint says nothing about the movement of NP's outside of S's dominated by NP's whose daughters do not include lexical head nouns. Thus the relativizable noun may be found in some -- perhaps quite deeply embedded -- sentential complement on a verb, noun, or adjective, as in (53):

- (53) (a) A man expected a boy to persuade a girl to consider an Englishman intelligent.
 (b) I knew the man who expected a boy to persuade a girl to consider an Englishman intelligent.
 (c) I know the boy whom a man expected to persuade a girl to consider an Englishman intelligent.
 (d) I knew the girl whom a man expected a boy to persuade to consider an Englishman intelligent.
 (e) I knew the Englishman whom a man expected a boy to persuade a girl to consider intelligent.

But if the configuration out of which the relativizable noun is moved is a noun clause of the form that-S, the possibility of movement of NP's out of it is not unrestricted. Provided that the noun clause is an object, the only two constraints have to do with whether the noun is the surface subject immediately after the complementizer that, as in (52.b), and with whether the noun is a dative, in which case there is a British/American dialect split, as in (54.a):

- (54) (a) The dean assumed that the chairman had sent the information to the students.
 (b) *The chairman whom the dean assumed that had sent the information to the students was at a loss.
 (c) *The students whom the dean assumed that the chairman had sent the information were at a loss. [OK for British]
 (d) The students whom the dean assumed that the chairman had sent the information to were at a loss.
 (e) The students to whom the dean assumed that the chairman had sent the information were at a loss.
 (f) The information that the dean assumed that the chairman had sent to the students was incorrect.

(54.c) indicates that the DATIVE MOVEMENT RULE (Which deletes to and places the indirect object in front of the direct object) cannot precede relativization in American English, though it can in British. But the DATIVE MOVEMENT RULE is in the lower cycle, so that it is not clear how to block (54.c) except by an ad hoc exclusion. (54.b), in conjunction with (54.b') indicates that NP's in subject position cannot be moved out of the object noun clause while the complementizer that is present, though they may in its absence:

- (54) (b') The chairman whom the dean assumed had sent the information to the students was at a loss.

This constraint is entirely a matter of surface subject, since either the active subject or the passive subject is unrelativizable if the complementizer is present:

- (55) (g) The dean assumed that the information had been sent to the students by the chairman.
 (h) *The information which the dean assumed that had been sent to the students by the chairman was incorrect.
 (i) The dean assumed that the students had been sent the information by the chairman.
 (j) *The students whom the dean assumed that had been sent the information by the chairman were at a loss.

From this evidence it appears clear that there is no very deep fact involved in the blocking of relativization of subject NP's preceded by that in object noun clauses: that is a complementizer which should not appear in the deep structure at all, but rather be introduced somewhere along the line in the transformational derivation of nominalized object clauses -- in order to guarantee that it will not block relativization in sentences like (54.b') we need to provide only that the rule of that-deletion has applied prior to relativization on the subject of a nominalized clause. Since that-deletion is in the lower cycle (i.e. the cycle below the one on which relativization takes place), rule-ordering is irrelevant to the solution. The solution depends rather on a condition in the relativization rule itself, namely that there be no item that preceding the coreferential NP which is moved by relativization.

There is one consideration which creates a problem with this quite general and appealing solution: there is a class of verbs with which that-insertion is obligatory. These verbs, pointed out by Janet Dean, include rejoice, quip, snort,...

- (55) (a) We rejoiced that the students found the solution.
 (b) *We rejoiced the students found the solution.

Given such verbs, the subject of the sentential object cannot provide the basis for relativization:

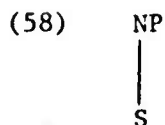
- (56) (a) *The students that we rejoiced that found the solution were tired.
 (b) *The students that we rejoiced found the solution were tired.

But for some speakers, at least, none of the NP's of such clauses are relativizable:

- (57) (a) *The solution that we rejoiced that the students found was untenable.
 (b) *The solution that we rejoiced the students found was untenable.
 (c) He snorted that the police ought to arrest the demonstrators.
 (d) *The demonstrators that he snorted that the police ought to arrest were causing great damage.
 (e) He quipped that he would reject the solution if he had a better one.
 (f) *The solution that he quipped that he would reject if he had a better one was unassailable.

If it is a fact that no subject NP can be moved out of a that-S construction, then the solution proposed above can be maintained by the ad hoc device of inserting the that-complementizer with the verbs that require it, and providing a general condition (not specific to relativization) that no NP can be moved out of such clauses. For the usual case, where that is not present in the deep structure, such a condition would not apply.

We have considered above the restriction on noun clauses when they are objects: in the light of the proposals above, we limit such structures, as deep structures with the complementizer inserted by the verb, to the verbs rejoice, quip, snort,...; all other surface structures of the that-S type are in fact of the type (58).



For the moment we provide no deeper analysis of the verbs rejoice, quip, snort... though it is clear that the peculiarity of their behavior with respect to relativization from within their sentential objects may have a deeper account: e.g. (55.a) may be derived from (55.a'):

- (55) (a') We rejoiced in the fact that the students found the solution.

If this is correct, the Complex NP Constraint would automatically block relativization on NP's within the sentential complement of fact. But quip and snort have a rather different deeper analysis: He made the quip that..., He gave a snort that... Both of these would also block automatically, since the that-S is dominated by a lexical head noun. So under either this deeper analysis of the non-conforming verbs, or under the proposal that the that-complementizer is part of the deep structure with just these verbs, the general solution of relativization appears to hold.

B. Sentential Subject Constraint

Now consider the restrictions on movement of NP's out of structures like (58) when the noun clause is a subject:

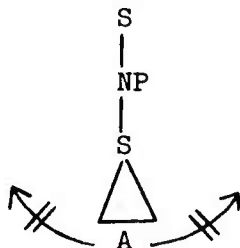
- (59) (a) That the chairman had sent the information to the students was assumed by the dean.
 (b) *The students whom that the chairman had sent the information to was assumed by the dean...
 (c) *The students to whom that the chairman had sent the information was assumed by the dean...
 (d) *The information which that the chairman had sent to the students was assumed by the dean was incorrect...
 (e) *The chairman who that had sent the information to the students was assumed by the dean was at a loss...

(59.a) is the passive form of (54.a), but this fact is irrelevant to what is going on in (59), since the same constraints will apply to any sentential subject (though after extraposition, the constraint does not apply):

- (60) (a) That the chairman had sent the information to the students annoyed the dean.
 (b) *The information which that the chairman had sent to the students annoyed the dean was incorrect.
 (c) The information which it annoyed the dean that the chairman had sent to the students was incorrect.
 (d) That she committed the murder was obvious.
 (e) *The murder which that she committed was obvious was a heinous crime.
 (f) The murder which it was obvious that she committed was a heinous crime.

(60.b) and (60.e) are blocked by Ross's SENTENTIAL SUBJECT CONSTRAINT:

- (61) No element dominated by an S may be moved out of that S if that node S is dominated by an NP which itself is immediately dominated by S. [(4.254)]



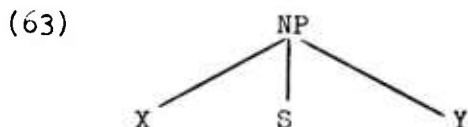
A peculiarity of sentences to which the sentential subject constraint applies is that relativization is not possible even on an NP in the object if the subject is sentential unless there is extraposition of the sentential subject:

- (62) (a) That the girl wanted to depart early annoyed the boy.
 (b) *The boy whom that the girl wanted to depart early annoyed was dull.
 (c) It annoyed the boy that the girl wanted to depart early.
 (d) The boy whom it annoyed that the girl wanted to depart early was dull.

To block sentences like (62.b) Ross has an output condition:

Grammatical sentences containing an internal NP which exhaustively dominates S are unacceptable.

That is, given (63):



where neither X nor Y is null, the sentence containing this configuration is unacceptable, though grammatical. It might be noted in passing that precisely this condition would serve to mark the unacceptability of the sentences like (3) under the ART-S analysis.

Sentences like (60.c), (60.f), and (62.d), where clearly extraposition must precede relativization, were analyzed in just this way (i.e. extrapose and then relativize) by Ross (1966b) though he appears to contradict this analysis in his dissertation when he argues that extraposition must be last-cyclic.

C. Coordinate Structure Constraint

A third general condition must be used to block relativization on a single conjunct in a coordinate construction (the examples (64) are Ross's):

- (64) (a) Henry plays the lute and sings madrigals. [(4.80)]
 (b) *The lute which Henry plays and sings madrigals is warped. [(4.82.a)]
 (c) *The madrigals which Henry plays the lute and sings sound lousy. [(4.82.b)]

These are blocked by Ross's COORDINATE STRUCTURE CONSTRAINT:

- (65) In a coordinate structure, no conjunct may be moved, nor may any element contained in a conjunct be moved out of that conjunct. [(4.84)]

A general class of exceptions to this constraint, not relevant to the problem of relativization, is rule schemata which move a constituent out of all the conjuncts of a coordinate structure (i.e. conjunction reduction, in general).

D. Pied Piping

1. Ross's Constraints

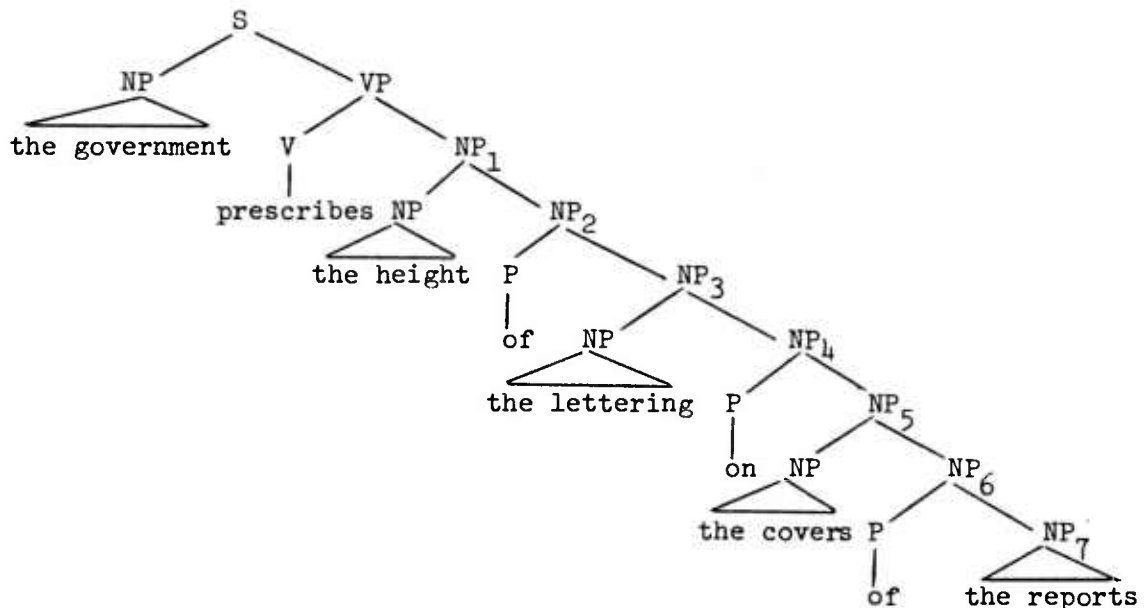
The final condition on relativization is called PIED PIPING by Ross, a condition enormously more complex and less general than the three conditions (COMPLEX NP, SENTENTIAL SUBJECT, AND COORDINATE STRUCTURE) noted so far.

Pied Piping is a convention intended to guarantee that certain NP's which dominate a coreferential NP can be moved along with the coreferential NP when it is moved by relativization. The convention as formulated by Ross has a moderately incredible set of conditions imposed upon it to make it work satisfactorily; and even the initial tree which is subject to Pied Piping is highly suspect in Ross's version of it, containing prepositional phrases dominated by NP. It is hard to imagine the rules which would produce such trees, outside of a case grammar of a type which Ross does not claim to be invoking. But given the case-grammar framework of the present analysis, Ross's trees can be made plausible and a number of his special conditions on the Pied Piping convention can either be eliminated or stated more effectively. The sentences (67), all relativizations on reports in (66), illustrate the problem [all from Ross (1967c), 197ff.].

- (66) The government prescribes the height of the lettering on the covers of the reports.
- (67) (a) Reports which the government prescribes the height of the lettering on the covers of are invariably boring.
- (b) *Reports of which the government prescribes the height of the lettering on the covers are invariably boring.
- (c) Reports the covers of which the government prescribes the height of the lettering on almost always put me to sleep.
- (d) *Reports on the covers of which the government prescribes the height of the lettering almost always put me to sleep.
- (e) Reports the lettering on the covers of which the government prescribes the height of are a shocking waste of public funds.
- (f) *Reports of the lettering on the covers of which the government prescribes the height are a shocking waste of public funds.
- (g) Reports the height of the lettering on the covers of which the government prescribes should be abolished.

The tree Ross provides for (66) is (67'):

(67')



Ross notes (p. 201) that there seems to be a constraint, in his dialect at least, which prohibits noun phrases which start with prepositions from being relativized (and questioned) when these directly follow the NP they modify (see (67.b,d,f)). Ross (p. 201) does not attempt a precise formulation of this constraint on Pied Piping, but instead discusses other constraints that the convention requires. From the limited investigation we have done, it appears that these other constraints are essentially correct, and therefore we only discuss them briefly, before returning to the question of piping a PREP-NP in a NP-PREP-NP construction and some related issues.

The first condition that blocks Pied Piping is the coordinate structure constraint, discussed above. The second is a condition special to Pied Piping which blocks its occurrence across an intervening S node, as in (68): [Ross's examples]

- (68) (a) They will give me a hat which I know that
I won't like.
(b) *They will give me a hat that I won't like
which I know.

A third condition is the LEFT BRANCH CONDITION, where Pied Piping is obligatory: [Ross's examples]

- (69) (a) We elected the boy's guardian's employer president.
 (b) The boy whose guardian's employer we elected president ratted on us.
 (c) *The boy whose guardian's we elected employer president ratted on us.
 (d) *The boy whose we elected guardian's employer president ratted on us.

A fourth condition prevents a head noun which is not pronominalizable from moving out of a prepositional phrase: [Ross's examples]

- (70) (a) *What time did you arrive at?
 (b) *The manner which Jack disappeared in was crazy.
 (c) *The place which I live at is the place where Route 150 crosses Scrak River.

A fifth condition is the IDIOMATIC PREP-PHRASE condition, where Pied Piping is not permitted, involving idiomatic phrases like do away with, get wind of, get one's sights on, etc., to block the likes of (71):

- (71) (a) *She's the girl with whom he did away.
 (b) *That's the answer of which he got wind.
 (c) *That the deer on which he got his sights.

We now turn to aspects of Pied Piping about which there is more question, and in particular the question of the conditions under which PREP-NP can or must move the PREP along with the NP.

2. Case Movement Constraint

The aspects of piping investigated here center around three issues:

- (a) how necessary is Ross's tentative constraint disallowing noun phrases which start with prepositions from being relativized (or questioned) when these directly follow the noun phrase they modify? (67.b,d,f)
 (b) what constraints are necessary on $\text{PREP} \widehat{\text{NP}}$ piping in $\text{NP} \widehat{\text{PREP}} \widehat{\text{NP}}$ constructions?
 (c) is piping possible on co-referential NP's resulting from REL-BE deletion?

(a) How necessary is the constraint on piping the PREP with the NP in a NP^{PREP}NP construction?

Informant response to sentences containing this kind of PREP fronting is extremely varied. In general sentences (72) and (73) are considered valid counterexamples to Ross's constraint since they are evidence that the modifying PREP can front with its co-referential NP.

- (72) (a) The solutions to the problems were ingenious.
 (b) The problems which the solutions to were ingenious were trivial.
 (c) The problems to which the solutions were ingenious were trivial.
- (73) (a) The answers to the questions were brief.
 (b) The questions which the answers to were brief were long.
 (c) The questions to which the answers were brief were long.

Native speakers who accept (72.c) and (73.c) will frequently have different responses to (72.b) and (73.b). The responses range roughly from outright rejection through grudging acceptance to complete acceptance. The same speakers who accepted (72.c) and (73.c) will however reject (74.c) and (75.c) and have mixed reactions to (74.b) and (75.b).

- (74) (a) The bottom of the barrel was bloodstained.
 (b) The barrel which the bottom of was bloodstained had once held malmsey.
 (c) The barrel of which the bottom was bloodstained had once held malmsey.
- (75) (a) The goal of the course was clear.
 (b) The course which the goal of was clear was well organized.
 (c) The course of which the goal was clear was well organized.

All the native speakers questioned, it should be noted, accept the (c) sentences as non-restrictive relative constructions. Confronted with these extremely varied responses, we have taken the following position: we claim that if the PREP^{NP} in a NP^{PREP}NP construction can be piped, then either the co-referential NP alone, or that NP plus the PREP, or that NP plus the PREP plus the NP with which it is in construction can all be piped. Thus we accept as grammatical all the (b) and (c) sentences of (72-75), and furthermore allow the following (d) sentences of (72-75):

- (72) (d) The problems the solutions to which were ingenious were trivial.
- (73) (d) The questions the answers to which were brief were long.
- (74) (d) The barrel the bottom of which was bloodstained has once held malmsey.
- (75) (d) The course the goal of which was clear was well organized.

A consequence of this position is that we disagree with Ross's stars on (67.b,d,f) and instead hold that all the sentences of (67) are grammatical. In fact none of the longer instances of piping are stylistically pleasing, but we find (67.e), which Ross accepts, stylistically as inept as (67.f), which he disallows. It is conceivable that the length of the piping is critical in determining the possibility of PREP fronting, but there is evidence that suggests that that is not the crucial factor. Consider the consequences of piping on the NP[^]PREP[^]NP constructions of (72.a) and (73.a) when they occur not in subject but in object position and therefore must pipe over the verb.

- (76) (a) He checked the solutions to the problems.
 (b) The problems which he checked the solutions to were ingenious.
 (c) The problems to which he checked the solutions were ingenious.
- (77) (a) He checked the answers to the questions.
 (b) The questions which he checked the answers to were clear.
 (c) The questions to which he checked the answers were clear.

Of the native speakers who accepted (72.c) and (73.c), some reject (76.c) but allow (77.c). The piping distance will not account for these differences in response. Perhaps further investigation will show that PREP piping is related to a more subtle analysis (see below) of types of NP[^]PREP[^]NP construction.

Finally a consequence of taking the position that where the NP can pipe, the PREP, and its related items, can follow, is that we offer no account of the diversity of native speaker response: another problem to be stuffed into the black output conditions box.

(b) What constraints are necessary on $\text{PREP} \widehat{\text{NP}}$ piping in $\text{NP} \widehat{\text{PREP}} \widehat{\text{NP}}$ constructions?

Ross, in his concern with other conditions on piping, does not differentiate between distinct types of $\text{PREP} \widehat{\text{NP}}$. Our position is that there are such constraints and that they can be more simply handled in a grammar that distinguishes the various case relations of the $\text{PREP} \widehat{\text{NP}}$ to the NP it is in construction with. Not all case relations have yet been determined, but the following hypothesis holds reasonably well in the grammar as it now stands:

in general, all cases in construction can pipe except for AGENT, LOCATIVE AND DATIVE.

As evidence that AGENT in construction with an NP cannot pipe, consider (78) and (79):

- (78) (a) The book by the professor was turgid.
 (b) *The professor who the book by was turgid was unhappy.
 (c) *The professor by whom the book was turgid was unhappy.
 (d) *The professor the book by whom was turgid was unhappy.
- (79) (a) The Army edited the analysis of the report by the professor.
 (b) *The professor who the Army edited the analysis of the report by was indignant.
 (c) *The professor by whom the Army edited the analysis of the report was indignant.
 (d) *The professor the analysis of the report by whom the Army edited was indignant.

As evidence that LOC in construction with an NP cannot pipe, consider (80) and (81):

- (80) (a) The workers in the mines were underpaid.
 (b) *The mines which the workers in were underpaid were nationalized.
 (c) *The mines in which the workers were underpaid were nationalized. [Acceptable only in the sense "The workers were underpaid in those mines"]
 (d) *The mines the workers in which were underpaid were nationalized.

- (81) (a) The dishes in the sink were dirty.
 (b) *The sink which the dishes in were dirty was cracked.
 (c) *The sink in which the dishes were dirty was cracked.
 (d) *The sink the dishes in which were dirty was cracked.

As evidence that DAT in construction with an NP cannot pipe, consider (82):

- (82) (a) The gift to the chairman was trite.
 (b) *The chairman who the gift to was trite was sad.
 (c) *The chairman to whom the gift was trite was sad.
 (d) *The chairman the gift to whom was trite was sad.

(82.c) is grammatical, but only with a different semantic reading from the reading appropriate to (82.a). Note that DAT, when not in construction with an NP, allows PREP fronting.

- (83) (a) He sent the gift to the secretary.
 (b) The secretary who he sent the gift to was delighted.
 (c) The secretary to whom he sent the gift was delighted.

(84) is evidence that DAT is not in construction with the NP, but with the VP:

- (84) *The secretary the gift to whom he sent was delighted.

We conclude this section with some examples of cases in construction with NP's that our rules would allow. We claim that (85) - (88) are grammatical.

- (85) (a) She detested the author of the book.
 (b) The book which she detested the author of was a best-seller.
 (c) The book of which she detested the author was a best-seller.
 (d) The book the author of which she detested was a best-seller.
- (86) (a) The winner of the prize was a Navaho.
 (b) The prize which the winner of was a Navaho was a trip to New Mexico.
 (c) The prize of which the winner was a Navaho was a trip to New Mexico.
 (d) The prize the winner of which was a Navaho was a trip to New Mexico.

- (87) (a) The notice about the reward was illegible.
 (b) The reward which the notice about was illegible was over \$1,000.
 (c) The reward about which the notice was illegible was over \$1,000.
 (d) The reward the notice about which was illegible was over \$1,000.
- (88) (a) His anguish over the crimes was inordinate.
 (b) The crimes which his anguish over was inordinate were certainly gruesome.
 (c) The crimes over which his anguish was inordinate were certainly gruesome.
 (d) The crimes his anguish over which was inordinate were certainly gruesome.

Note that if the possessive in (88) had been on any NP in the construction except the first, piping is ruled out.

- (89) *His crimes which the anguish over was inordinate were certainly gruesome.

(c) Is piping possible on coreferential NP's resulting from REL-BE deletion?

We assume that the distinction Chomsky made (1968) between an NP[^]PREP[^]NP construction, such as a house in the woods, and a reduced relative, such as that book on the table, is correct; Chomsky's evidence for the distinction was in part the narrow restrictions on the head noun in the NP[^]PREP[^]NP constructions, and in part the possibility of contrastive stress for the NP[^]PREP[^]NP construction: -- JOHN'S house in the woods --, but the impossibility of an analogous contrastive stress for the reduced relative: -- *JOHN'S book on the table. The very fact that a preposed possessive is possible with house in the woods demonstrates that it must be derived, on one reading, from a case-source rather than a reduced-relative-clause source, since preposed possessives are ungrammatical with relative clauses: *John's house that is in the woods, *John's book that is on the table.

Since the reduced relative construction can be similar superficially in its bracketing to an NP[^]PREP[^]NP construction, the question arises of its behavior with respect to piping. Our position is that it is not possible to relativize on the second NP of a reduced relative construction. Thus we claim that the sentences of (80) could not be derived from the reduced form of (90) any more than the sentences of (91) could be derived from (92).

(90) The workers (who were) in the mines were underpaid.

↓
∅

(91) (a) *The evening $\left\{ \begin{array}{l} \text{which} \\ \text{in which} \end{array} \right\}$ the party $\left\{ \begin{array}{l} \text{in} \\ \emptyset \end{array} \right\}$
was dull was windy.

(b) *The hotel $\left\{ \begin{array}{l} \text{which} \\ \text{at which} \end{array} \right\}$ the party $\left\{ \begin{array}{l} \text{at} \\ \emptyset \end{array} \right\}$
was dull was large.

(92) (a) The party (that was) in the evening was dull.

↓
∅

(b) The party (that was) at the hotel was large.

↓
∅

In other words we hold that predicate LOC and TIME phrases, like predicate NOMINAL phrases, cannot undergo relativization. To disallow (91) the relative formation rule must be blocked from applying to the output of the REL-BE deletion rule.

VII. REDUCED RELATIVES AND CASES ON NOUNS

An additional question concerning REL-BE deletion is the fact that by way of REL-BE deletion, we can generate such sentences as (94) from (93):

(93) The boy who is from Chicago hit me.

(94) The boy from Chicago hit me.

while at the same time, our case-grammar framework provides structures for such expressions as (95), (96), and (97):

(95) the back of the room...

(96) the author of the book...

(97) the introduction of output conditions...

as cases on nouns, obviously not the result of REL-BE deletion.

The problem is, of course, to be able to tell one type from the other, and, more seriously, to avoid, in a well-motivated way, predicting false ambiguities by generating the same result by both relative clause reduction and cases on nouns where there is no such ambiguity. There appear to be some examples of genuine ambiguity, such as (98):

(98) our agent in Chicago...

where one may be referring to the Chicago agent (a Locative on agent) or an agent who is in Chicago, but normally there is no such ambiguity.

It has been suggested that if a frequency adverb can be inserted after the head noun of the structures in question, then the structure in question is derived via a relative clause, since, presumably such adverbs are of sentential origin. However since we know so little about adverbs in general and frequency adverbs in particular, the validity of this test is open to question. It yields results such as (99) and (100):

(99) the books usually on the table...

(100) *the key usually to the door...

In addition, it is quite often unclear whether or not a given expression has passed the test. Besides, this test would, if it worked, only allow us to determine the constituency after the fact when what is needed is a principled means of generating only the correct structures.

At this time we can only point out the difficulty, realizing that if it cannot be handled in a principled way within case grammar and if it can be so handled in some other format, then this would constitute a strong argument against this aspect of our analysis and case grammar in general, since it is the case structure which leads to this particular representation of this dilemma, but provides no explanation for it.

VIII. WH- ATTACHMENT AND FRONTING

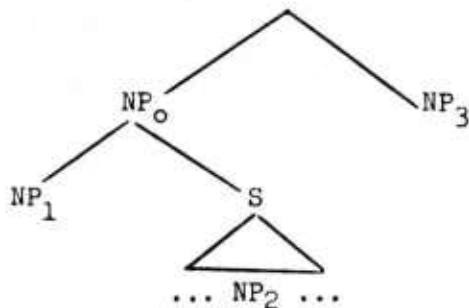
If WH- attachment and WH- fronting are handled by two separate rules, as has generally been assumed (e.g. in Smith, 1964), it is possible to regard dialects in which (101) - (104) are acceptable as having made the fronting rule optional.

- (101) This is a book before I had read which I was benighted.
- (102) This is a book the man who wrote which is a fool.
- (103) The hat I believed the claim that Otto was wearing which is red [on the non-appositive reading].
- (104) Ruth liked the sketch the artist who drew which was detested by the critics.

It is not totally clear whether Ross's complex NP Constraint should apply to WH- attachment. If it applies, it would block (101) - (104). The assumption that it might apply to WH- attachment follows from the following two claims of Ross (1967c):

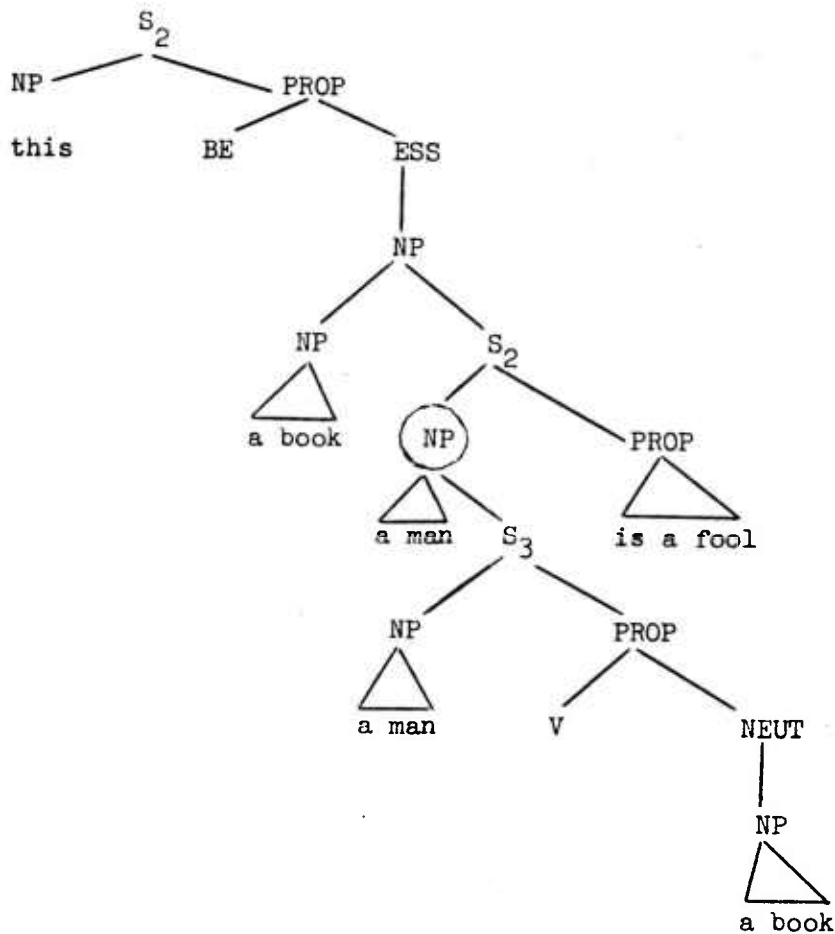
- a. "All feature-changing rules obey the same constraints as chopping rules." [6.193]
- b. "To say that a feature-changing rule obeys the Complex NP Constraint is to say that no element not dominated by a complex NP can effect changes in the sentence [immediately] dominated by that NP." [p. 455, MS]

Thus, illustrating with the NP-S analysis of relative clauses for the sake of simplicity, NP₂ in the structure below can change features in NP₂ but NP₃ cannot do so because it is not dominated by NP₀:



Consequently, since a book in S₁ of (102') is not dominated by the circled NP in the example, it presumably cannot add the feature [+WH] to a book in S₃, so that (102) would be blocked:

(102')



We have noted with reference to Indefinite Incorporation (see NEG) that there is good reason to agree with Ross's observation that his constraints apply to feature-changing rules. But Ross (MS p.356) specifically excludes the Pronominalization rule from these constraints, although it changes features. The exclusion of pronominalization from these constraints is justified by Ross on the grounds that "[+PRO] is not a feature like ...[+INDEFINITE]... it is an instruction to delete all or part of the constituents of the node to which it is attached." Though this is a tenuous distinction, it clearly must be made, since pronominalization is not subject to constraints on feature-changing rules. We have noted earlier the similarities between the relative pronouns and the personal pronouns, and it appears that in this respect they are similar too.

IX. RULES

A. WH-Rel Attachment

1. Nom-S Analysis

Structure Index

X	NOM	S[# X	NP[X ART NOM]	NP	X #]	S	X
1	2	3 4	5 6 7		8 9	10	

Conditions

- (a) 2 = 7, and 4 ≠ x + that
- (b) 6 dominates

+SPEC
-DEF
-WH
- (c) If there is a [+WH] anywhere within the S **immediately dominating 7**, which is also [-REL], the **structure index for this transformation is not met.**
- (d) The rule is obligatory.

Structure Change

- (a) Replace [-WH] in 6 by

+WH
+REL
+PRO
- (b) Replace

+SPEC
-DEF

 in 6 by [+DEF]
- (c) Erase 7 and 3.
- (d) Replace 9 by half-fall.

Notes on the Rule

1. For a further discussion of reference and identity conditions, see Section II.D.2. of PRO (as well as the discussion of identity conditions in Section II of this paper).
2. For a discussion of Condition (b), see Section II.C of this paper.
3. Condition (c) is required to block relativization of embedded questions, such as (105), which would otherwise yield (106):

(105) S [Tichbourne is the fink S [A certain fink ate something] S] S
 [+WH]
 [-REL]

(106) Tichbourne is the fink who what ate?

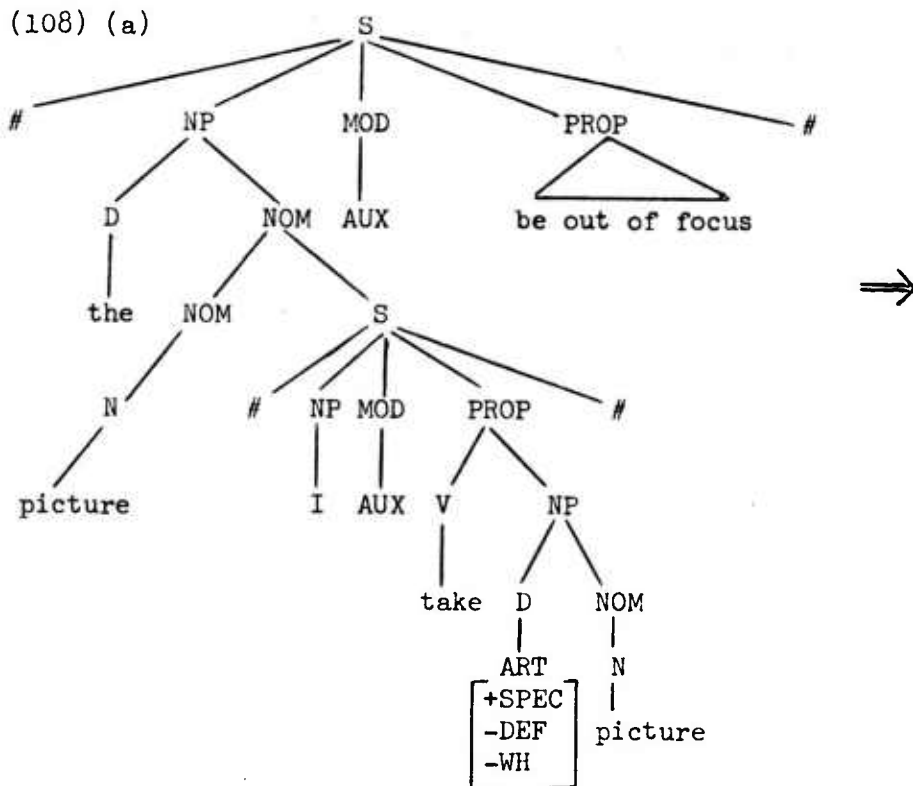
While (106) should probably be generated, it should not come from (105). If anything should come from (105) it should be (107):

(107) Tichbourne is the fink who ate what?

but we propose no analysis of such rather special questions as (106) and (107).

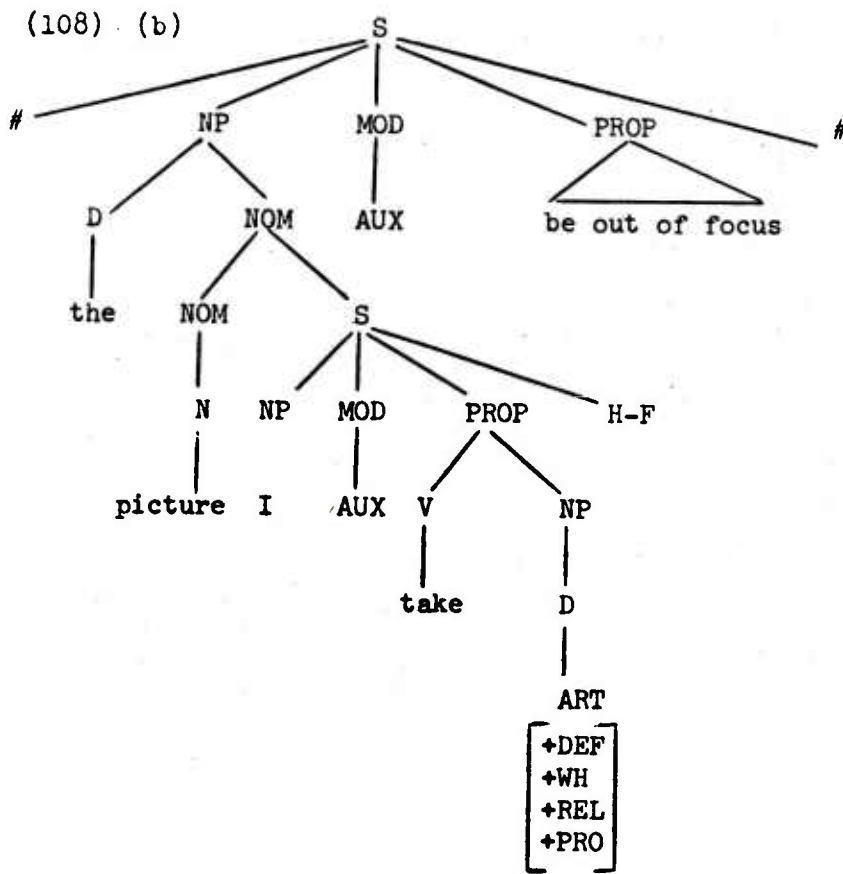
4. The general constraints discussed in Section VI make it unnecessary to state several restrictions which would otherwise have to be applied to this rule (depending on dialect [see Section VIII] and/or WH- fronting). See Section VI for the constraints involved and the ungrammatical sentences blocked.

5. Part (c) of the structure change of this rule is intended to provide a source for the typical intonation break of relative clause structures.



"The picture that I took was out of focus."

[The picture - I took a [certain] picture - was out of focus.]



[The picture - I took WH- the - was out of focus.]

2. NP-S Analysis

Structure Index

X	NP	S[	#	X	NP[	D	N]	NP	X	#	]S	X
1	2		3	4	5	6	7		8	9		10

Conditions

- (a) 2 = 5, and 4 ≠ x + that
- (b) If there is a [+WH] anywhere within the S immediately dominating 7, which is also [-REL], the structure index for this transformation is not met.
- (c) 6 dominates [-WH]
- (d) The rule is obligatory.

Structure Change

- (a) Replace [-WH] in 6 by

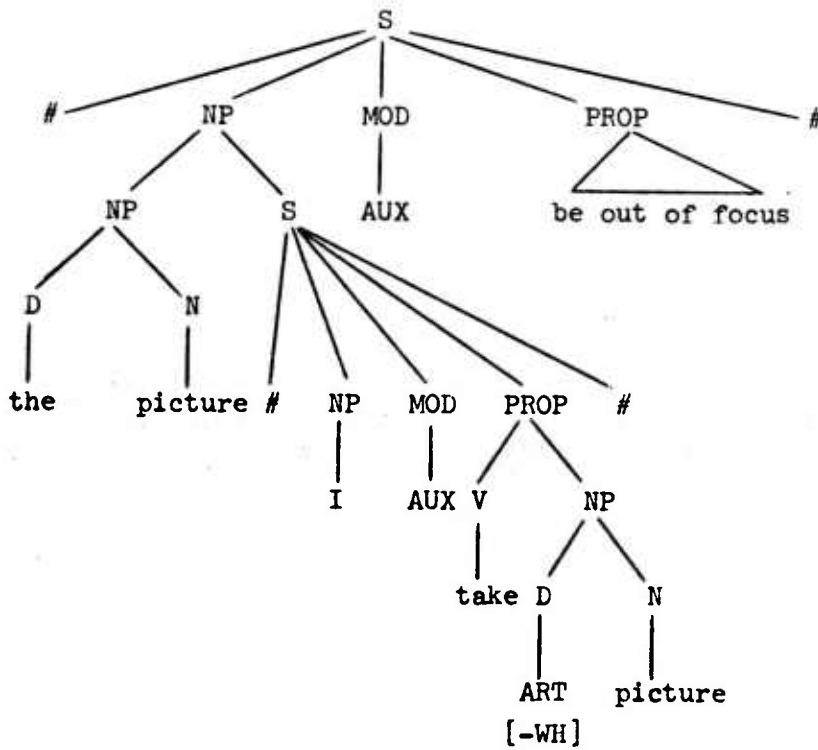
+WH
+REL
+PRO
- (b) If 6 dominates [-DEF], replace it by [+DEF].
- (c) Erase 7 and 3.
- (d) Replace 9 by half-fall.

Notes on the Rule

1. The rule of definitivization is more complicated than S.C. (b), and probably precedes WH-REL-Attachment under the NP-S analysis (see II.b.2 above). We have not been able to work out the details satisfactorily.

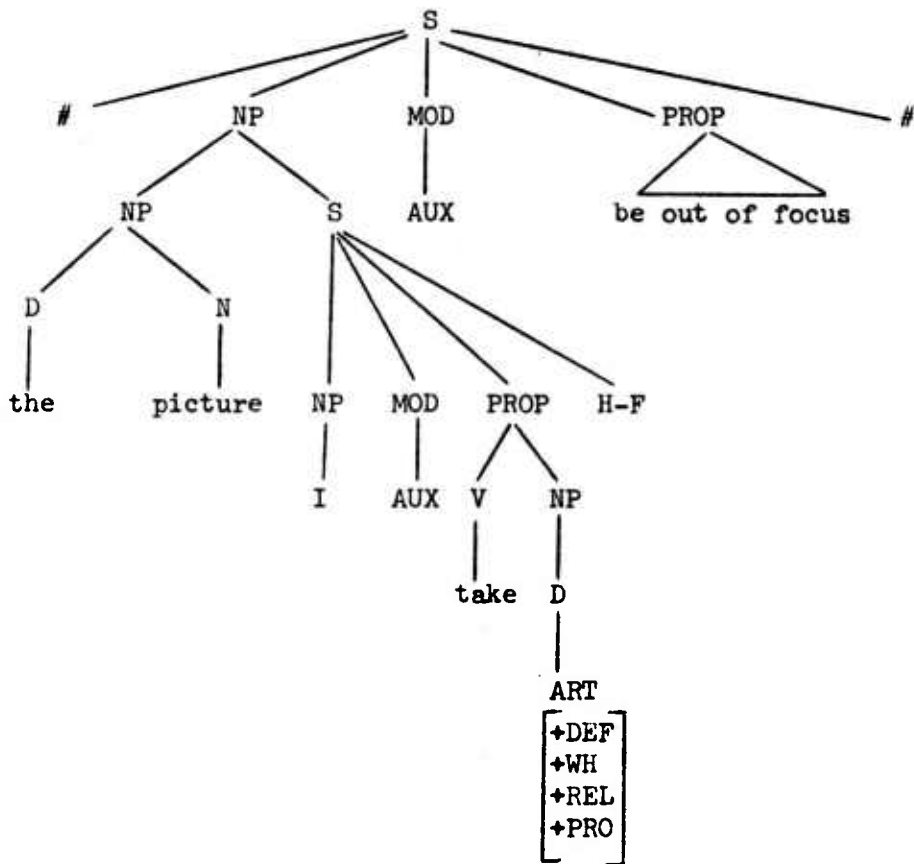
Example in tree format

(108') (a)



"The picture that I took was out of focus."
 [The picture - I took the picture - was out of focus.]

(108') (b)



[The picture - I took WH- the - was out of focus.]

3. ART-S Analysis

Structure Index

X D [X ART S [# X NP [ART N] NP X #] S] D N X
 1 2 3 4 5 6 7 8 9 10 11 12 13 14

Conditions

- (a) $3 + 13 = 8 + 9$, and $6 \neq x + \text{that}$
- (b) If there is a [+WH] anywhere within 4 which is also [-REL], the structure index for this transformation is not met.
- (c) 8 dominates [-WH]
- (d) The rule is obligatory.

Structure Change

- (a) Replace [-WH] in 8 by

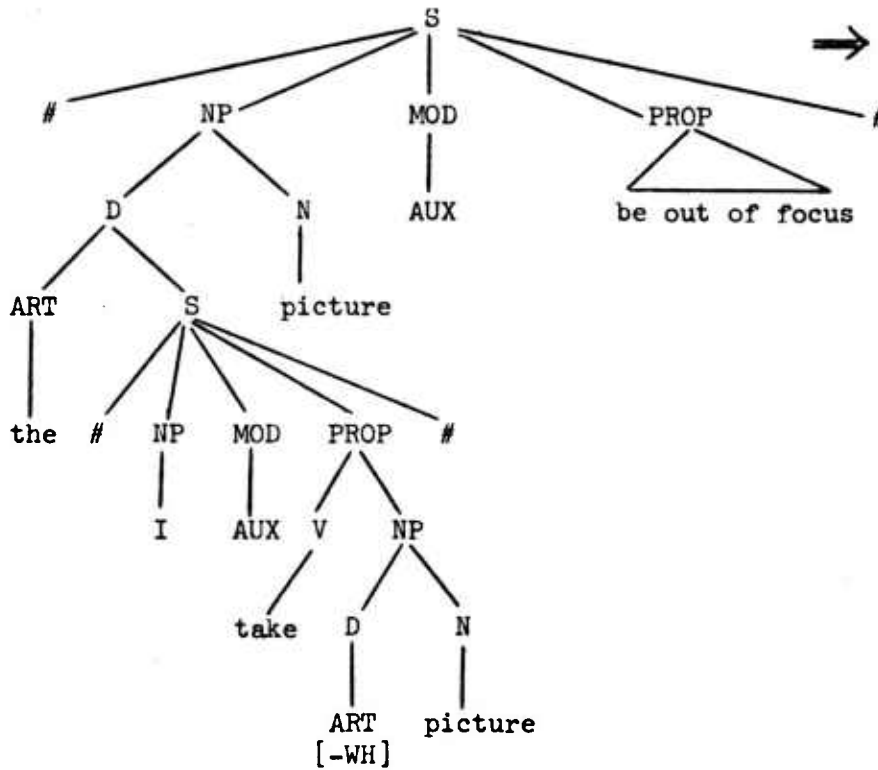
+WH
+REL
+PRO
- (b) If 8 dominates [-DEF], replace it by [+DEF].
- (c) Erase 9 and 5.
- (d) Replace 12 by half-fall.

Notes on the Rule

1. Items 7-10 of the Structure Index are so formulated as to exclude stacking. Stacking can be allowed by replacing ART in 8 by D and requiring identity between $3 + 13$ and the ART of $8, + 9$, employing a later rule to sort out the relative pronouns (see Section II.A.2).
2. Since the embedded sentence is dominated by the matrix determiner, it must be moved to the proper position by a later rule (IX.C).
3. As in the NP-S analysis, a rule of definitivization probably precedes WH-REL Attachment. Since this rule has not been worked out satisfactorily, S.C. (b) provides for definitivization in an ad hoc way.

Example in Tree Format

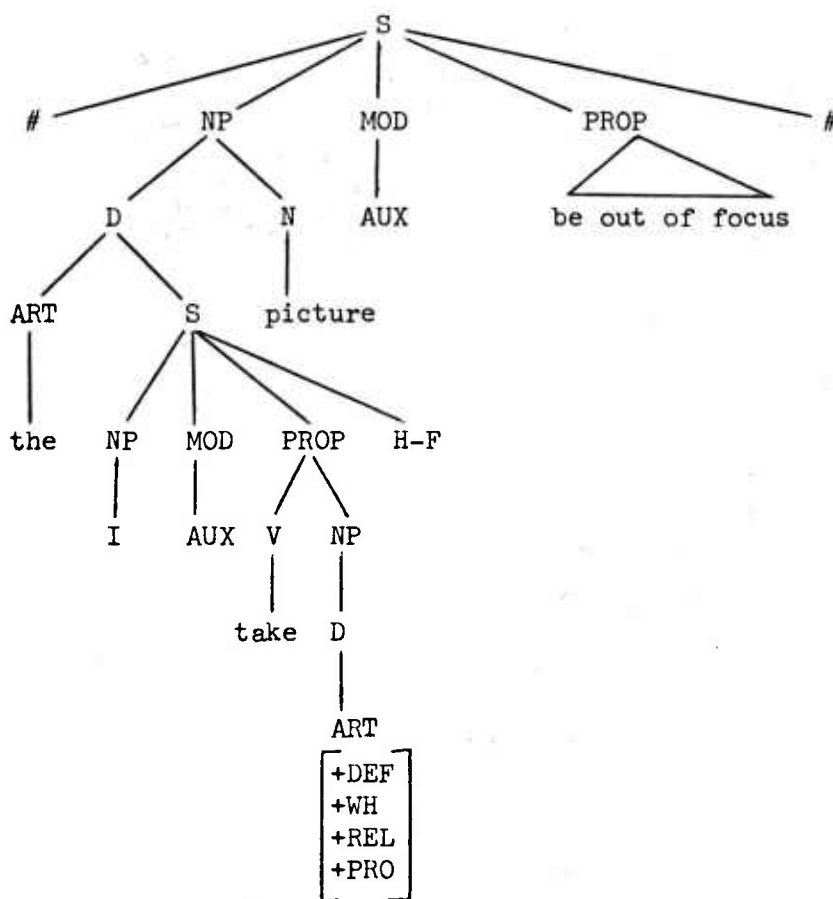
(108'') (a)



"The picture that I took was out of focus."

[The - I took the picture - picture was out of focus.]

(108'') (b)



[The - I took WH- the - picture was out of focus.]

B. WH- Fronting

1. NOM-S, NP-S, and ART-S

Structure Index

X	S	[	X	NP	[	X	X	NP	[	ART	]	X
1	2	3		4	5	6	7	8				

Conditions

- (a) 7 dominates [+WH, +REL, +PRO, +DEF].
- (b) This transformation is subject to the general constraints discussed in Section VI.
- (c) The rule is obligatory.

Structure Change

Chomsky-adjoin 6 as left daughter of 2, OR
 Chomsky-adjoin 5 + 6 as left daughters of 2
 (in accordance with Pied Piping convention),
 and erase original 6 or 5 + 6.

Notes on the Rule

1. The rule of WH- Fronting is invariant under the three analyses NOM-S, NP-S, ART-S, because the relevant nodes are S, NP, and ART, with the position in relation to the head noun playing no role in the rule.

2. For discussion and examples of general constraints see Section VI. In particular, see the following examples:

Complex NP Constraint (52, 53, 54)
 Sentential Subject Constraint (59, 60)
 Exhaustive S Output Condition (62)
 Coordinate Structure Constraint (64)

3. The variables 4 and 5 are to allow the Pied Piping convention to divide up the NP PREP NP structure. See examples (66-71), (72-89).

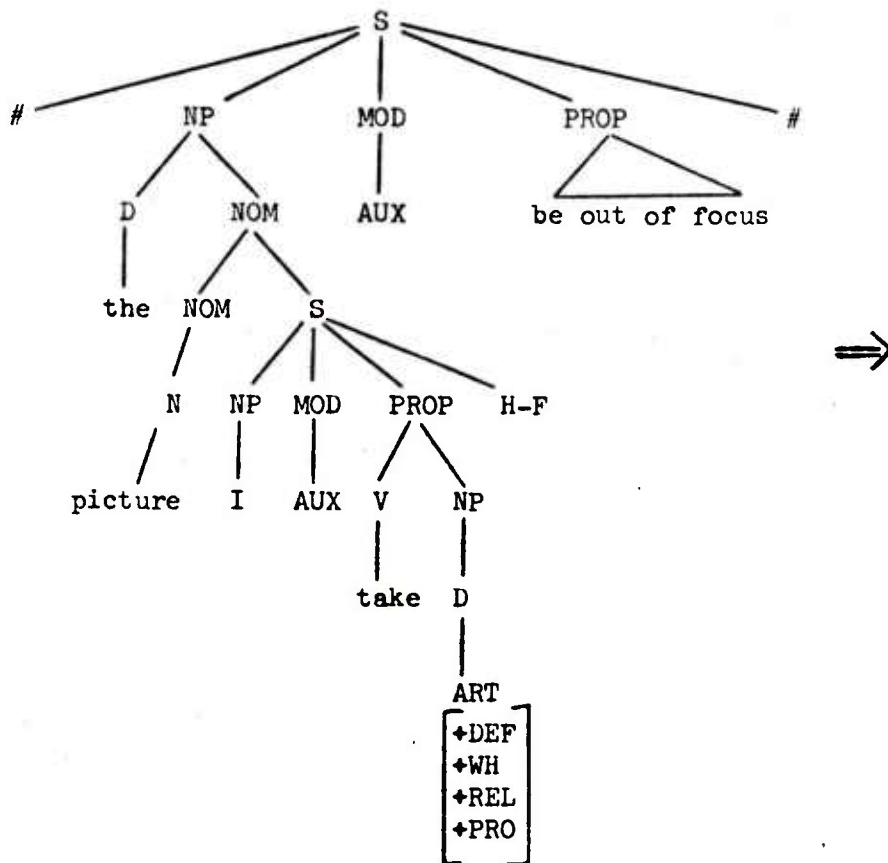
4. This rule is equivalent to Ross's (1967c) rule 4.135, different only in notational conventions.

5. Ross argues (1967c) for Chomsky-adjunction to S rather than sister-adjunction to 3 so that the coordinate structure constraint will apply in cases where 3 is null. Chomsky-adjunction guarantees that constituent 7 will be moved, since the coordinate structure constraint applies only to movement. Thus even if X₃, X₄, and X₅ are null, there will still be movement of X₇ and one cannot relativize on (109.a) to derive (109.b):

- (109) (a) The boy and the girl embraced.
 (b) *The boy who and the girl embraced is my neighbor.

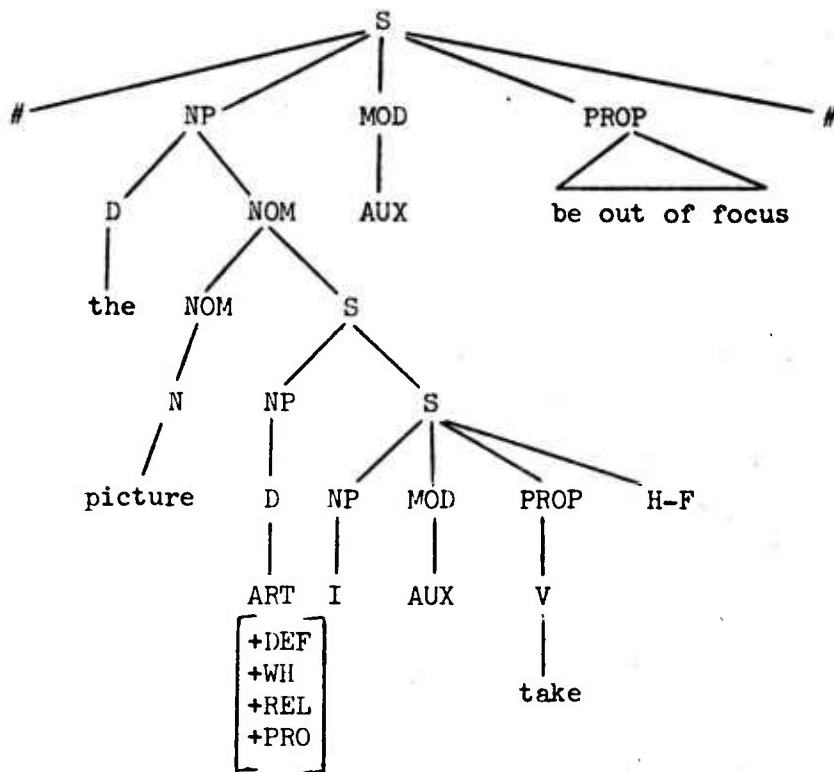
Example in Tree Format, NOM-S and NP-S

(108) (b)



[The picture - I took WH- the - was out of focus.]

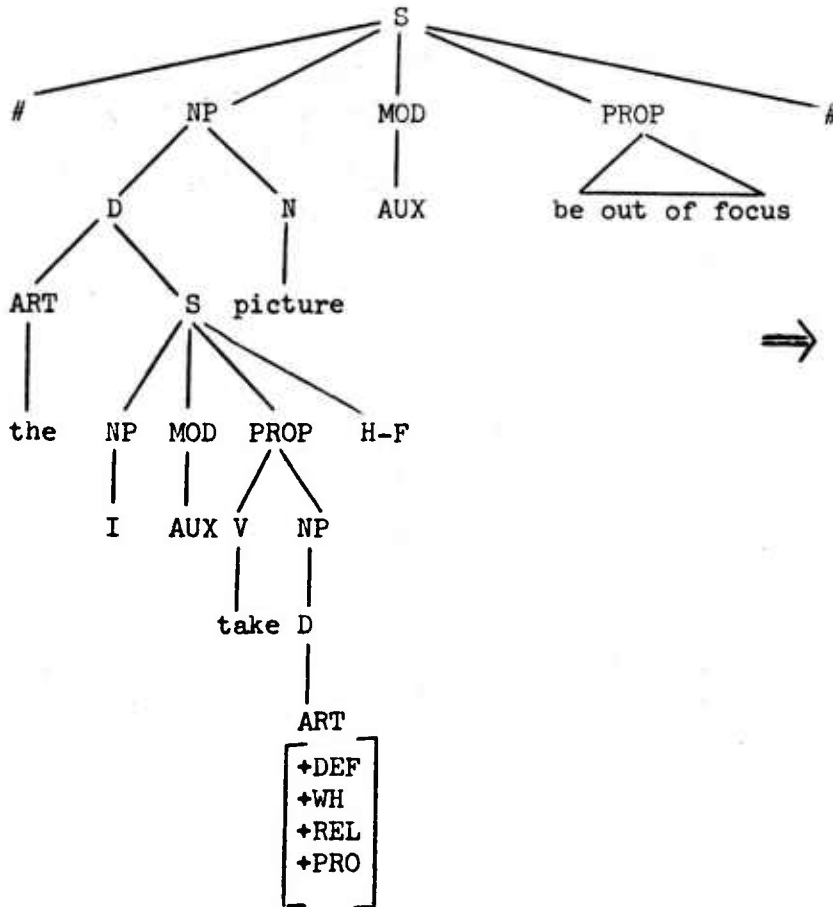
(108) (c)



[The picture - WH- the I took - was out of focus.]

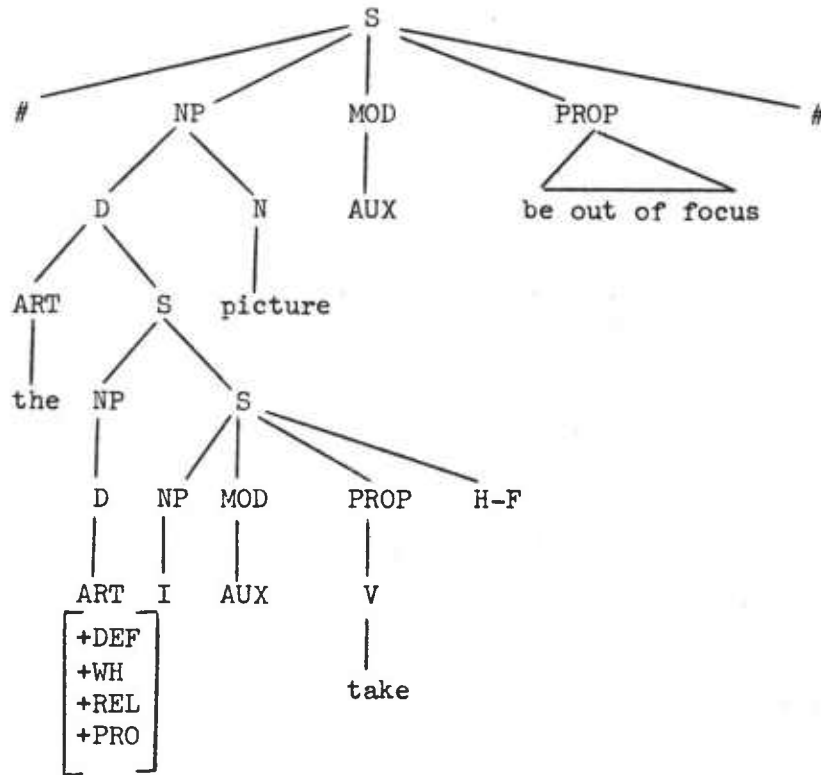
Example in Tree Format, ART-S

(108'') (b)



[The - I took WH- the - picture was out of focus.]

(108'') (c)



[The - WH- the I took - picture was out of focus.]

C. Clause-Positioning Rule, ART-S Only

Since the relative clause is generated as a constituent of D, all relative clauses in the ART-S analysis must be properly positioned as constituents of the head-noun NP by a clause-positioning rule.

Structure Index

$$X \quad NP[X \quad D[S] \quad X] \quad X$$

1 2 3

Conditions

- (a) 2 dominates $\left[\begin{array}{l} +WH \\ +REL \\ +PRO \end{array} \right]$
- (b) 2 does not dominate an S which dominates $\left[\begin{array}{l} +WH \\ +REL \\ +PRO \end{array} \right]$
- (c) 1 is the highest NP dominating 2.
- (d) The rule is obligatory (but see VIII above).

Structure Change

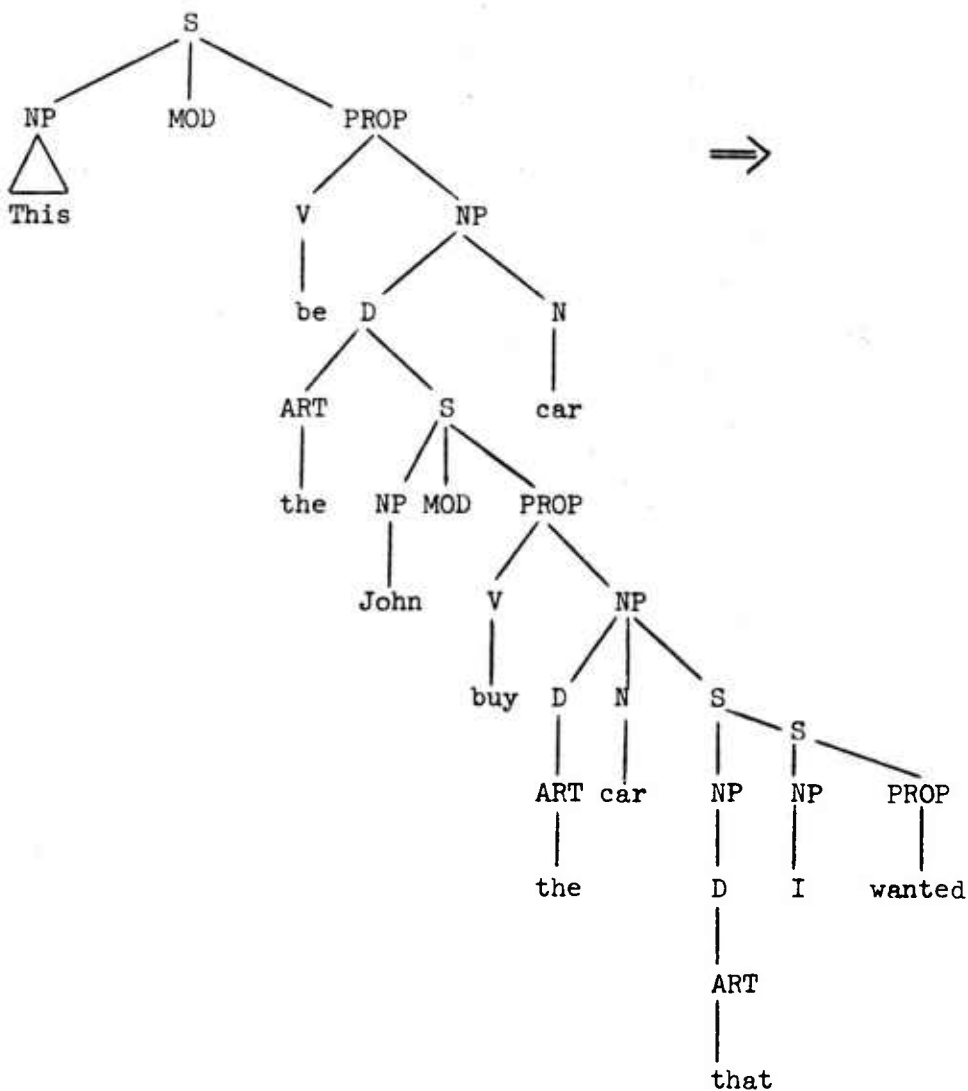
Attach 2 as right daughter of 1.

Notes on the Rule

1. Condition (a) insures that this rule applies only to relative clauses.
2. Condition (b) is to insure that if we are dealing with a deep-structure stacked relative clause construction (as in Section III), that the rule will apply first to the most deeply-embedded clause. Note that this rule can reapply indefinitely. In a stacked relative, once the most deeply-embedded clause has been positioned, (see (112.c)), that clause is the X provided for by variable 3 and condition (b) is once again met, allowing the application of the rule to the next most deeply embedded clause on the next cycle. The rule works its way up the tree, attaching one relative clause at a time to the head noun in the normal progress of the cycle.

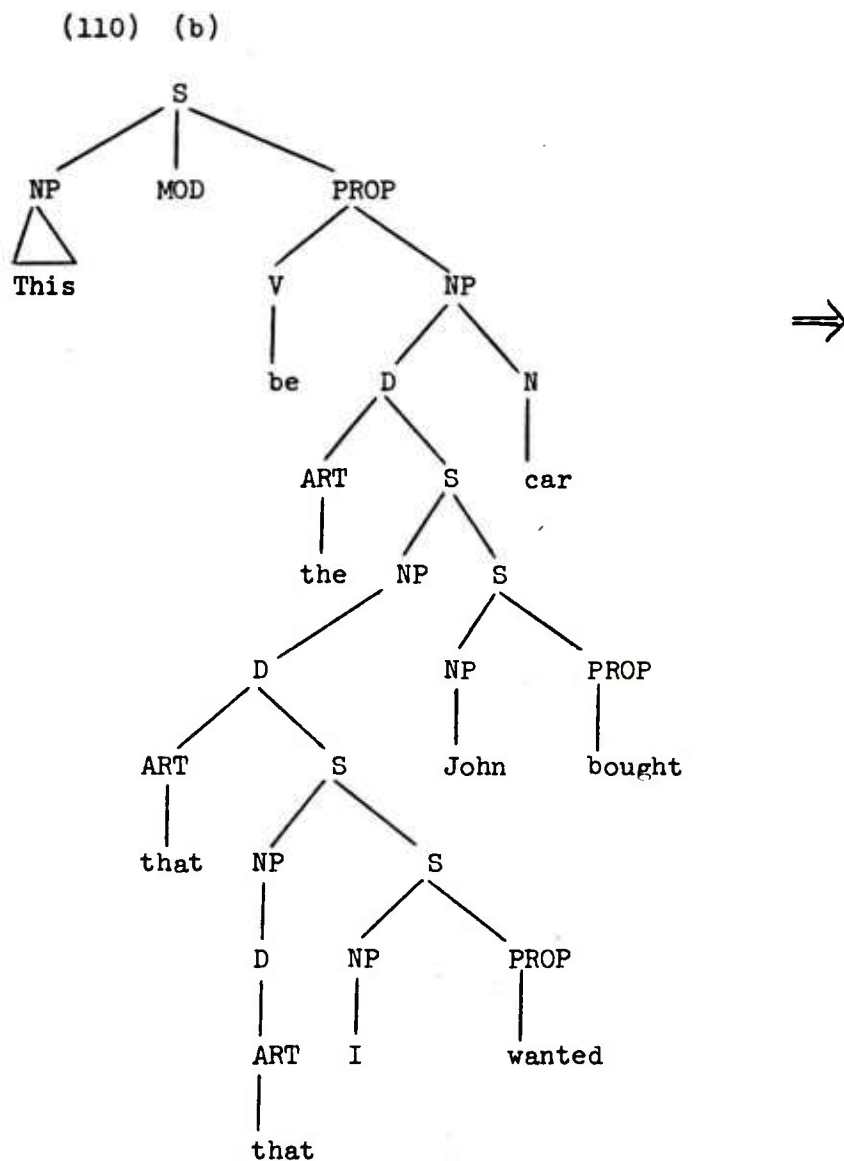
3. Condition (c) insures that the clause is adjoined to the head-noun NP rather than some intermediate NP which also dominates 2 in such stacked constructions as (112.b), where either the car of the topmost S or the car of the string John bought the car would otherwise meet the structural description of the rule. The most deeply embedded clause must not be adjoined to an intermediate NP because doing so creates the following problem:

(110) (a)



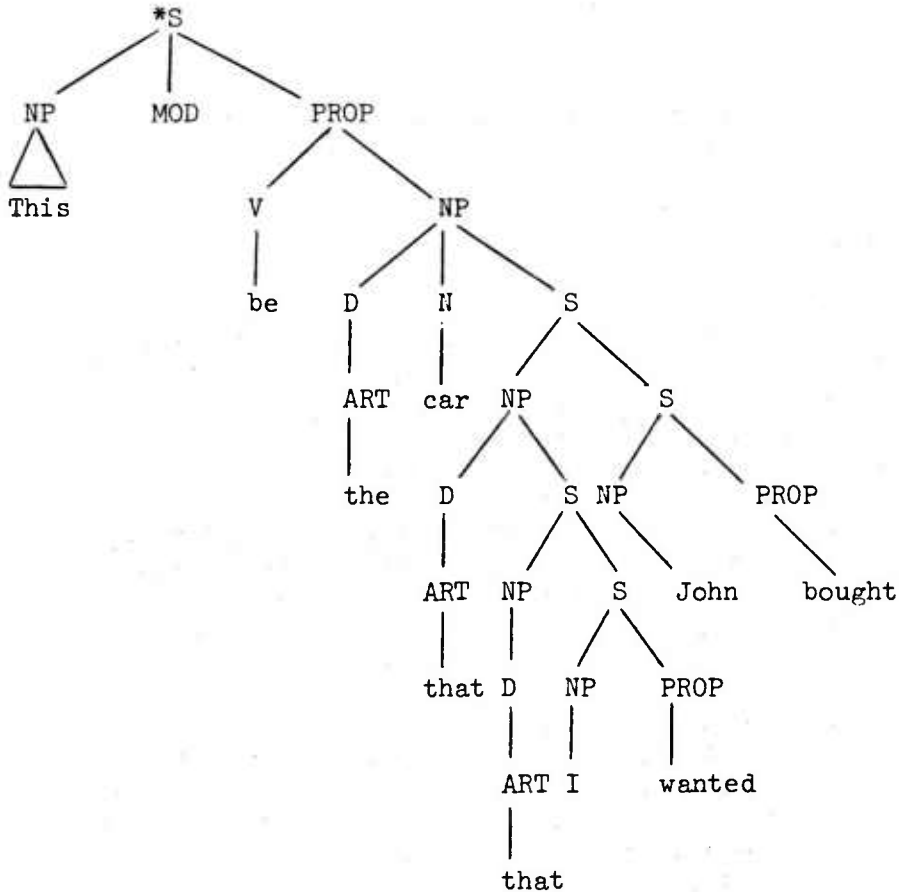
Structure after first cycle:

"This is the car that I wanted that John bought."
 [This is the - John bought the - that I wanted - car.]



Structure after second cycle, with the lowest REL having been positioned at the end of immediately dominating NP rather than top-most NP.

(110) (c)



Structure after third cycle, with the higher REL having been positioned at the end of its immediately dominating NP

If, after the first cycle in the derivation (110), the lowest clause has been adjoined to an intermediate dominating NP, as in (110.a), then on the next cycle, as a result of WH- attachment and fronting, the structure is (110.b), since the NP which is fronted dominates the lower clause. The subsequent positioning of the second-most-deeply-embedded clause yields (110.c), which is ungrammatical. There are several solutions to this problem other than our condition (c) on the positioning rule, but they are either ad hoc or lead to new problems. One could make the positioning rule apply to the relevant ART or D nodes, but this will reverse the clauses and complicate the semantic interpretation which in stacking depends on the assumption that the higher relative modifies the head noun as in turn modified by any lower relative. A second

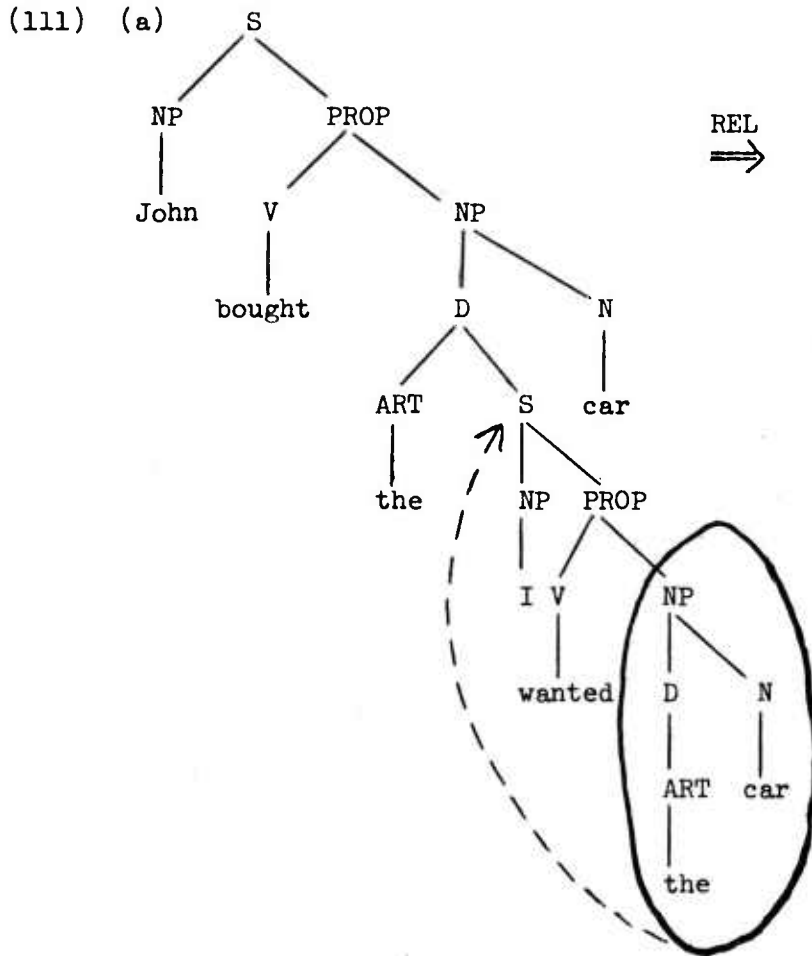
alternative would be to have a special transformation solely for the purpose of unscrambling the that-that-PROP-PROP structure of (110.c). This is a particularly bad alternative since the rule could be defended only in terms of grammar-dependent arguments - i.e. the other rules created a mess that had to be cleaned up. A third alternative is to make the positioning rule last-cyclic, moving from bottom to top of the tree and attaching all relative clauses to the topmost NP. It is clear that the present proposal is to be preferred to any of these, since if no stacking is generated at all the present rule is the one needed anyway.

While there are no conditions on this rule to specifically guarantee that the N of the head NP in a stacked construction is in fact identical (in whatever sense is required for relativization) to the embedded N which has been relativized, such a consequence is automatic. If, for example, the N in the NP of the top S in (112) is guttersnipe instead of car, on the lowest cycle, REL- attachment and WH- fronting will take place, and then the lowest clause will be attached to the NP the guttersnipe in the top S. However, on the next cycle, REL- attachment will be blocked because of the non-identity of car and guttersnipe. Therefore the sentence boundaries in the string John bought the car will not be erased and eventually the structure will be cast onto the scrap-heap as are all sentences which have internal occurrence of sentence boundaries at the surface structure level.

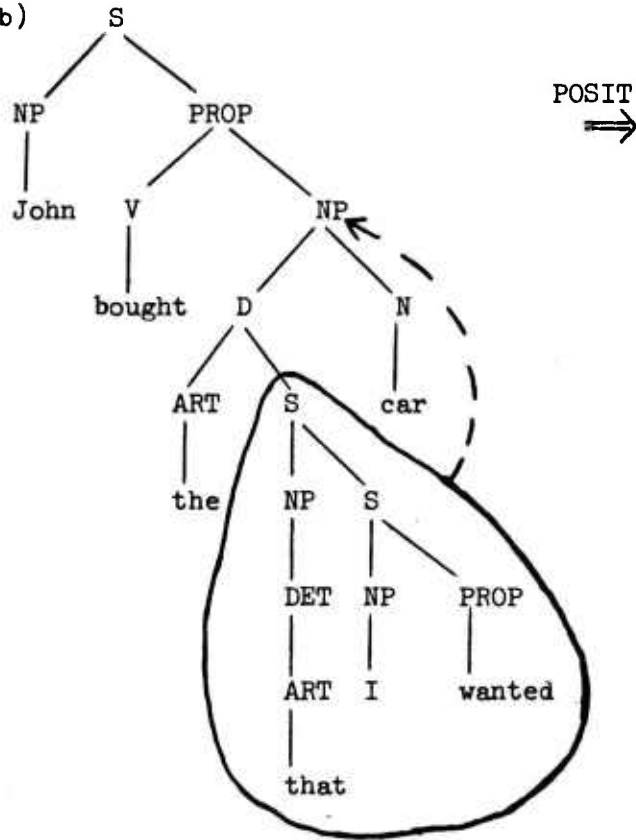
4. Note that by attaching the relative clause, however deeply-embedded, directly to the head-noun NP, a rather simple surface structure is derived, one that appears to be intuitively correct, particularly if it is true, as has been argued, that one of the major functions of the transformational rules is to "flatten" or simplify deep structures.

Examples in tree format

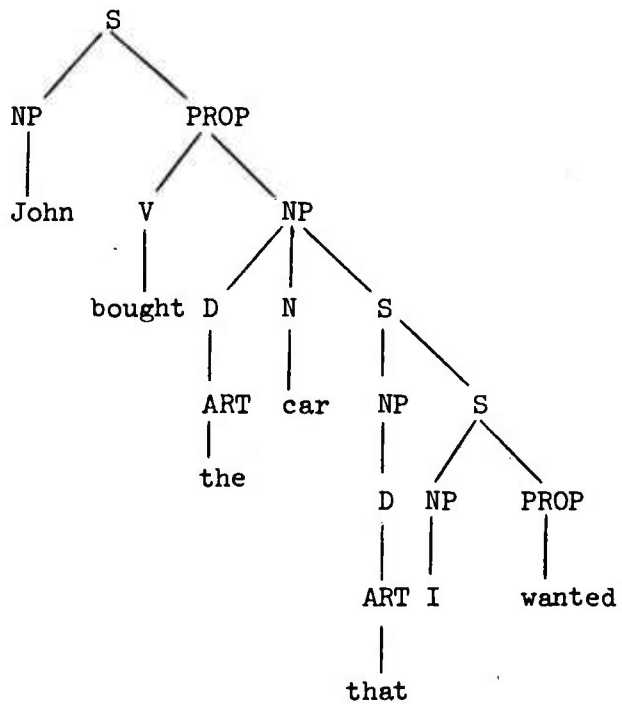
The series of trees (111) and (112) schematically illustrate the operation of relativization under this analysis for simple (one-clause) and stacked relative clause sentences (where REL includes both REL- attachment and WH- fronting).



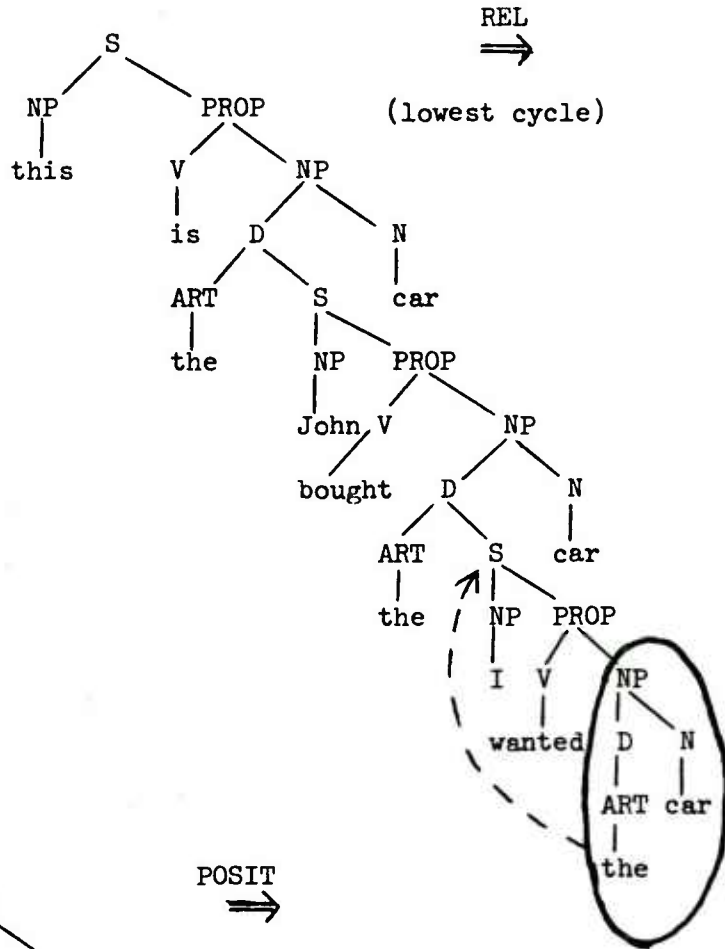
(111) (b)



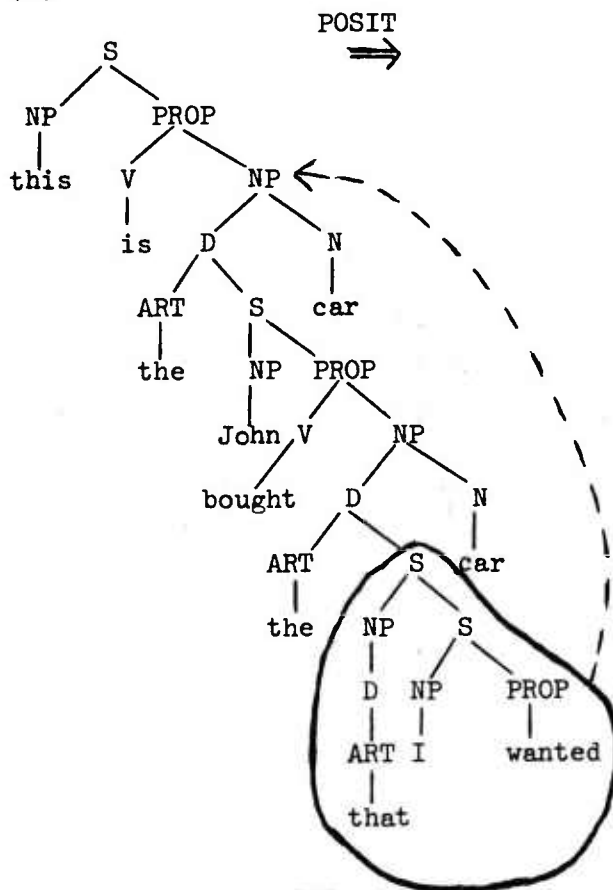
(c)



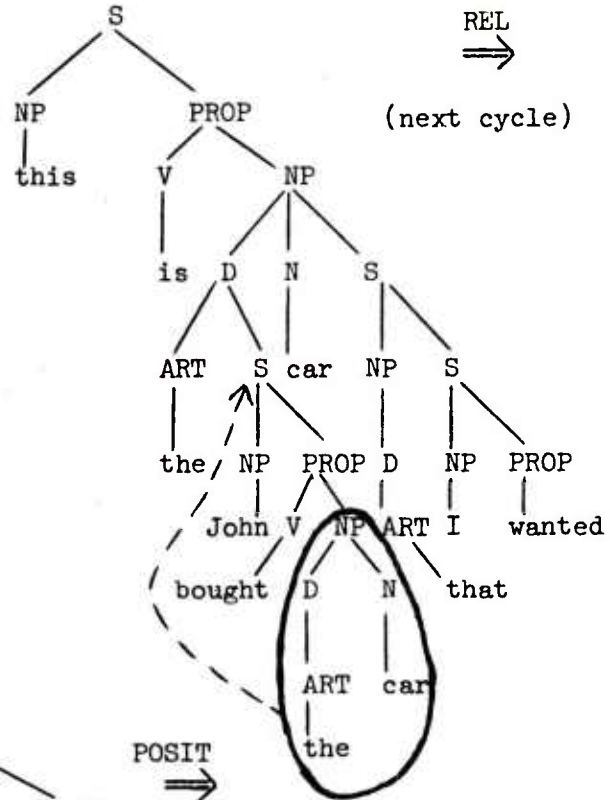
(112) (a)



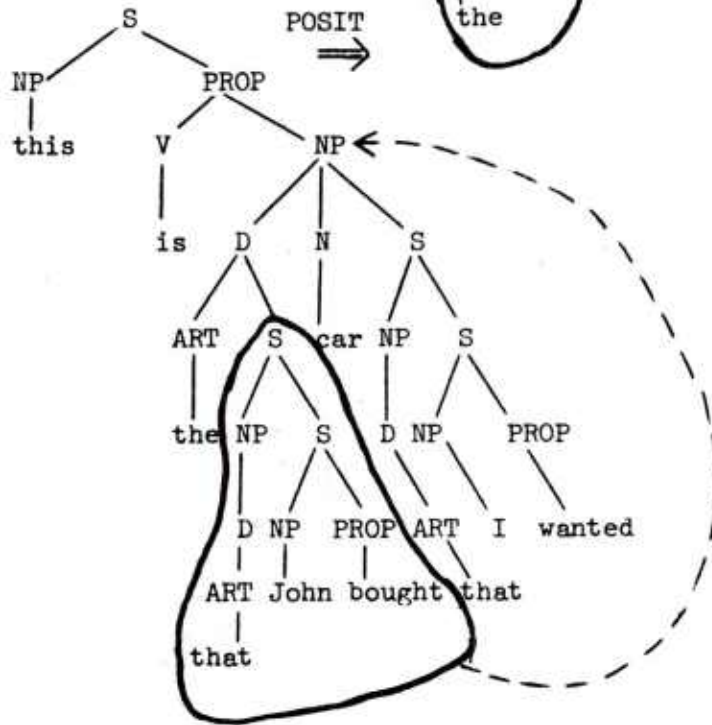
(b)



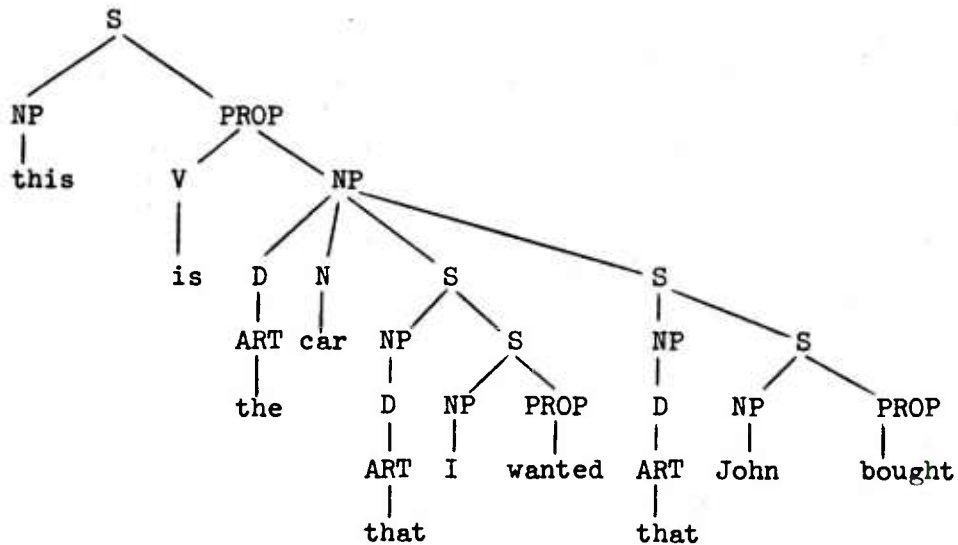
(c)



(d)



(e)



From this point on in the rules, all rules will be formulated in terms of the NOM-S analysis, as the processes involved are essentially the same in all three analyses.

D. R-REL-that

Structure Index

X	ART	X
	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> +WH +REL +PRO +F </div>	
1	2	3

Conditions

- (a) 1 is not X + PREP.
- (b) The rule is optional.

Structure Change

- (a) Attach the feature [+THAT] to 2.

Notes on the rule

1. This rule must follow WH-REL-fronting.
2. Though this rule is, in some ways, close to being no more than a morphophonemic rule (it simply provides a necessary feature for the morphophonemic component to interpret), the rule of that-deletion (below) depends on being able at this point in the syntax to identify those relative pronouns that have the form that as distinct from all others. That-deletion in turn depends on being able to discriminate between that's which are relative pronouns and that's which are conjunctions, since the conditions for deletion are distinct.

Examples

A. Grammatical

(114) The boy that just left was a friend of mine.

(115) People that live in glass houses...

B. Ungrammatical and blocked

(116) *The boy to that I said something left early.

(117) *The boy I said something to that left early.
(i.e. "*The boy I said something to whom left early.")

E. R-REL-that-Deletion (Optional)Structure Index

X	ART	NP	X
	+THAT		
	+REL		
1	2	3	

Structure Change

- (a) Erase 2.

Notes on the Rule

This form of the rule assumes that that-deletion is not general. Other instances of apparent that-deletion are handled in an entirely different way (see NOM).

Examples

A. Grammatical

(118) The boy (that) he said was here...

B. Ungrammatical and blocked

(119) *The boy (that) left early was my flying instructor.

F. REL-Reduction (Optional) - A

Structure Index - A

X	NOM [-PRO]	S[	ART [+REL]	TNS	BE	X	]S	X
1		2	3			4	5	

Structure Change - A

(a) Delete 3.

(b) Attach 4 as right daughter of 1.

Notes on the Rule

1. This is the first of two rules for REL-Reduction; the second applies in case there is no BE in the appropriate string.

2. 4 is attached as right daughter of 1 in order to eliminate intermediate structure, including S; that is, there are reasons for asserting that when a deep structure S has lost a certain amount of its internal structure it is no longer an S.

3. -ing and -en insertion applied while the REL S was in its first cycle (its reduction to the present form occurred on the second cycle). Likewise NEG placement, so that when this rule applies NEG is after BE in the structure index, and X_4 therefore includes it, for sentences like "A student not involved in the study of syntax hardly knows how fortunate he is".

4. See Section VII of this paper for discussion of REL-Reduction.

5. There are several other restrictions on this and the following transformation that we have not yet built into the rules, such as the fact that in a series of relative clauses, if the first clause is not reduced, none of the following clauses may be reduced if they are also on the same noun, so that from (120) one should be able to get (121), but not (122):

(120) This is the car that John bought that I wanted.

(121) This is the car John bought that I wanted.

(122) *This is the car that John bought I wanted.

and perhaps not even (123):

(123) This is the car John bought I wanted.

Also, one would not want to be able to reduce to get sentences such as (124) from (125):

(124) *I know a man tall.

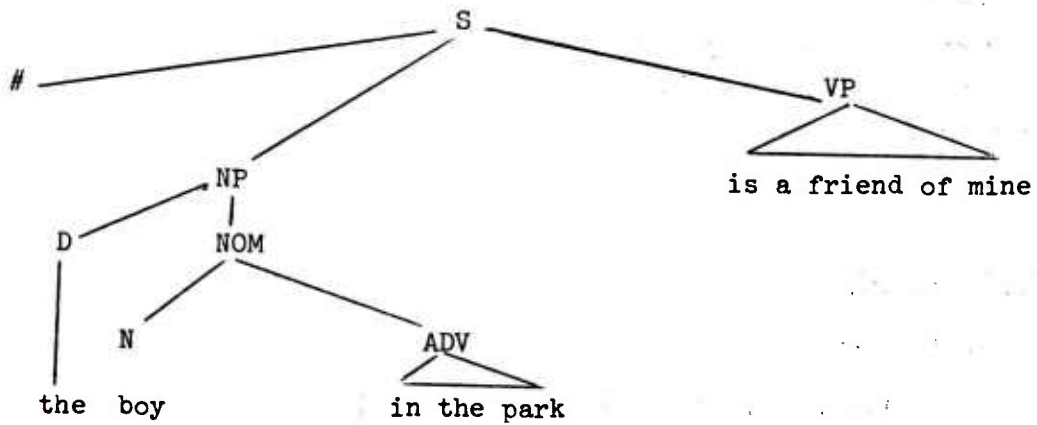
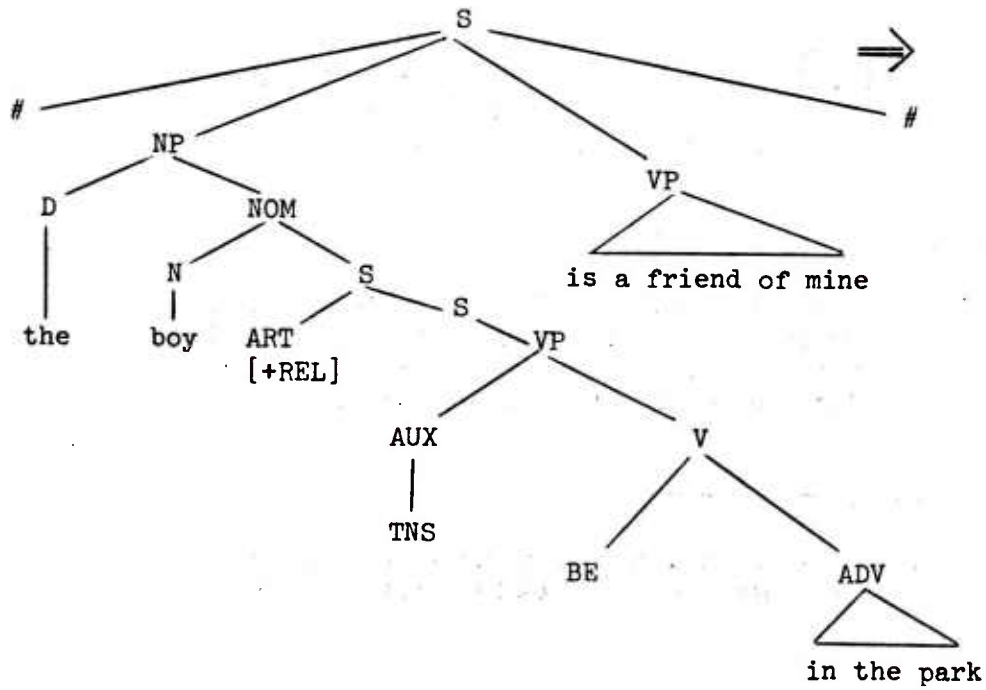
(125) I know a man who is tall.

In order to avoid (124) as a surface structure, ADJ pre-positioning (Rule G) is obligatory.

Examples

A. P-Markers

(126) The boy in the park is a friend of mine.



B. Grammatical

- (127) A boy (who is) working on the farm...
- (128) A boy (who is) on the farm...
- (129) A boy (who is) being killed by snakes...
- (130) A boy (who is) nice...(Intermediate stage; the ADJ-Preposition rule, being obligatory given this optional reduction, assures that (72) can't remain as final output.)

C. Ungrammatical and blocked

- (131) *He in the park is a friend of mine. (Though the rules up to this point allow "He who is in the park...", the present rule does not allow reduction of such sentences.)

D. Grammatical from other rules

- (132) I saw the student studying in the library. (From other rules, namely complementation.)

G. REL-Reduction (Optional) - B

Structure Index - B

X	NOM [-PRO]	S[	ART [+REL]	X	TNS	(NEG)	V	X	]S	X
1		2	3	4	5	6	7		8	

Structure Change - B

- (a) Delete 3.
- (b) Attach -ing to 5, erasing [[†] PAST], or
If 5 dominates [+ PAST], attach ing have en as daughters of 5, and erase [+ PAST].
- (c) Attach 4 - 7 as right daughters of 1.

Notes on the Rule

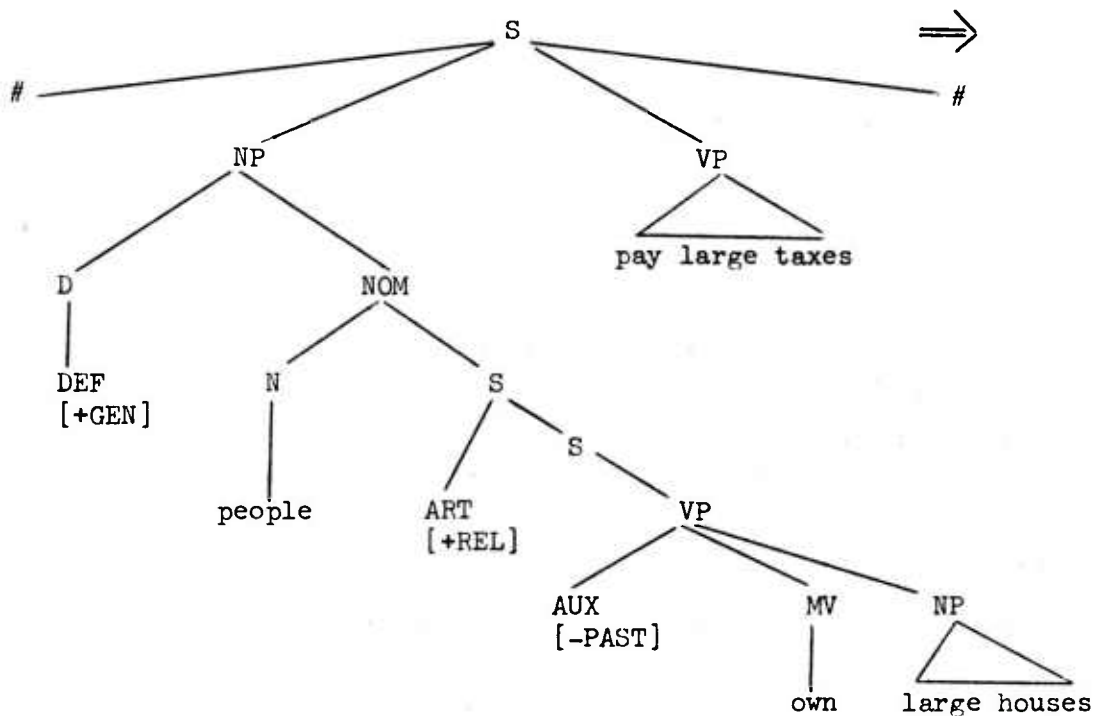
1. X_4 is provided on the assumption that pre-verbal adverbs like only may still be in this position. NEG is separately mentioned because it has been moved to the position after TNS in the first cycle. These details may be incorrect, but there appears to be no problem in principle of stating them within the terms of this rule.

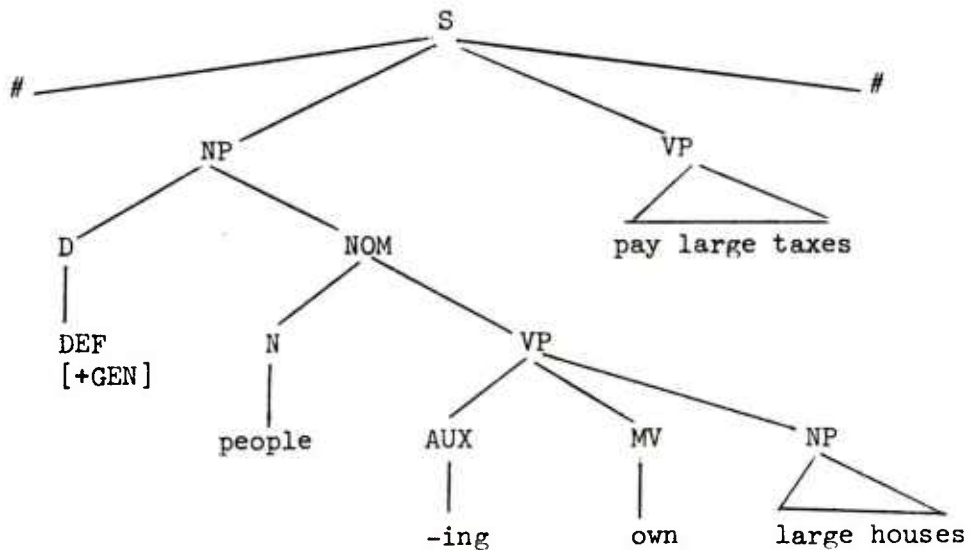
2. Structure change (c) is for the same reasons, and has the same consequences, as the similar attachment provided for in REL-Reduction-A.

Examples

A. P-Markers

(133) People owning large houses pay large taxes.





B. Grammatical

- (134) Anyone having undergone yesterday what he underwent deserves a vacation. (Deep structure must be "Anyone who underwent yesterday...")
- (135) Anyone undergoing yesterday what he underwent deserves a vacation. (Same deep structure as (76), but have-insertion is optional.)
- (136) Planes flying low are less likely to create sonic booms, but they're just as annoying.
- (137) Anyone not having read more than one book this past week is one book up on me.

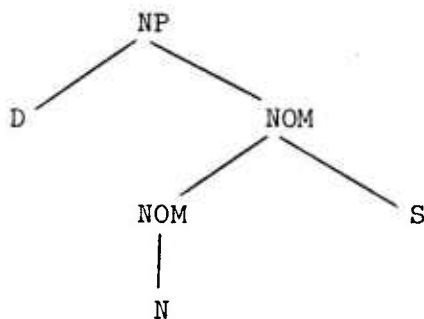
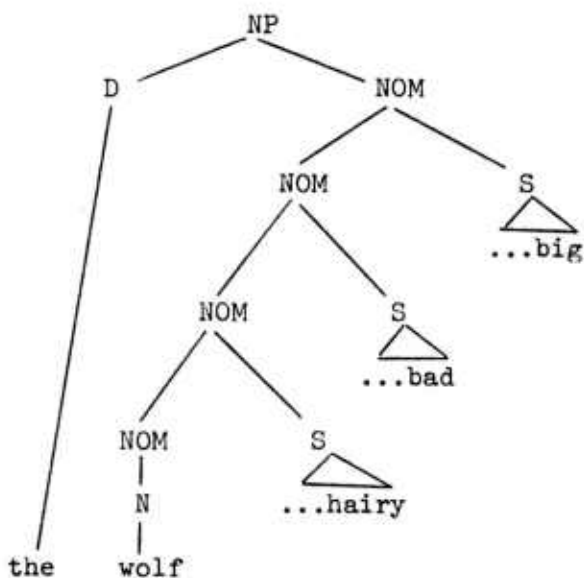
C. Ungrammatical and blocked

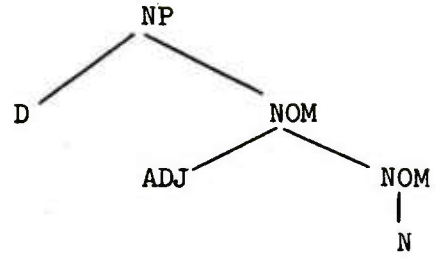
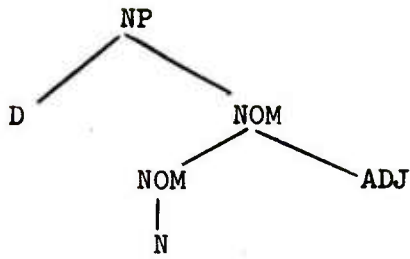
- (138) *I owning a large house pay large taxes.

H. ADJ-Pre-Position

INTRODUCTION

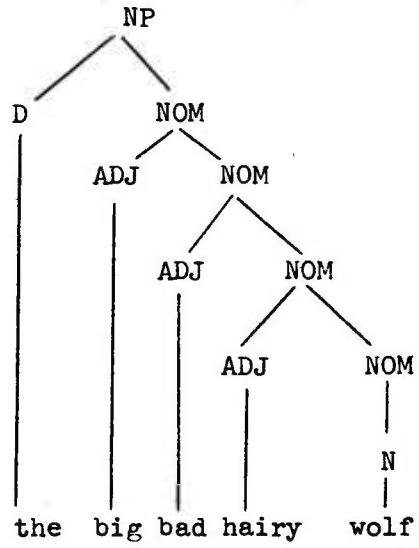
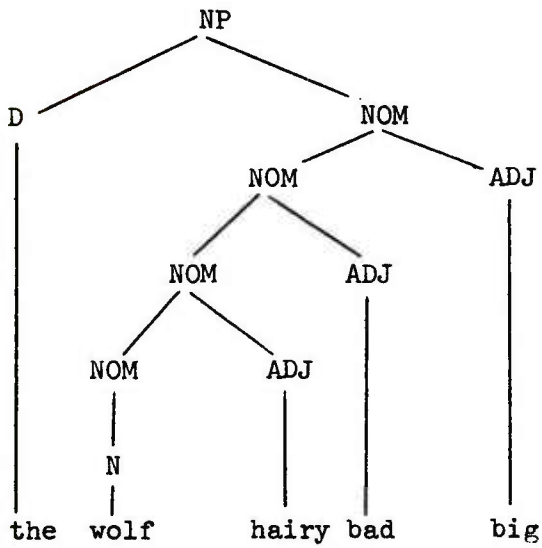
Only the REL immediately following the head noun (assuming several REL's in a stacked row) will meet the structure index for REL-Reduction. Once reduced, if it is an ADJ, this rule places it obligatorily in front of the head noun; the next REL, now immediately following the head noun, is also subject to reduction and placement in front of the head noun AND in front of the ADJ already moved, thus inverting the order of stacked REL's containing ADJ's. At the moment, following a suggestion from Ross, we are regarding the constraints on prenominal adjective ordering as a surface constraint, as there seems to be no comparable constraint on stacked relative clauses.

Deep



REL-Reduction

ADJ-Pre-Pose



December 1968

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1. ORIGINATING ACTIVITY (Corporate author) University of California Los Angeles, California		2a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED	
		2b. GROUP N/A	
3. REPORT TITLE INTEGRATION OF TRANSFORMATIONAL THEORIES ON ENGLISH SYNTAX			
4. DESCRIPTIVE NOTES (Type of report and inclusive dates) None			
5. AUTHOR(S) (First name, middle initial, last name) Robert P. Stockwell Paul Schachter Barbara Hall Partee			
6. REPORT DATE October 1968		7a. TOTAL NO. OF PAGES 538	7b. NO. OF REFS
8a. CONTRACT OR GRANT NO. AF 19(628)-6007		9a. ORIGINATOR'S REPORT NUMBER(S) ESD-TR-68-419, Vol. I	
b. PROJECT NO.		9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)	
c.			
d.			
10. DISTRIBUTION STATEMENT This document has been approved for public release and sale; its distribution is unlimited.			
11. SUPPLEMENTARY NOTES		12. SPONSORING MILITARY ACTIVITY Command Systems Division, Electronic Systems Division, Air Force Systems Command, USAF, L G Hanscom Field, Bedford, Mass. 01730	

13. ABSTRACT

Integration of Transformational Theories on English Syntax

This study attempts to bring together most of the information about the transformational analysis of the grammar of English that was available up through the summer of 1968, and to integrate it into a single coherent format. The format chosen is that of C. Fillmore (the "Deep Case" hypothesis) combined with the "Lexicalist" hypothesis of N. Chomsky. The areas of close investigation were the determiner system; pronominalization; negation; conjunction; relativization; implementation and nominalization; the systems of interrogative, passive, imperative, and cleft sentences; the genitive; the lexicon; and the ordering of rules for these areas of the grammar.

14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
English Syntax Transformational Grammar Case Grammar Deep Case Hypothesis Lexicalist Hypothesis Determiners Pronominalization Negation Conjunction Relativization Complementation Nominalization Interrogative Imperative Genitive Cleft Passive Lexicon Case Placement						

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INTEGRATION OF TRANSFORMATIONAL THEORIES ON ENGLISH SYNTAX

Robert P. Stockwell
Paul Schacter
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NOMINALIZATION AND COMPLEMENTATION

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II. INTRODUCTION

A. Briefly, the Claims of the Present Analysis

Except for the relative clause, all embedded sentences in this grammar are directly dominated by the node NP. The node NP itself only appears directly dominated by some case, a case determined by a head verb, adjective, or noun. Given this frame of reference, therefore, all sentential complements, whether on nouns as in (1.a), on verbs as in (1.b), and (1.c), or on adjectives as in (1.d), are nominalizations of the S dominated by an NP which is dominated by the Neutral case which has undergone objectivalization (1.a,b,d) or subjectivalization (1.c). If the head noun is the deletable noun fact, the nominalization may appear in the surface structure to be dominated by some case other than Neutral, but (1.e), where the sentential subject might be assumed to be dominated by a deep structure Instrumental (or Means), is derived from (1.f), where the item that would be dominated in a deeper structure by Instrumental case is fact.

- (1) (a) The fact that he left early was annoying.
 (b) He demanded that she leave early.
 (c) It appeared that he was stupid.

- (d) He is anxious that she understand his motives.
- (e) That he has blood on his hands proves that he is guilty.
- (f) The fact that he has blood on his hands proves that he is guilty.

Traditionally, grammarians have divided simplex sentences into three large classes (sometimes with a fourth -- exclamations or assertives), the classification being determined by the form or mood of the verb that is characteristic of each type: declaratives (indicative mood), imperatives (subjunctive mood), and interrogatives (inversion of subject and auxiliary, or special verb forms in some languages). All three types of simplex sentences can be embedded. When embedded, they undergo transformational mapping into surface structures that differ considerably from the surface structure of the simplex form, the form they would have as the topmost S, to which last-cyclic rules would apply (e.g. inversion of the interrogative, deletion of the second person subject of imperatives). The nominalization rules provide an account of these differences in form, describing in particular their clausal form, their infinitival form, and their gerundive form.

Derived nouns like proposal, insistence, inference, denial, or claim, which have been taken as transformationally derived, by some grammarians, are here taken as lexically derived, for reasons set forth in the general introduction and in part recapitulated in the annotation (Section B) below. The class of nominals that have been labeled "Action Nominals" (e.g. by Lees, 1960), having the form V-ing of OBJ, - as in the killing of the rats, the several bombings of civilians that we witnessed, the eliminating of deadwood from the ranks, - are likewise taken here as lexically derived, for the same reasons (the fact that they have such noun-like qualities as taking a full range of determiners, relative clauses, singular/plural contrasts, and so on). It is necessary to distinguish these action gerundives, which are lexically derived, from transformationally derived gerundives, either factive (the fact of his having given money to John), generic (hunting polar bears is fun), or verb complements of a highly restricted type (he avoided leaving).

The description of nominalization is set forth in terms of a set of parameters, some of which are quite general in that they partition the predicates which govern nominalizations into large sets each characterized by a definable range of general syntactic properties, and others of which are essentially exception features that set off small classes exhibiting syntactic irregularities.

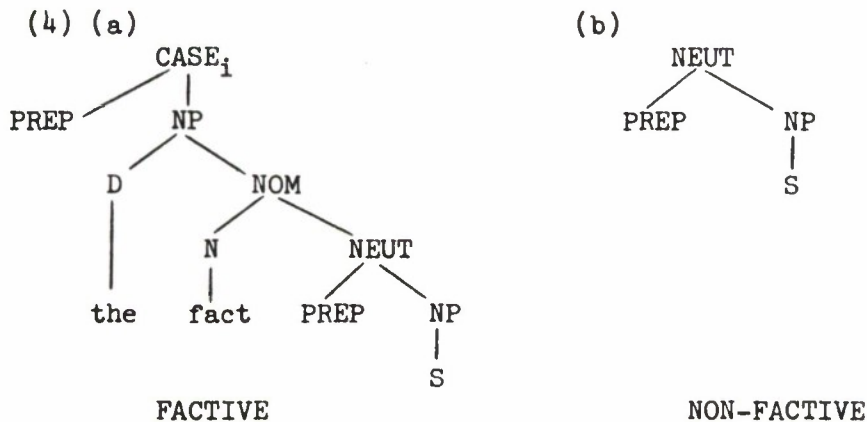
One important parameter is the distinction between FACTIVE and NON-FACTIVE first set forth in detail by the Kiparskys (1968). They proposed that many of the differences in the form and meaning of nominalizations depend not on essentially arbitrary syntactic features but rather on semantic features in the governing items. Factive predicates can only occur when the speaker presupposes that the sentential object or subject of the predicate is true, or factual; non-factive predicates occur when the speaker merely asserts or believes the predicate to be true, but does not presuppose its factuality. The distinction is clearest under negation, since the presupposition remains constant in both the negative and positive forms of the sentence:

- (2) (a) It is odd that the door is closed.
[Kiparsky MS, p.8]
- (b) It isn't odd that the door is closed.
 [Kiparsky MS, p. 9]
- (c) I regret that the door is closed.
 [Kiparsky MS, p. 8]
- (d) I don't regret that the door is closed.
 [Kiparsky MS, p. 9]

But with a non-factive predicate, the assumption about the factuality of the sentential object is polarized by negation of the predicate:

- (3) (a) It is likely that the door is closed.
- (b) It isn't likely that the door is closed.
- (c) I believe that the door is closed.
- (d) I don't believe that the door is closed.

To anticipate later details, factive nominalizations have the deep structure "the fact that S", non-factive nominalizations have the deep structure "that S". More precisely, the structures of (4):



Note that (b) is identical with (a) beginning with the lower right-hand node NEUT. That is, factive nominalizations appear in a case-frame with the head item fact, non-factive nominalizations appear in a case-frame with any head item except fact. Qua nominalizations, they are alike, and the differences between them depend on the head item. The relevant claim made by the differentiation of these structures is that so-called factive predicates do not have sentential objects. They have an NP consisting of the fact as object. The noun fact in turn does have a sentential object. The sentences (2.c) and (3.c) have the same surface structure by virtue of a rule which deletes the fact in (2.c). The deep-structure prepositions are retained or deleted by entirely general rules that operate also with non-sentential NP's throughout the grammar.

A second general parameter in the description of nominalizations, also first set forth by the Kiparskys (1968), is the distinction between EMOTIVE and NON-EMOTIVE predicates. Predicates which express the subjective value of a proposition rather than knowledge about it or its truth value are said to be emotive. This class of predicates takes for in infinitival nominalizations, as in It is important for us to solve the problem.

Infinitival nominalizations are taken to be a secondary consequence of several distinct processes which have the effect of leaving the verb without a subject with which it can undergo agreement: either marking the subject with an oblique surface case (as when for is inserted with emotive predicates), or deleting it (as when it is erased by an identical NP in the matrix sentence), or raising it out of its own sentence. In the general lines of this analysis, details aside, we again follow the Kiparskys (1968).

Not all gerundives are best analyzed as nominalizations. One class which was historically adverbial remains clearly adverbial in sense, although the deep structure of the underlying adverbial is not clear. But the gerundive in He went hunting, earlier He went a-hunting, still earlier He went on-hunting, and others of the same type (He kept (on) working, He saw me fishing, He continued questioning her) cannot naturally be related to deep-structure nominals unless these nominals are themselves part of an adverbial.

B. Previous Scholarship

1. Chomsky's 1958 Analysis
2. Lexicalist versus Transformationalist
3. The Distinction between Nominalization and Complementation
4. IT + S
5. Second Passive, IT-Replacement, and Extraposition
6. The Erasure Principle

1. Chomsky's 1958 Analysis

In his early writings on transformational grammar Chomsky mentions various types of nominalizations. The rules he proposed were offered as illustrations of certain properties of transformational grammars rather than as full-scale accounts of nominalizations in English. Chomsky has since changed his position on several aspects of nominalization. The following account of his early sketch of complementation and nominalization is mainly of historical interest only, though Chomsky's sketch of complementation, at least, was sufficiently satisfactory that Lees (1960) kept most of the same classes and for several parts of the analysis made no attempt to go any deeper.

The 1958 paper distinguished ten classes of verbs that take different types of complements. In the examples below (Chomsky 1958) the complements have been underlined:

- (5) (a) consider, believe,... They consider the assistant qualified.
- (b) know, recognize,... We know the assistant to be qualified.
- (c) elect, choose,... We elected him president.
- (d) keep, put,... We kept the car in the garage.
- (e) find, catch,... We found him playing the flute.
- (e') persuade, force,... We persuaded him to play the flute.
- (f) imagine, prefer,... We imagined him playing the flute.
- (f') want, expect,... We wanted him to play the flute.
- (g) avoid, begin,... We avoided meeting him.
- (g') try, refuse,... We tried to meet him.

Some of these verbs can obviously be assigned to more than one of these classes. Chomsky derived these sentences from separate underlying sentences, the matrix containing a dummy complement which was replaced by part of the constituent sentence in a transformational mapping:

- (6) (a) They consider COMP the assistant. MATRIX
- (b) The assistant AUX be qualified. CONSTITUENT
- (c) They consider the assistant qualified. DERIVED SENTENCE

The 1958 account contained a separate transformational rule for each of the above complement types. The rules are all very similar, and it is obvious that Chomsky was not attempting to achieve much generalization. His main point was that each of the above complements differed by at least one condition, and that this condition depended on the classification of the matrix verb.

Besides these rules for complementation, Chomsky proposed rules for various types of nominalization. The various types are underlined in the following examples:

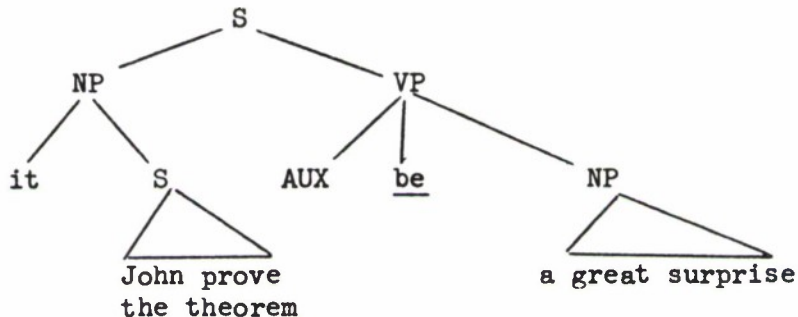
- (7) (a) John's proving the theorem was a great surprise.
- (b) To prove the theorem is difficult.
- (c) John's refusal to come was a great surprise.
- (d) The growling of lions is frightening.
(Cf. Lions growl.)
- (e) The proving of theorems is difficult.
(Cf. Theorems are proved.)
- (f) The country's safety is in danger.

In his derivation, Chomsky provides a dummy nominal which is replaced by the appropriate form of the constituent sentence, with one rule for each type of nominalization. E.g., in Chomsky (1958) the sentence (7.a) has the analysis

$$\left\{ \begin{array}{l} T - it - C + be + a + great + surprise \\ John - C - prove + the + theorem \end{array} \right\}$$

⇒ John + S - ing + prove + the + theorem -
C + be + a + great + surprise

This is equivalent, in the model of Aspects (Chomsky, 1965), to a tree of the following form:



The 1958 paper nowhere discussed the distinction between nominalization and complementation, apparently simply assuming its validity, an assumption subsequently shared by Lees (1960).

2. Lexicalist versus Transformationalist

The general arguments which led the UCLA research group to adopt the lexicalist position with respect to such nominals as proposal, safety, insistence, claim, etc. have been presented in GEN INTRO under the heading Theoretical Orientation. The lexicalist

position leads in a natural way to the adoption of Fillmore's Case Grammar. The properties of nouns like proposal, insistence, killing, ... are, in this frame of reference, in no way specific to a discussion of nominalization, since their expansion in the deep structure is quite parallel to that of verbs and adjectives, and the rules of nominalization which apply to sentences embedded within verbal case frames apply equally to sentences embedded within nominal case frames.

Chapin (1967) has presented arguments which suggest that neither position, lexicalist nor transformationalist, is entirely correct, but the areas of his research are not developed in this grammar and did not lead us to modify our position. For example, he shows that -able in general presupposes a passive underlying it: "John is pervertable" should be related to "John is able to be perverted". He claims this must be a transformational relationship since there is no apparatus in the lexicon as presently conceived to utilize the passive within a lexical derivation. He goes on to argue that -ity must also be transformationally derived, since it is added to adjectives in -able. But nouns with -ity are highly idiosyncratic in their semantic and syntactic properties, not predictable in these respects from the underlying verb or adjective. This kind of evidence suggests that transformational processes somehow belong within the part of the grammar traditionally known as "derivational morphology"; and of course Lees (1960) presented a vast range of similar evidence.

3. The Distinction between Nominalization and Complementation

Inspection of Chomsky's (1958) examples and rules indicates that his "complements" appear in object position, and his "nominalizations" in subject position. His complementation rules contain conditions which mention the verb in the matrix sentence, but his nominalization rules do not. These observations are purely fortuitous, since nominalizations are not confined to subject position, and even in that position they obey constraints in respect to the matrix verb:

- (8) (a) *John's refusal to come is difficult.
- (b) *John's refusal to come is in danger.
- (c) He tried to anticipate John's refusal to come.
- (d) He was annoyed by the fact of John's proving the theorem.

Lees (1960) takes (9.a) to be a typical complement construction, and (9.b) to be a typical infinitival nominalization:

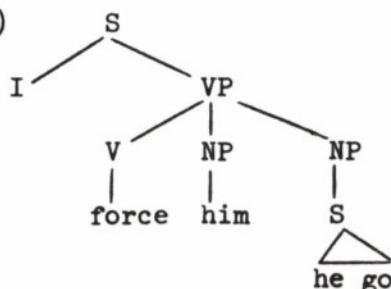
- (9) (a) I force him to go. [Lees (1960), p. 74]
- (b) I plead for him to go. [Ibid]

He points out that these constructions differ in several ways (p. 74): "... (1) for him is deletable in nearly all cases: "I plead to go", while from the Comp sentence him is omitted only after a special subset...: "I try to go", but not: *"I force to go"; (2) there is no passive: "He is forced to go by me", but not: *"He is pleaded for to go by me"; (3) the sentences in question seem to be parallel to others with an abstract object, not an animate object: "I force him to go" parallel to: "I force him", but "I plead for him to go" parallel to: "I plead for it"; (4) there is no WH-transform of an internal noun: "Whom do I force to go?", but not *"Whom do I plead for to go?"..."

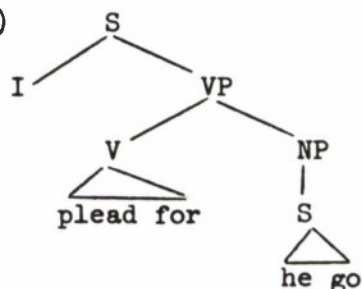
Lees' arguments demonstrate that (9.a) and (9.b) must be distinguished, but of course they do not show that the distinction is one of category (NP vs. COMP). Rosenbaum (1967a), originally written as his dissertation in 1965, argues that complements and nominalizations, though they must be distinguished in respect to the relation they have to other nodes of the sentence, should not be distinguished in respect to their internal structure. He argues further that they share a wide range of common transformations such as complementizer specification, deletion of subjects, and the like. The sentence underlying him to go in (9.a) and (9.b) is itself a nominalization in both examples, but the structure of the predication is different because of the presence in (9.a) of an additional node (details omitted).

(9)

(a')



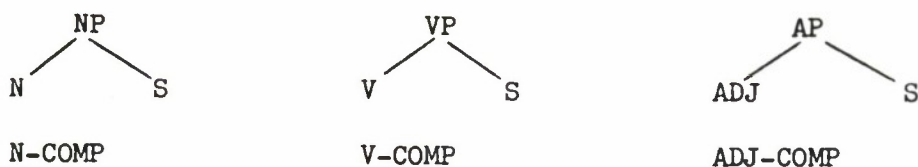
(b')



Equi-NP-deletion applies to (9.a') to derive I force him to go. If the constituent subject of (9.b') were identical with the matrix subject, the same deletion would apply to derive I plead to go.

The most important virtue of Rosenbaum's analysis is that it provides an account of the relation between verb complements and nominalizations. This it does in two ways: first, by showing that many structures that had previously been considered verb complements are in fact nominalizations functioning as objects of verbs or objects of prepositions; second, by arguing that nominalizations are themselves derived from noun-complement constructions (the IT + S analysis), and that the same complementizers that operate in verb complementation (that, for...to, POSS...ing, etc.) operate in noun complementation.

In collapsing the two putatively distinct structures, Rosenbaum takes complementation as primary. By "complement" he means an S introduced into the structure as right sister of some head item:



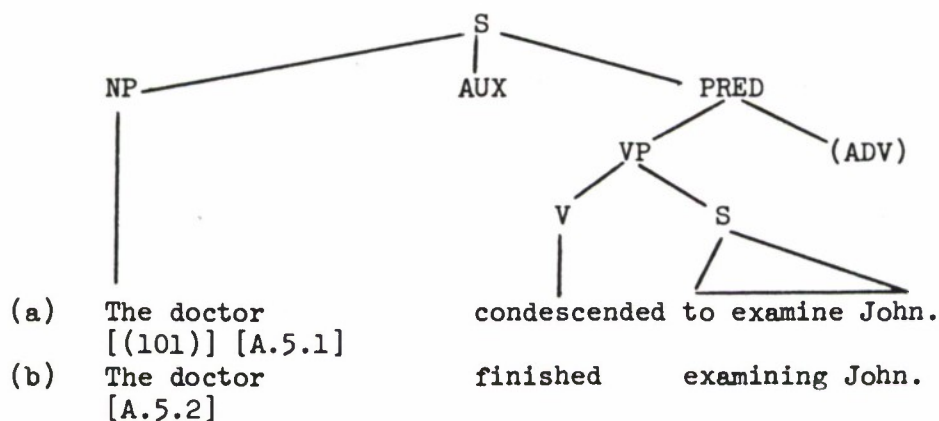
The analysis developed subsequently in the present paper takes nominalization to be primary, by which we mean that there is no S involved in these rules which is not directly dominated by NP. The difference is by no means purely notational, since a number of quite distinct substantive claims are involved. For the differences to be made clear, Rosenbaum's views must be summarized in some detail. However, Rosenbaum's 1965 dissertation views are clearly not the same as his current views, and we infer from the Preface to Rosenbaum (1967a) that at least some of his current views are quite similar to ours. In the Preface he writes: "First, the number of clear cases of verb phrase complementation [i.e. V-COMP, above] has diminished to the point where their general existence becomes questionable" (p.ix). The verb complementation paper of UESP (1967) was devoted largely to providing evidence against the existence of verb phrase complementation. In view of Rosenbaum's retraction above quoted, the present paper merely summarizes some of the problems inherent in Rosenbaum's earlier view, since we agree that the distinction between VP and NP complementation is not fully viable.

Two other investigators independently (Wagner (1968) and Bowers (1968)) take a position like that of UESP (1967), arguing that many of the passive and pseudo-clefted examples cited by Rosenbaum are not totally out if the appropriate prepositions are assumed: e.g. What she condescended to was to talk with us is better than *What she condescended was to talk with us; and What Bill tended to was to think big is better than *What Bill tended was to think big (Wagner, 1968). But we certainly

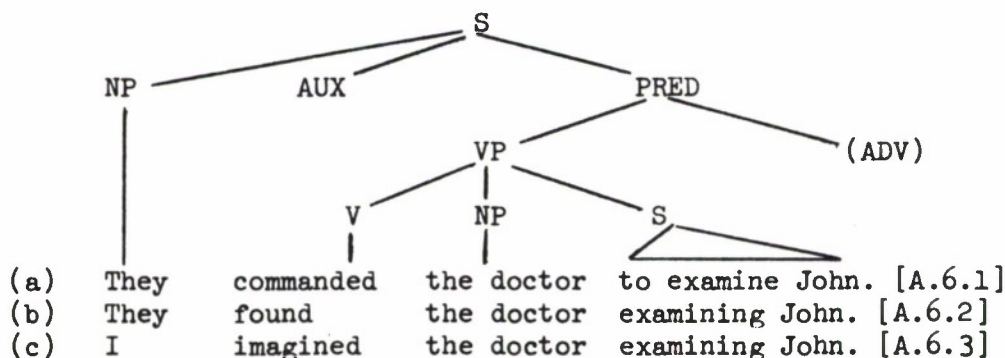
do not agree with Wagner, as will appear in detail below, that if these prepositions are correctly inserted in the ordering of rules, then "Rosenbaum's arguments come to nothing" (Wagner, 1968, p.91), since we still reject such examples as Wagner's (34), To drink beer is condescended to by nine out of ten people, or even worse, ...is tended to..., which he would, on the arguments presented, have to accept. The question of where one draws the line of grammaticalness is touchy, and presumably subject in these cases not so much to dialect variation as to genuine uncertainty on the part of native speakers being faced with examples of a type so rarely met in normal discourse that they simply have no clear intuition about them. It becomes, we shall argue, a question of strategy in handling data of a type where decisions about grammaticalness are so shaky.

Rosenbaum's (1967a) classes of VP-Complementation are illustrated in (10)-(12) [classes and predicates from Appendix of Rosenbaum (1967a)]:

(10) Intransitive Verb Phrase Complementation



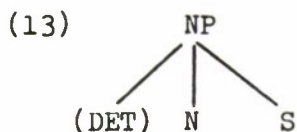
(11) Transitive Verb Phrase Complementation



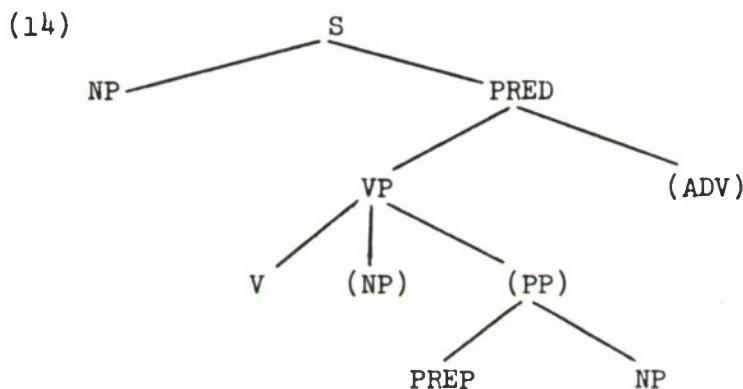
(12) Oblique Verb Phrase Complementation [like transitive except that the object of the matrix verb is introduced by a preposition]

- (a) I rely on the doctor to examine John. [A.7]
- (b) We prevail upon the doctor to examine John. [A.7]

NP complements are characterized by a configuration in which the node NP immediately dominates N + S,



so that any of the NP's in (14) may have this internal structure and be instances of NP complementation:



Rosenbaum's classes of NP-Complementation are illustrated in (15) - (18) [classes and predicates from Appendix of Rosenbaum (1965a)]:

(15) Subject NP complementation

- (a) That the doctor examined John does not matter. [A.2.1.1]
- (b) For the doctor to have examined John seems awful. [A.2.1.2]
- (c) The doctor's examining John mortified the whole family. [A.2.2]

(16) Object NP complementation

- (a) Everybody thinks that the doctor examined John. [A.1.1]
- (b) We prefer for the doctor to examine John. [A.1.2.1]
- (c) They believe the doctor to have examined John. [A.1.2.2]
- (d) They remembered the doctor's examining John. [A.1.3]

- (17) Intransitive oblique NP complementation [The constituent S is part of a prepositional object of a verb which has no other object. The preposition is deleted before that-S and infinitivals.]
- (a) They hoped (for) that the doctor would examine John. [A.3.1]
 - (b) They arranged (for) for the doctor to examine John. [A.3.2]
 - (c) They approved of the doctor's examining John. [A.3.3]
- (18) Transitive oblique NP complementation [The constituent S is part of a prepositional phrase which complements a verb that has another object. The preposition is deleted before that-S and infinitivals.]
- (a) Mary convinced Jean (of) that the doctor had examined John. [A.4.1]
 - (b) They forced the doctor to examine John. [A.4.2]
 - (c) They suspected the doctor of examining John. [A.4.3]

To argue against the distinction between VP-COMP and NP-COMP one must have in mind some alternative. An alternative for which one might argue is that (10), (11), and (12) are analyzable as instances of NP-COMP, thereby eliminating the distinction between NP-COMP and VP-COMP. This is our understanding of what Rosenbaum means by the sentence in his Preface (1967a) asserting that there appear to be few cases of VP-COMP. Such an argument depends on showing that the criteria by means of which Rosenbaum distinguished the two are in some way faulty criteria. His criteria were these:

- (a) Behavior of the COMP under the passive rule;
- (b) Behavior under the pseudo-clefting rule;
- (c) Behavior under the extraposition rule;

and we add

- (d) Behavior under pronominalization.

(a) COMP and Passive

Consider first these examples from Rosenbaum (1967a):

- (19) (a) Everyone preferred to remain silent. [15.a.1]
 (b) To remain silent was preferred by everyone.
 [(15.a.2)]
 (c) John tended to play with his little brother
 of ten. [(15.b.1)]
 (d) *To play with his little brother often was
 tended by John. [(15.b.2)]

(19.d) is unquestionably bad; but (19.b) is not impeccable, either. By an oversight, though tend is a paradigm example of VP-COMP in the text (p.14), it does not show up at all in the lists of Rosenbaum's appendix: presumably it belongs with A.5.1, Intransitive Verb Phrase Complementation with for-to Complementizer. With these examples, passivization is ungrammatical:

- (20)
- | | | |
|---------------------|--|---------------|
| To examine John was | (a) *began
(b) *ceased
(c) *commenced
(d) *condescended (to)
(e) *continued
(f) *dared
(g) *declined
(h) *endeavored
(i) *failed
(j) *gotten
(k) *grown
(l) *hastened
(m) *managed
(n) *proceeded
(o) *refused
(p) *started | by the doctor |
|---------------------|--|---------------|

This observation is significant as a test for a distinction between VP-COMP and NP-COMP, however, only if there is a class of sentences comparable to (20) in which passivization is grammatical. The relevant class is presumably A.1.2.1 (Object NP Complementation with for-to complementizer), since that class includes prefer, which is cited in (19) as a viable example of passivization:

- (21)
- | | | |
|---------------------|---|---------------|
| To examine John was | (a) ?preferred
(b) *borne
(c) *demanded
(d) ?desired
(e) ?disliked
(f) ?expected
(g) ?feared
(h) ?hated
(i) *intended
(j) ?liked | by the doctor |
|---------------------|---|---------------|

- (k) ?loathed
- (l) ?loved
- (m) ?promised
- (n) *prescribed
- (o) ?requested
- (p) ?required
- (q) *wanted

One cannot easily convince himself that these are fully grammatical. One can much more readily convince himself that if the verbs of (20) and (21) are different in respect to the structure of their complements, the test of passivization certainly does not provide satisfactory motivation for the distinction.

It appears in general to be true that an infinitival, in particular a subjectless one, cannot become subject under the passive rule. If true, this is an interesting fact, and one which requires explanation: e.g. it suggests that if, in the deep structure of The doctor prefers/demands/desires...to examine John, there is motivation to assume a deep structure dominance of to examine John by a node NP, then somehow in the reduction of that deep structure to the surface infinitival either the NP node must be removed, or some other device must prevent passivization. We provide an account below of what such a device might be. But first consider these examples further: some sentences in (21) can be improved by retaining a subject and seeking a semantic content that is somehow - though it is not clear how - more appropriate to the structure: e.g.,

- (21') (a) For the comprehensives to be given after the end of the term is generally preferred by the slower students.
- (b) [with extraposition] It is intended for the better students to finish their degrees in three years.

The number of instances where passivization of for-to constructions with subjects results in a fairly high-grade output is substantial; if one finds the higher-grade examples persuasive, the conclusion must be either that complementation and nominalization are distinct structures, since no amount of tinkering with the sentences of (20) will produce examples of the quality of (21'), or that there is some other factor which permits passivization in just these instances but in no instance where the subject of the infinitival is deleted. Tinkering with sentences like those of (20) has been claimed (by UESP 1967, Bowers 1968, and Wagner 1968) to produce examples that are significantly better than some rejected by Rosenbaum, and this claim is certainly correct. Rosenbaum, in citing examples like *To think slowly was tended by me, neglected the preposition that shows up in the slightly better pseudo-cleft form (Bowers' (1968) example 33) What Bill tended to was to think big; i.e., the passive, if it exists, is (?) To think slowly

was tended to by me. But in fairness to Rosenbaum, it must be acknowledged that the improvement, in this example and in the others that can be modified in the same way, is not a startling black-and-white up-grading to obvious grammaticality.

If one feels, as we do, that some of the extraposed passives like (21'.b) are close to fully grammatical; that the examples (21) are better with subjects supplied for the infinitivals, but that they are about as bad as (20), taken as they stand; and that the examples (20) are irreparably bad, - then one has a problem in strategy (since the grammar one writes depends, in this instance crucially, on one's conclusion about these examples). One strategy would be to take a hard line on the question of what is grammatical in these instances where the data is so fuzzy. This would force the grammar to assert that It is intended for students to finish in three years is as bad as For students to finish in three years is intended, which is not true, or that To finish in three years is intended is as bad as To finish in three years is managed, which also is not true.

There is a gradation among these examples, however: one might explain the relative persuasiveness of It is intended for the students to finish in three years on the assumption that it is derivatively generated (in the sense of Chomsky, "Some Methodological Remarks on Generative Grammar", Word 17, 1961) from It is intended that the students finish in three years, i.e. an analogy which associates for-to with subjunctive, since for-to corresponds with subjunctive in a wide range of examples: It is important for him to finish in three years/It is important that he finish in three years; I prefer for him to finish in three years/ I prefer that he finish in three years. But verbs like begin, manage, continue, decline, fail,..., not having a corresponding that-S subjunctive, should not, and do not, lend themselves to this analogical extension at all.

This hard line strategy would require in the present grammar that we allow passivization just in case there has been no reduction to infinitival form. Without now anticipating our subsequent detailed analysis of infinitivals, a device which would block all moving of infinitivals into passive subject would be to place the rules of infinitival reduction after the rule of passive subject placement, formulating them in such a way as to exclude reduction if the embedded sentence had been made subject of a passive verb. This device would be unnatural, however, since with some predicates such as tragedy, important, an infinitival as subject is unobjectionable: For her to have married so young was a tragedy that we all deplored; For them to wear a lifejacket will be important to their survival if they get shot down. It would also be ad hoc, since it would require repetition of the same constraint in a number of rules determining infinitival reduction.

Alternatively, a device which is also ad hoc but much less unnatural, since passivization requires a number of special constraints not required by active subject placement anyway, would be to constrain passivization so as not to move any sentential NP into passive subject unless that sentence contained an AUX: i.e. unless it were still a "real" sentence, not an infinitival reflex of one. But there is independent motivation to place the rule TO-REPLACE-AUX, which establishes infinitival form, after the case placement rules, whereas the constraint just suggested will filter out just the right examples only if the passive rule follows TO-REPLACE-AUX. Since we believe we have fairly strong reasons to treat passivization along with case placement in general, and since the case placement rules must precede TO-REPLACE-AUX, the suggested constraint to "real sentences" cannot serve to block passivization in these instances.

A third alternative is to block only subjectless infinitivals from passivizing. As noted above, it is the subjectless infinitivals which are consistently bad when passivization of the matrix verb puts them into subject position - i.e. the examples (21), as distinct from (21') where the infinitivals have subjects. A compromise between a totally "hard line" position, then, and the Bowers/Wagner/UESP (1967) position, is to block passivization under the condition that the would-be sentential passive subject is lacking its own subject, thereby admitting (21'), but excluding (20) and (21). That, after much discussion, is the consensus solution of the present grammar. It is ad hoc in that the passive rule must have a condition that blocks passivization of subjectless infinitivals. It is also unnatural in view of the fact that the rule does not otherwise have to look at the internal structure of the NP that is to be moved to passive subject. But it correctly reflects our intuitions about the set of grammatical sentences.

(b) COMP and PSEUDO-CLEFT, EXTRAPOSITION

Behavior of the complement under passivization, then, turns out to be no satisfactory justification for the putative distinction between VP-COMP and NP-COMP. Consider, now, the second basis, pseudo-clefting:

- (22) (a) 1. I hate you to do things like that.
 [Rosenbaum (1967a) (10.a.1)]
 2. What I hate is for you to do things
 like that. [10.a.2]
- (b) 1. We prefer you to stay right here.
 [10.b.1]
 2. What we prefer is for you to stay
 right here. [10.b.2]

- (c) 1. I defy you to do things like that. [10.c.1]
 2. *What I defy is for you to do things like that.
 [10.c.2]
- (d) 1. We tempted you to stay right here.
 2. *What we tempted was for you to stay right here.

The pseudo-clefting test depends on the assumption that what is clefted is an NP, a claim which is supported by the third test, extraposition, which indicates that (22.a) and (22.b) contain NP's that can be extraposed, whereas (22.c) and (22.d) do not:

- (22') (a) I hate (it) very much for you to do things like that. [(11.a)]
 (b) I prefer (it) very much for you to stay right here. [(11.b)]
 (c) *I defy (it) very much for you to do things like that. [(12.a)]
 (d) *We tempted (it) very much for you to stay right here. [(12.b)]

But of course pseudo-clefting also depends on the assumption that what is clefted is a constituent; one of the surprising aspects of Rosenbaum's book is that while he is the scholar who first clarified the distinction between They expected the doctor to examine John and They persuaded the doctor to examine John (discussed by Chomsky (1965), pp. 22-23), he nonetheless fails to note here that the fact about (22.c) and (22.d) which blocks pseudo-clefting, and extraposition, is that neither for you to do things like that nor for you to stay right here is a constituent. The difference between (22.a-b) and (22.c-d), already noted as the distinction between (9.b') and (9.a'), is precisely that between expect and persuade discussed by Chomsky. That is, for these examples the question of VP-COMP vs. NP-COMP is simply irrelevant. The distinction between expect and require, which is even clearer than, and exactly like, the distinction between expect and persuade, is the following:

The sentence (23.a) is cognitively synonymous with the passive (23.b):

- (23) (a) They expected the doctor to examine John.
 (b) They expected John to be examined by the doctor.

But the sentence (23.c), identical with (23.a) in surface structure, is not synonymous with (23.d):

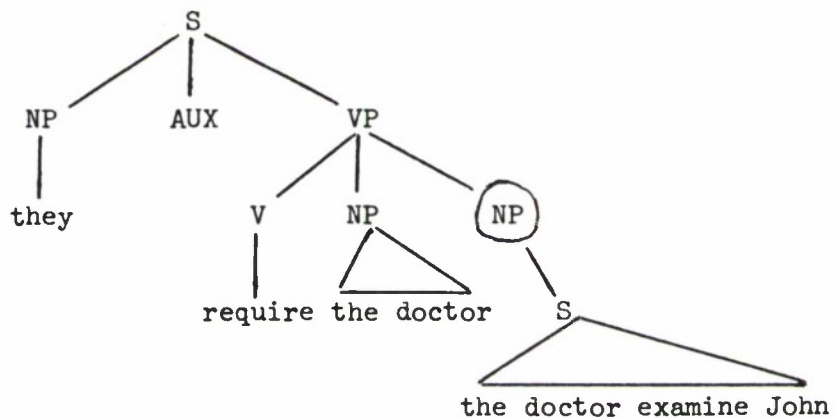
- (23) (c) They required the doctor to examine John.
 (d) They required John to be examined by the doctor.

(23.c,d) are paraphrased by an explicit Dative in (23.d,f):

- (23) (e) They required of the doctor that he examine John.
- (f) They required of John that he be examined by the doctor.

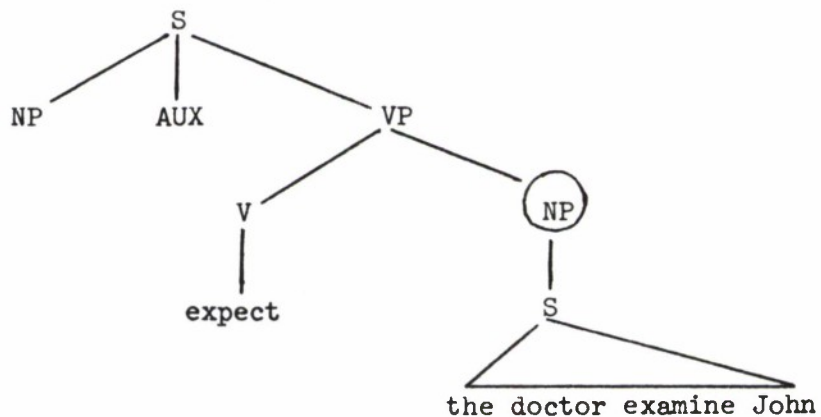
The examples with require (or persuade) have, minimally, a deep structure that includes an animate object in addition to a sentential object:

(23) (c')



The examples with expect (or hate or prefer) have no such animate NP object in addition to their sentential object:

(23) (a')



In short, the pseudo-clefting argument that supports the circled NP of (23.a') is irrelevant to the question of whether (23.c') should have the circled NP or not.

Although pseudo-clefting is not an argument appropriate to the distinction between the examples (22), it is relevant to the discussion of other examples of the putative contrast between NP-COMP and VP-COMP, in fact to the same examples as those to which the passive test was adduced. Bowers (1968) claims that although *To see his friend was rejoiced at by him is not grammatical, What he rejoiced at was to see his friend [(13) and (14)] is. Bowers is not quite so happy with What he tempted Bill to was to be interviewed by the company [(17)], but he is not willing to state categorically that it is ungrammatical; similarly What they condemned him to was to die [(23)]. If grammatical, such examples dispute the NP-COMP/VP-COMP distinction proposed by Rosenbaum.

The problem with pseudo-clefting as a test is that there are numerous examples which have no corresponding grammatical non-clefted infinitival cognates: e.g.

- (24) (a) What I look forward to is for him to break his neck.
 (b) *I look forward (to) (for) him to break his neck.
 (c) I look forward to his breaking his neck.
- (d) What I would really enjoy is for people to leave me alone.
 (e) *I would really enjoy (for) people to leave me alone.
- (f) What I deplore is for idiots to be running the country.
 (g) *I deplore for idiots to be running the country.
 (h) It is deplorable for idiots to be running the country.
- (i) What I propose is that they quit sticking their noses in the department's affairs.
 (j) What I propose is for them to quit sticking their noses in the department's affairs. [Perhaps not fully well-formed, but derivatively related to (i).]
 (k) *I propose for them to quit sticking their noses in the department's affairs.

- (l) What I require is that he do better.
- (m) What I require is for him to do better.
[Perhaps not fully well-formed, but derivatively related to (l).]
- (n) *I require for him to do better.
- (o) I require him to do better.

(24.a) seems impeccable, but (24.b) is totally out. (24.d) is good, but (24.e) quite dubious. (24.f) is impeccable, but only rarely is (24.g) claimed to be grammatical (e.g. by the Kiparskys (1968)). The remaining sets involve the possibility of a derivative relation to a subjunctive. It is hard to see how data like these can be used to support or deny the NP-COMP/VP-COMP distinction. It is certainly legitimate to use evidence from pseudo-clefting to argue for one or another element of content in the deep structure of an infinitival: e.g., we claim that the existence of (25.a) argues for a subjunctive in the underlying form of (25.b), even though there is no corresponding form (25.c):

- (25) (a) What I especially want is that my daughter grow up to be a gracious lady.
- (b) I especially want my daughter to grow up to be a gracious lady.
- (c) *I especially want that my daughter grow up to be a gracious lady.

But to argue from the pseudo-cleft that there must be a certain structural distinction in the available non-clefted cognates claims that we understand the conditions under which pseudo-clefting is permitted; the data of (24) testify that we, at least, do not understand these conditions.

(c) COMP and PRONOMINALIZATION

The fourth criterion, pronominalization, not proposed by Rosenbaum, tends to support the circled NP of both (23.a') and (23.c'):

- (26) (a) Mary expected the doctor to examine John, and I expected it, too.
- (b) Mary required the doctor to examine John, and I required it of him, too.

But pronominalization provides contrary evidence in other examples:

- (27) (a) *Mary { forced
commanded
ordered
told } the doctor to
examine John, and I { forced
commanded
ordered
told }
him (into) it, too.

- (b) ?The doctor condescended to examine John,
and the other specialist condescended to
it, too.
- (c) ?I prefer to be examined by osteopaths,
and Mary prefers it, too.
- (d) ?John tends to like blondes, and I tend
toward it, too.

The examples (27.a) are all bad, except perhaps force with into; (27.b,c,d) are extremely questionable, only really acceptable in the form A condescends/prefers/tends to do X, and B tends to do it, too. It appears, in fact, that there are no very satisfactory examples of it-anaphora where the item replaced is an infinitival complement: this fact strongly suggests that the derivation of infinitival complements is not a matter of simply replacing a sentence by a cognate infinitival form - that several steps are involved in the derivation, and that in the course of this derivation the underlying sentence is mutilated in such a way as no longer to be recognizable as an NP, for pronominalization, or else somehow the necessary conditions for pronominalization were not present in the first place. Since the present grammar does not attempt to deal with the PRO-ing of sentences, a solution to this problem continues to be outstanding, nor do we have any very clear notion of what solution might successfully be proposed.

Returning, now, to the main line of argument: Are there solid syntactic grounds for the distinction between VP-COMP and NP-COMP? The criteria which have been proposed fail to make the distinction consistently. The claim that there are at least two distinct structures, namely those with a dative (23.c') and those with only a sentential object (23.a'), is persuasively motivated by both passivization and pseudo-clefting, but that distinction is independent of the distinction in question. The fact that passivization is ungrammatical with subjectless infinitival complements (20) and (21) may or may not be correctly analyzed as a function of a condition on the passive rule, but if the facts are as we have outlined, they do not support the distinction in question. What, then, remains as a basis for the distinction between VP-COMP and NP-COMP?

It seems to us that there is one kind of argument for VP-COMP, not raised by Rosenbaum, which is difficult to eliminate. Consider the semantic interpretation of the following sets:

- (28) (a) He forgot to study the lesson.
 (b) He forgot that he was to study the lesson.
 (c) He forgot that he (had) studied the lesson.
- (29) (a) He avoided studying the lesson.
 (b) He neglected to study the lesson.

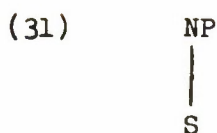
In (28), it seems clear that neither (b) nor (c) is entailed by (a), but any derivation which assumes a deep structure NP-sentential object of forget will encounter grave difficulty avoiding the claim that something like (b) or (c) is indeed entailed by (a). In such sentences as (28.a), involving a contrary-to-fact embedded sentence, a way out, though not otherwise motivated, is to assign a subjunctive aspect to the verb of the embedded sentence, thus distinguishing between the deep structure of (28.a) and that of (28.b,c). In some closely similar sentences, there is independent justification for subjunctive: in particular, example (25) above. Although (25.c) does not exist, (25.a) strongly suggests that (25.c) is indeed the deep structure obligatorily reduced to (25.b): it would otherwise be quite impossible to explain the subjunctive form of the pseudo-cleft (25.a). Since there is not comparable pseudo-cleft form for (28.a), the assumption of subjunctive to account for the contrast within (28) can be argued only by analogy with (25). The examples (29) contain the same problem of interpretation, but they permit neither the non-subjunctive contrasts analogous to (28.b,c) nor pseudo-cleft forms analogous to (25.a), although the sentences (30) are at least readily interpretable:

- (30) (a) *?What he avoided was that he study the lesson.
 (b) *?What he neglected was that he study the lesson.

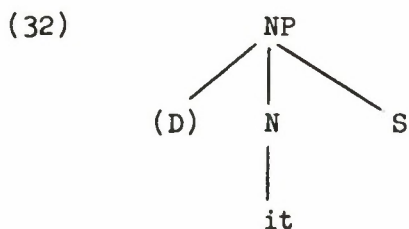
Since there is at least a not-totally-unreasonable solution to the problem posed by (28), and since there appear to be no other persuasive arguments in favor of VP-COMP, we set this argument aside also as insufficient to justify the distinction between VP-COMP and NP-COMP.

(d) Nominalization versus Complementation: Conclusion

We conclude that the distinction between NP-COMP and VP-COMP is not a necessary or revealing one. The only alternative is not, however, that all "complement" structures are what Rosenbaum (1967) calls Noun Phrase Complementation. Our claim is that they are not complements at all, but nominalizations: i.e., they have the deep structure (31):



To argue that they are not complements, we must now consider Rosenbaum's arguments that the structure of NP-Complementation is (32):



4. IT + S

Rosenbaum's (1967a) arguments for assuming it in the deep structure are these:

- (a) The rule of Extraposition moves sentential subjects and objects out of their deep-structure position and adjoins them at the end of the matrix sentence. When moved out in this way, there is evidence that such sentences are no longer dominated by NP but rather are adjoined directly under the matrix S. In the original position of the extraposed sentence, the expletive it appears in the surface structure.
- (b) The it which appears in the surface structure is not the same as the it of pronominalization, since it can't be questioned or relativized; i.e., this it is a dummy like the it of It's raining.
- (c) NP-Complementation and VP-Complementation share most rules, in Rosenbaum's analysis, but not the rule of extraposition. E.g., I hate (it) very much for you to do things like that is NP-Complementation, and grammatical under extraposition (from object); but *I defy (it) very much for you to do things like that is ungrammatical, a fact which Rosenbaum explains by claiming that it is VP-Complementation, which is not subject to extraposition.
- (d) Finally, the statement of complementizer transformations is simplified by making the complementizer a feature on it and spreading it into the sentential complement.

The four arguments above are reconstructed from Rosenbaum's "Defense of the Phrase Structure Rules" (pp. 9-23). A fifth argument, stated by Lakoff (1966c) is

- (e) If one argues that the it is introduced transformationally in the proper environments, it is virtually impossible to define what is meant by "the proper environments."

(a) is clearly a fact, but not an argument unless it is indeed "virtually impossible" to state the proper environments for transformational insertion of it. (b) is also a fact, but equally statable of an it inserted by a non-anaphoric transformational rule. (c) is a valid argument, but it depends on the validity of the NP-COMP/VP-COMP distinction, as stated by Rosenbaum; it is not specific to IT + S, since the distinction between NP-COMP and VP-COMP can equally well be made as between S dominated by VP, and S dominated by NP. From (c) all that is clear is that some basis must be provided to permit extraposition in the right instances, which is true of (e) also. (d) is a weak argument because it depends on Rosenbaum's preference for a particular formalism; if it turns out that the Kiparskys (1968) are right, and that the complementizers come from a variety of deep sources, the formalism (even if it were the best possible) could not be employed anyway. So only (e) is a real argument. Lakoff acknowledges that the environment in which extraposition from subject occurs is readily statable; the one that he finds "virtually impossible" to state is the environment of "vacuous extraposition from object." But at the time of presenting his arguments he was unaware that the only instances of extraposition from object are factives. The notion "factive" is independently motivated, and it provides precisely the environment, fairly easily stated (although a few items must be marked with exception features), that Lakoff found difficult to state.

There appears, then, to be little solid justification for the IT + S analysis, and we have accordingly rejected it.

5. Extraposition, IT-Replacement, and Second Passive

To account for the relationships between sentences like (33),

- (33) (a) That John will find gold is certain.
 (b) It is certain that John will find gold.
 (c) John is certain to find gold.

- (d) *That John found gold happened.
- (e) It happened that John found gold.
- (f) John happened to find gold.

a rule of Extraposition (deriving (33.b) from (33.a), and (33.e) from (33.d)) has been widely assumed (e.g. Ross (1967c), Rosenbaum (1967a), and Lakoff (1965)); and a rule of IT-replacement (deriving (33.c) from (33.b), and (33.f) from (33.e)) was proposed by Rosenbaum (1967a) and appears to be generally assumed, though the form of it varies (see, for example, discussion of the problem in Kiparsky (1968), in particular footnote 6).

A class of sentences that require a similar derivation (and incidentally thereby reduce the candidates in (20) for analysis as VP-Complementation) is the class of so-called "transparent" predicates (i.e. selectional restrictions determined by the verb of the complement):

- (34) (a) *That John got tired began.
 (b) *It began that John got tired.
 (c) John began to get tired.
- (35) (a) *That John was a tyrant continued.
 (b) *It continued that John was a tyrant.
 (c) John continued to be a tyrant.
- (36) (a) *That John worked hard ceased.
 (b) *It ceased that John worked hard.
 (c) John ceased to work hard.

Our derivation of (33) - (36) by a process of "raising to subject" is discussed below.

Another class of sentences that seem to require a similar derivation is that of (37):

- (37) (a) They believe that Bill is intelligent.
 (b) They believe Bill to be intelligent.
 (c) Bill is believed to be intelligent.

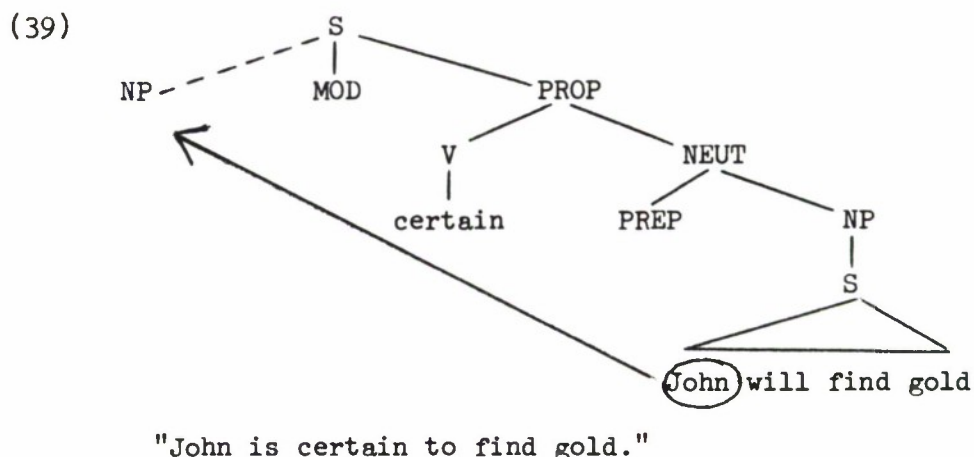
Lees (1960) labeled (37.c) as the "Second Passive". He correctly observed (p. 63) that "It is as though the passive transformation could apply either to the whole That-Clause nominal as subject [generating That Bill works hard is said (by someone)] or only to the internal nominal subject of the That-Clause [generating (37.c)]". Our analysis of such sentences in Section III is essentially the same as Lees', with the additional observation about to-insertion of the Kiparskys which provides a general account of why the form of the that-clause is infinitival after the subject has been lifted up into the matrix sentence by a process of "raising to object", and then taken as the passive subject by the regular subject placement rule.

Rosenbaum (1967a) has claimed that there is no need for a second passive rule, if the grammar contains rules for extraposition and it-replacement. His (excessively ingenious) derivation of sentences like (37), contrary to Lees' clearly correct intuition, is the following:

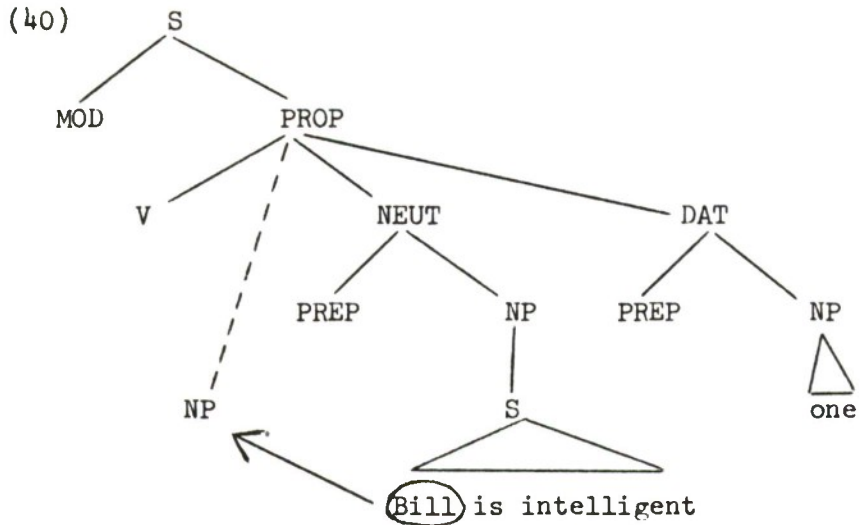
- (38) (a) *One says it-for Bill to work hard.
- (b) *It-for Bill to work hard is said.
 [Passive of (a)]
- (c) *It is said for Bill to work hard.
 [Extraposition on (b)]
- (d) *Bill is said for to work hard.
 [It-replacement on (c)]
- (e) Bill is said to work hard. [For-deletion]

[Perhaps it should be noted, though irrelevant to these arguments, that the subject of the matrix sentence cited as "one" above is not used by either Lees or Rosenbaum; Lees uses "people" as the deletable subject, Rosenbaum uses "they". Our arguments that "one" is the deletable indefinite subject appear in Section III.]

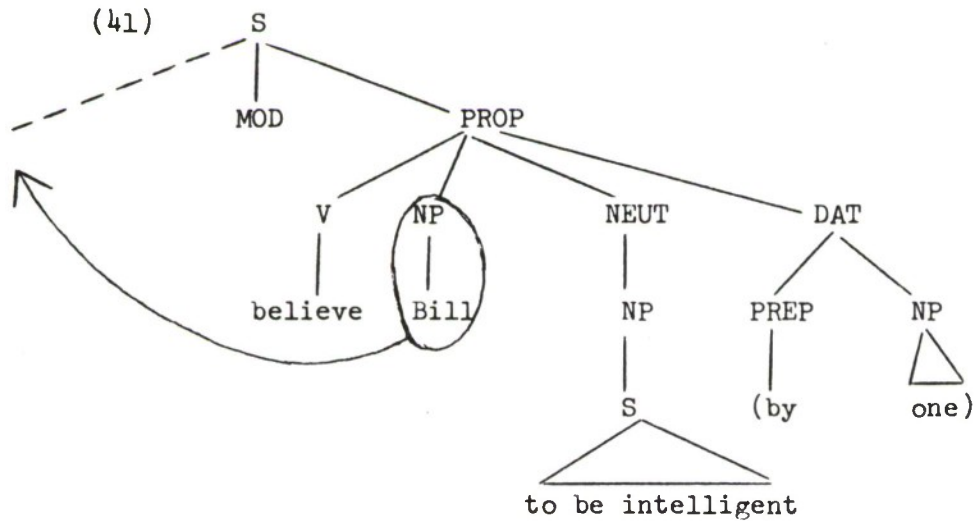
If the other rules indeed worked as claimed by Rosenbaum-- e.g. if IT+S were well-motivated, if for-to infinitivalization were well-motivated as the deeper structure of all to- infinitivals, and if the distinction between VP-complementation and NP-complementation were sound -- then a counter-intuitive derivation like (38) might still be justified, as Rosenbaum tried to justify it, by the fact that such rules are independently needed and might therefore just as well be used to account for this apparently irregular construction. Since none of these conditions appear to hold firmly, we have sought a different analysis. Since we have a rule of subject placement, both passive and active, the most natural solution is an optional rule preceding subject placement which raises the subject of an embedded sentence into the subject position of the matrix sentence, in instances like (33.c), (33.f), (34.c), (35.c), and (36.c): taking (33.c) as typical, these have the (simplified deep structure (39):



Similarly, an optional rule can raise the subject of an embedded sentence into the object position of the matrix sentence, in instances like (37.b), and then Subject Placement will move this object into subject of the matrix:



"One believes Bill to be intelligent."



"Bill is believed to be intelligent."

With all but one small set of verbs of this class, all steps in the derivation are grammatical. The exceptions - say, rumor, repute - have one ungrammatical step for which we have no account:

- (42) (a) They say - Bill is intelligent.
 (b) *They say - Bill to be intelligent.
 (c) Bill is said to be intelligent.

The details of this derivation are presented in Section III.D.6,7. We anticipate them here in general outline to show how our treatment of this class of examples is related to other studies. In particular, our analysis obviates both a second passive rule, while formalizing precisely the intuition of Lees (1960) quoted above, and relates the phenomenon of It-replacement to a general set of conditions for subject placement.

6. The Erasure Principle

It is a general principle of transformational theory that deletions in the course of a derivation must be recoverable. Otherwise any derivation with a deletion would be infinitely ambiguous. The kind of deletion that commonly occurs in complement structures is erasure under an identity condition: e.g. for a whole host of reasons the deep structure of a sentence like He tried to leave is assumed to contain two occurrences of the subject he: He tried + He AUX leave. The subject of the embedded sentence is erased by the higher identical subject, in this instance. Rosenbaum (1967a) found it necessary to develop an erasure principle which would guarantee for his derivations that there could be no ambiguity as to which was the erasing NP. The principle cannot be simply that the first NP to the left is responsible for the erasure, even though such a principle would be a first approximation which would work well for such sentences as (43):

- (43) (a) They tempted John to leave early.
 [Rosenbaum (1967a) ex. 18.a]
 (b) We forced John to ignore his work.
 [Rosenbaum (1967a) ex. 18.b]

The consideration of purpose clauses eliminates this principle, since it would require that "boat" and "car" be the erased subjects in (44):

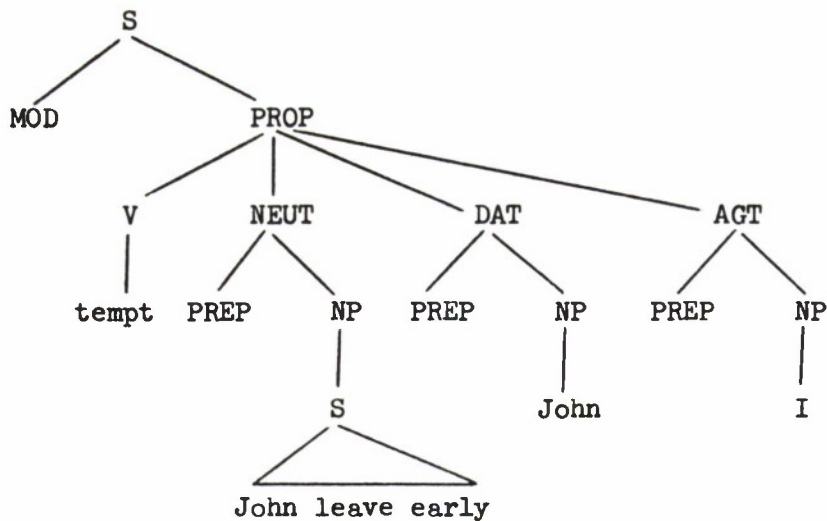
- (44) (a) I sold the boat to save money.
 [Rosenbaum (1967a) ex. 19.a]
 (b) She took the car to buy bread.
 [Rosenbaum (1967a) ex. 19.b]

Rosenbaum sets forth a principle of minimum distance (measured by counting the number of branches in the path connecting two nodes) which eliminates the problem of (44), since the subject of the purpose clause is more distant from the matrix object than from

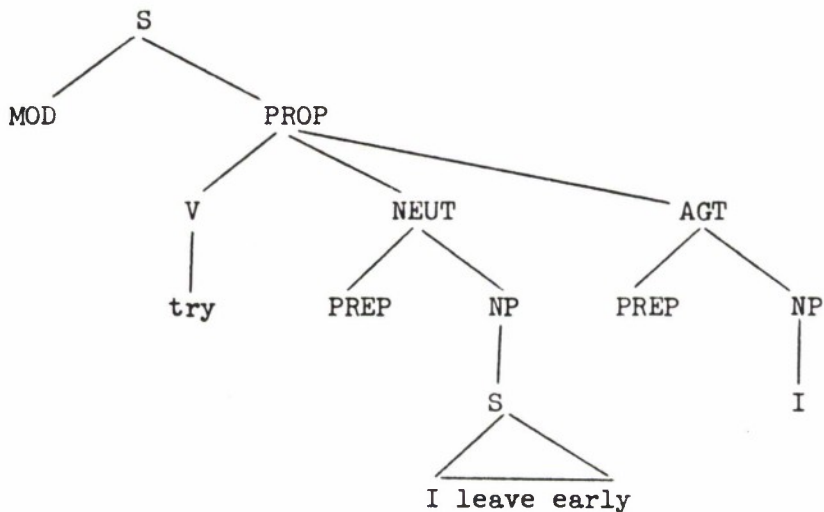
the matrix subject (because in Rosenbaum's tree there is an additional Pred-Phrase and VP node dominating the object).

Consider, however, the status of the principle of minimum distance as applied to Fillmorean trees:

(45) (a)



(b)



For several reasons, the rule of EQUI-NP-DEL, which erases the embedded S's in (45), must apply fairly early - before the Case Placement rules that move the appropriate NP into surface subject

position: in particular, because it must precede raising of the subject of embedded S's to object of matrix as in (40), in order to allow normal reflexivization in (46) but block it in (47):

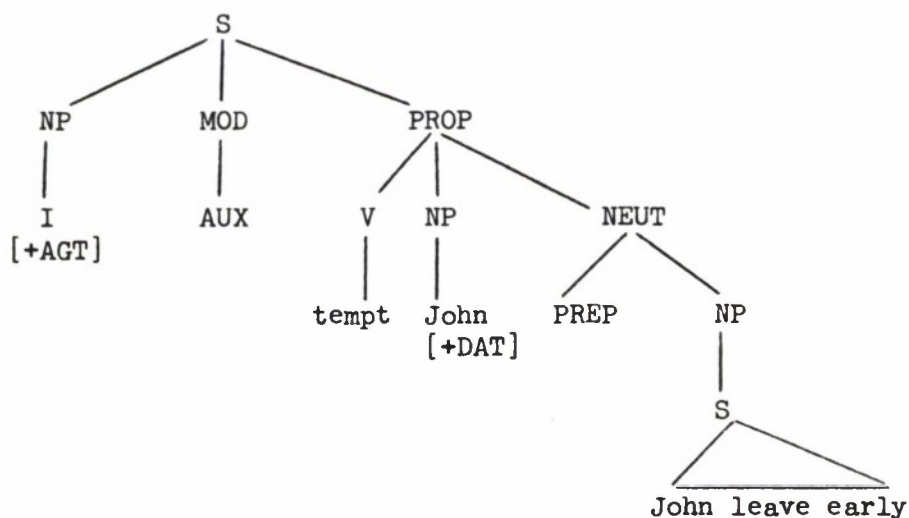
(46) John believes himself to be intelligent.

(47) *John wanted himself to work hard.
 [in the sense of "John wanted to work hard."]

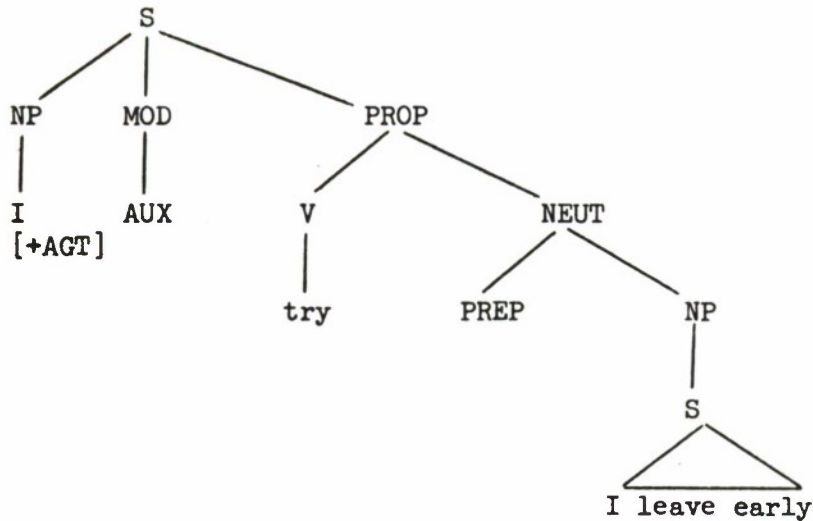
If this rule is prior to the Case Placement rules, then the distance of the erasing NP is identical in (45.a), where the Dative NP is responsible, and in (45.b), where the Agent NP is responsible. We have, therefore, stated the rule in such a way that the erasing NP is identified by the case node dominating it, and we have replaced the principle of minimum distance by the principle that an identical dative has erasure priority over an identical agent.

If it were not necessary for EQUI-NP-DEL to precede the Case Placement rules, as we believe it is, there would be a very natural way to capture Rosenbaum's principle within this Frame of reference. The distances would come out right because of the elimination of certain nodes in the objectivalization rule, nodes which must be eliminated for totally independent reasons (see discussion in BASE RULES). Consider the structures (45): these are the structures as they exist prior to the application of the rules of subjectivalization and objectivalization early in the cycle: after the application of those rules, the structures are as in (45'):

(45') (a)



(b)



In these trees, by Rosenbaum's principle of branch-counting to determine minimal distance, the subject of the embedded sentence is one branch closer to the Dative than to the subject of the matrix sentence. The principle therefore would make the right decision in these cases.

A sentence that Rosenbaum's principle and our own Dative/Agent principle both fail to explain is (48):

(48) He promised us to leave at once.

The sentence is perhaps only marginally grammatical anyway; if it, and others like it, are fully grammatical, then the verb itself must be marked for the erasing condition which it requires. Or some other general condition, different from either Rosenbaum's or ours, must be found. But the example is suspect on another score: if our formulation of the structures (45') is indeed correct, where the principle of minimum distance works really because the Dative has been objectivalized--which in turn was motivated by the requirement of the passive form of (45'.a) John was tempted to leave early, then it should be the case that the passive of (48) is We were promised to leave at once, which is clearly ungrammatical. From this evidence, one must conclude that the structure of (48) is somehow radically different from that of the examples that are relevant to the principle of minimum distance. A possible conclusion is that (48) is a simple blend of the two constructions He promised us that he would leave at once and He promised to leave at once both of which are fully grammatical and are generated with no special problem by the present grammar, in ways discussed subsequently under Section III.D.5.

III. THE PARAMETERS OF NOMINALIZATION

- A. Factive/NonFactive
- B. Sentential/NonSentential
- C. Emotive/NonEmotive
- D. Infinitivalization
- E. Gerundive/NonGerundive
- F. Stative Infinitival
- G. Deep Structure Constraints
- H. Surface Structure Constraints
- I. Miscellaneous Exception Features

A. Factive/NonFactive

- 1. Syntactic Justification of the Distinction
- 2. Criteria for Factivity
- 3. The Abstract Instrumental

1. Syntactic Justification of the Distinction

The Kiparskys (1968) provide the following lists of factive and non-factive predicates (MS pp. 1 and 4):

<p>(49) <u>With factive subjects</u></p> <p>significant odd tragic exciting relevant</p> <p>matters counts makes sense suffices amuses bothers</p> <p><u>With factive objects</u></p> <p>regret be aware (of) grasp comprehend take into consideration take into account bear in mind ignore make clear mind forget (about) deplore resent care (about)</p>	<p><u>With non-factive subjects</u></p> <p>likely sure possible true false</p> <p>seems appears happens chances turns out</p> <p><u>With non-factive objects</u></p> <p>suppose assert allege assume claim charge maintain believe conclude conjecture intimate deem fancy figure know realize</p>
---	--

[Know and realize are asserted to be semantically factive, syntactically non-factive.]

The distinction is supported by the following kinds of syntactic evidence:

- a. Only factives allow either that-S or Fact that S:
- (50) (a) The fact that she solved the problem is significant.
 (b) *The fact that she solved the problem is likely.
 (c) I regret the fact that she solved the problem.
 (d) *I believe the fact that she solved the problem.
- b. Only factives allow the full range of gerundive constructions:
- (51) (a) Her having solved the problem is significant.
 (b) *Her having solved the problem is likely.
 (c) The professor's not knowing the answer to that question was surprising.
 (d) *The professor's not knowing the answer to that question was true.
 (e) I regretted her having contemplated her navel for so long.
 (f) *I asserted her having contemplated her navel for so long.
- c. Most non-factives allow raising the subject of the constituent S to subject of the matrix S [Rosenbaum's IT-Replacement; in the present grammar simply one of the options permitted in the early subjectivalization rule, governed by the rule feature [RAIS-SUBJ] discussed under Section D below], but none of the factives do: [Examples (52) from Kiparsky (1968) MS p. 3]
- (52) (a) It is likely that he will accomplish even more.
 (b) He is likely to accomplish even more.

- (c) It seems that there has been a snowstorm.
- (d) There seems to have been a snowstorm.

- (e) It is significant that he will accomplish even more.
- (f) *He is significant to accomplish even more.

- (g) It is tragic that there has been a snowstorm.
- (h) *There is tragic to have been a snowstorm.

- d. Extraposition is optional with sentential subjects of factives, but obligatory with sentential subjects of non-factives: [Examples from Kiparsky (1968) MS p. 4]
 - (53) (a) That there are porcupines in our basement makes sense to me.
 - (b) It makes sense to me that there are porcupines in our basement.

 - (c) *That there are porcupines in our basement seems to me.
 - (d) It seems to me that there are porcupines in our basement.

- e. "Vacuous extraposition from object" is optional with factives, but disallowed with non-factives; it is obligatory with a small sub-set of factives:
 - (54) (a) I regret that she lives far away.
[Factive]
 - (b) I regret it that she lives far away.
[Optional]

 - (c) *I hate that she lives far away. [Factive]
 - (d) I hate it that she lives far away.
[Obligatory]

 - (e) I suppose that she lives far away.
[NonFactive]
 - (f) *I suppose it that she lives far away.
[Disallowed]

- f. Only non-factive predicates allow what the Kiparskys non-committally call the "accusative and infinitive construction", which turn out to be infinitival reductions like any others except that they must be stative:

- (55) (a) We assumed the quarterback to be responsible.
 (b) *We ignored the quarterback to be responsible.
 (c) He supposes himself to be competent.
 (d) *He grasps himself to be competent.

A number of the non-factives disallow this construction also -- the Kiparskys note that charge is one such: in our dialects intimate is another; and for many speakers also anticipate, emphasize, and announce, which are both factive and non-factive. But in any case, none of the factives allow this construction.

The deep structure proposed by the Kiparskys for factive and non-factive nominalizations is (56):



From the point of view of our "Fillmore-cum-Lexicalist" base, the S in (56.a) is an NP-object of fact, as in (4.a).

2. Criteria for Factivity

It appears that the full range of the Kiparskys' observations can be captured by a feature [+/-FACT], a strict-subcategorical feature specifying that the predicate is compatible with the noun fact as a realization of the case NEUT in its case frame. All items which disallow factive objects but accept sentential objects are marked [-FACT], [+/-S]. This is the class of non-factive predicates. All items which allow factive objects are marked [+/-FACT], [-S]. This is the class of factive predicates. They do not accept sentential subjects or objects at all: those surface structures in which embedded sentences appear to occur really occur as objects of the noun fact, which is deletable (as proposed by the Kiparskys) by the rule of FACT-DEL. Finally, those items which allow both factive and non-factive objects are marked [+/-FACT], [+/-S] -- e.g., listed by the Kiparskys, anticipate, acknowledge, suspect, report, remember, emphasize, announce, admit, deduce. But there is no need, as they propose, to list these each as two different verbs (though not, they agree, unrelated),

since we can redundantly specify that [+FACT] → [-S], and [+S] → [-FACT]. Under the convention of obligatory specification in our lexicon, and these redundancy rules, only the permitted clusters of features will emerge.

The remaining problem is to find a diagnostic for non-factivity. Those predicates which should be marked [+/-FACT] are easily diagnosed simply by testing whether or not they allow "the fact that S" as subject (or object, as appropriate). Those which should be marked [-FACT] are also easily diagnosed, by the converse of the test for factivity. But how does one determine that a clausal object of a verb which also allows "the fact that S" is not an instance of deleted "the fact"? That is, given (57),

- (57) (a) He reported the fact that she had committed the crime.
 (b) He reported that she had committed the crime.

how does one determine that report is [+/-FACT, +/-S] rather than simply [+/-FACT], [-S]? The Kiparskys point to a subtle semantic contrast between the factive and non-factive interpretations of sentences like (57.b). They claim that factive gerundives derive only from deep structure "fact that", and infinitivals only from deep structure non-factives, resulting in the contrasting interpretations of (57.b):

- (57') (b) FACTIVE: He reported her having committed the crime.
 NonFACTIVE: He reported her to have committed the crime.

The gerundive is said to imply that the report was true in the speaker's mind, while the infinitival is said to leave open the possibility that the report was false, or at least non-substantiated. We find this distinction over-subtle, and believe we can read either sentence either way; but in any case it is impossible to perceive a corresponding distinction with other verbs claimed to be of the same class:

- (58) (a) He acknowledged the fact that she had committed the crime.
 (b) He acknowledged that she had committed the crime.
 (b') FACTIVE: He acknowledged her having committed the crime.
 NonFACTIVE: He acknowledged her to have committed the crime.

Testing the same distinction with anticipate, suspect, remember, emphasize, announce, admit, deduce suggests that the distinction is, at best, transitory. There are other contrasts between otherwise identical factive and non-factive objects; these are viable, but they cannot be hinged on the gerundive/infinitival contrast. Thus the Kiparskys' example (59):

- (59) (a) I explained the suspect's inching doorward.
 (b) I explained that the suspect inched doorward.

where (59.a) is derived from "I explained the fact that the suspect inched doorward", requires distinct meanings of explain: "to give reasons for" in (a) and "say that S to explain X" in (b). But since explain does not allow infinitival reduction in the non-factive instance (b), this example in no way supports the contrast claimed for examples like (57). It shows only that explain requires two distinct lexical entries, which happen in this instance to correlate with [+/-FACT], but that correlation does not appear to exist in general for those verbs that take both factive and non-factive objects.

A diagnostic which works for most of the factivity-indifferent verbs cited by the Kiparskys is reduction of sentential objects to stative-infinitival form, which is consistently disallowed by factives:

- | | | | | |
|------|---------------|--|---|------------------------------|
| (60) | { | (a) anticipated ?
(b) acknowledged
(c) suspected
(d) reported
(e) remembered
(f) emphasized ?
(g) announced (?)
(h) deduced | } | Bacon to be the real author. |
| | The professor | | | |

There are dialect differences about the viability of examples (a,f,g). As noted above, it is not universally true that non-factive predicates are compatible with this structure (e.g. charge, intimate), but perhaps all the factivity-indifferent ones are. In the present analysis, at any rate, it has been assumed that predicates are factive or non-factive in accord with the test of whether they allow "the fact that S"; and if they allow it, and also allow stative-infinitival reduction, they are marked as factivity-indifferent (i.e. [+/-FACT, +/-S] with obligatory specification of these such that if one feature is plus, the other is minus).

3. The Abstract Instrumental

One fringe benefit of the Kiparskys' analysis of factive/non-factive nominalizations is that a slightly messy aspect of nominalization within the Case Grammar frame of reference is cleaned up. At one point in the development of this grammar it was assumed, almost by default, that at least two distinct underlying cases must be allowed to dominate nominalizations, for sentences like (61):

- (61) (a) That he broke out of jail proves that he
was guilty.
(b) Her leaving early suggests that she was
bored.

Fillmore suggested that the subject nominalization of these sentences should be dominated in the deep structure by the Instrumental Case (or conceivably some case like "Means" that does not now appear in the grammar). The problem with that suggestion was that there was then no way whatever to limit the range of cases under which the feature [+/-S] could appear, though it was clear that we did not want sentential objects under Datives, for example. But if all sentences of the type (61) involve only factive nominalizations (in the subject), as appears to be the case, then Fillmore's suggestion can be adopted, but not with Instrumental case directly dominating the nominalization: rather it dominates a factive of the structure specified in (4.a), since clearly the sentences (61) are reductions of (61'):

- (61') (a) The fact that he broke out of jail proves
that he was guilty.
(b) The fact of her leaving early suggests that
she was bored.

B. Sentential/NonSentential

The noun fact is itself a non-factive predicate. If any predicate is [-FACT], it may or may not take a sentential NP in its case frame. It must be marked [+S] if its only possible realization of the case NEUT is sentential, or [-S], if it cannot take a sentential realization of NEUT. If it takes either, then it is marked [+/-S] and specified one way or the other under the convention of obligatory specification.

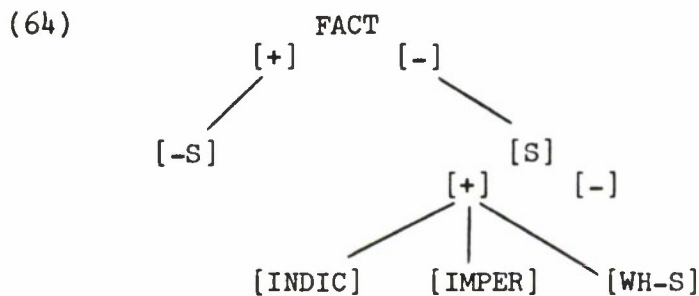
If a predicate allows a sentential realization of NEUT, it must still be marked for the kind of sentence permitted or required. Predicates which are constrained to indicative sentences are marked [-IMPER], [-WH-S]; those which are constrained to imperative sentences are marked [-INDIC], [-WH-S]; and those which are constrained to interrogatives are marked [-IMPER], [-INDIC]. These features are hierarchically related to the feature [+S] such that there is a lexical redundancy rule (62):

- (62) [+IMPER]
 [+INDIC] → [+S]
 [+WH-S]

The kinds of constraints that are provided by these features are illustrated in (63):

- (63) (a) They demanded that she leave.
 (b) *They demanded that she left.
 (c) *They demanded what she was doing.
 (d) They expected that she would leave.
 (e) *They expected that she leave.
 (f) *They expected who arrived late.
 (g) They knew that she left.
 (h) *They knew that she leave.
 (i) They knew who left.
 (j) They asked that she leave.
 (k) They asked who left.
 (l) *They asked that she left.
 (m) They insisted that she leave.
 (n) They insisted that she left.
 (o) *They insisted who left.

The features [FACT], [S], [INDIC], [IMPER], and [WH-S] are strict subcategorical features in the hierarchy (64), with the definitions (65):



- (65) (a) [FACT] = [____NEUT[NP^{the fact}NEUT[NP[S]]]]
 (b) [S] = [____NEUT[NP[S]]]

(c) [INDIC] = [____NEUT[NP[S[-SJC]]]]

where -SJC means that the predicate of that S does not contain the morpheme SJC ("subjunctive")

(d) [IMPER] = [____NEUT[NP[S[+SJC]]]]

where +SJC means that the predicate of that S contains the morpheme SJC

(e) [WH-S] = [____NEUT[NP[S[WH]]]]

where WH means that the S contains the feature [+WH]

A predicate which allows only a non-sentential NP as realization of the case NEUT, and does not allow the noun fact with its potential complementation, would be marked [-FACT][-S] in the lexicon. No provision is made here for those predicates that allow only cognate objects other than sentential ones, like dream:

- (66) He dreamed that he had solved the problem.
He dreamed a pleasant dream.

C. Emotive/NonEmotive

1. The Sources of Complementizers
2. Classes of Emotive and NonEmotive Predicates

1. The Sources of Complementizers

Rosenbaum (1967a) proposed that that, for-to, and POSS-ing were essentially idiosyncratic features on the heads of sentential complements. It is still hard to find satisfactory generalizations to account for the gerundive complements, but at least that and for appear to be redundant on semantic and/or configurational facts. The item that can be inserted by an extremely general rule, given the conditions that there is an embedded sentence dominated by NP and that subject-verb agreement has applied; it is subsequently deletable by an optional rule which applies to all such structures provided that they are not subjects, and are non-factive. The item for appears to depend, as claimed by the Kiparskys, on a class of head items which have the feature [+EMOT]. As is demonstrated in Section III.D of this paper, the independent insertion of for in the presence of the feature [+EMOT] has numerous syntactic consequences in conjunction with several other processes which all result in the formation of infinitivals.

We therefore reject, along with the Kiparskys, the spurious introduction of for, as done by both Lees (1960) and Rosenbaum (1967a), in the derivation of infinitival nominalizations. Instead we insert for in the presence of the feature [+EMOT] on the head item. This label "emotive" refers to "all predicates which express the subjective value of a proposition rather than knowledge about it or its truth value" (Kiparsky, 1968).

2. Classes of Emotive and NonEmotive Predicates

Depending on the case-frame of the predicate, a sentence dominated by NEUT may undergo either subjectivalization or objectivalization in the early rules of the cycle. These lists are from Kiparsky (1968).

[+EMOT] [+FACT]
subjectivalization

important	fascinate
crazy	nauseate
odd	exhilarate
relevant	defy comment
instructive	surpass belief
sad	a tragedy
suffice	no laughing matter
bother	
alarm	

The Kiparskys list three factive predicates which require objectivalization of the sentence under NEUT, but these are ungrammatical with for-to constructions in all dialects we have checked. Their examples are regret, resent, and deplore. We find the examples (67) ungrammatical, but evidently the Kiparskys do not:

- (67) (a) *We regretted for her to do it.
 (b) *We resented for her to do it.
 (c) *We deplored for her to do it.

For us there appear to be no [+FACT], [+EMOT] examples of verbs with which the NEUT would undergo objectivalization -- i.e. there are no sentences of the type (67) with factive predicates. The one apparent counter-example has been analyzed correctly by Lees, Rosenbaum and others as containing a preposition with the verb which deletes the for-complementizer, and it is non-factive in any case:

- (68) (a) We hoped for them to do it.
 (b) We hoped for a solution to the problem.
 (c) *We hoped for the fact that they would do it.

In contrast with the [+EMOT], [+FACT] class of predicates with subjectivalization, there is a non-factive class; there is a corresponding class with objectivalization:

[+EMOT] [-FACT]
subjectivalization

improbable
 unlikely
 nonsense
 a pipedream

[+FUT]
 urgent
 vital

[+EMOT] [-FACT]
objectivalization

[+FUT]
 intend
 prefer
 reluctant
 anxious
 willing
 eager

The feature [+FUT] is a deep structure constraint discussed in Section G of this paper. It requires that the tense of the predicate of the embedded sentence refer to a time posterior to that of the matrix predicate.

To show that the feature [EMOT] is on a parameter orthogonal to that of the feature [FACT], the Kiparskys list [-EMOT] examples of each type:

[-EMOT] [+FACT]
subjectivalization

well-known
 clear
 (self)-evident
 goes without saying

[-EMOT] [-FACT]
subjectivalization

probable
 likely
 turn out
 seem

[+FUT]

imminent
 in the works

[-EMOT] [+FACT]
objectivalization

be aware of
 bear in mind
 make clear
 forget
 take into account

[-EMOT] [-FACT]
objectivalization

[+FUT]
 predict
 anticipate
 foresee

[+/-FUT]

say
 suppose
 conclude

D. Infinitivalization

1. Conditions for TO-REPLACE-AUX
2. Illustration of 1.a: Derivation of Infinitivals with [+EMOT] Predicates
3. The fact -- it?
4. Conditions for EQUI-NP-DEL
5. Illustration of 1.b: Derivation of Infinitivals with EQUI-NP-DEL
6. Conditions for Subject Raising
7. Illustration of 1.c: Derivation of Infinitivals with Subject Raising

1. Conditions for TO-REPLACE-AUX

Following the Kiparskys' view of the matter (1968), with minor modifications, the infinitive is taken to be simply the form of a verb that has not undergone agreement with a subject, always marked by to unless deleted by the exception feature [+TO-DEL]. The list of [+TO-DEL] verbs includes the verbs of sense perception see, hear, feel (but not taste, smell), and such verbs as help, make, have, let. The conditions under which a verb does not undergo agreement with a subject are the following:

- a. When the subject is marked with an oblique (surface) case, as when it is in construction with a preposition for inserted with the [+EMOT] verbs.
- b. When the subject is erased from the clause of the verb, e.g. by EQUI-NP-DEL, where the erasing node will be either a deep structure dative, or it will be a deep structure agent in the absence of a dative.
- c. When the subject is raised from its own clause into the next higher S; it may be raised to object of the next higher predicate by the regular objectivalization rule if it is marked [+RAIS-OBJ], or it may be raised to subject of the next higher predicate by the regular subjectivalization rule if it is marked [+RAIS-SUBJ].

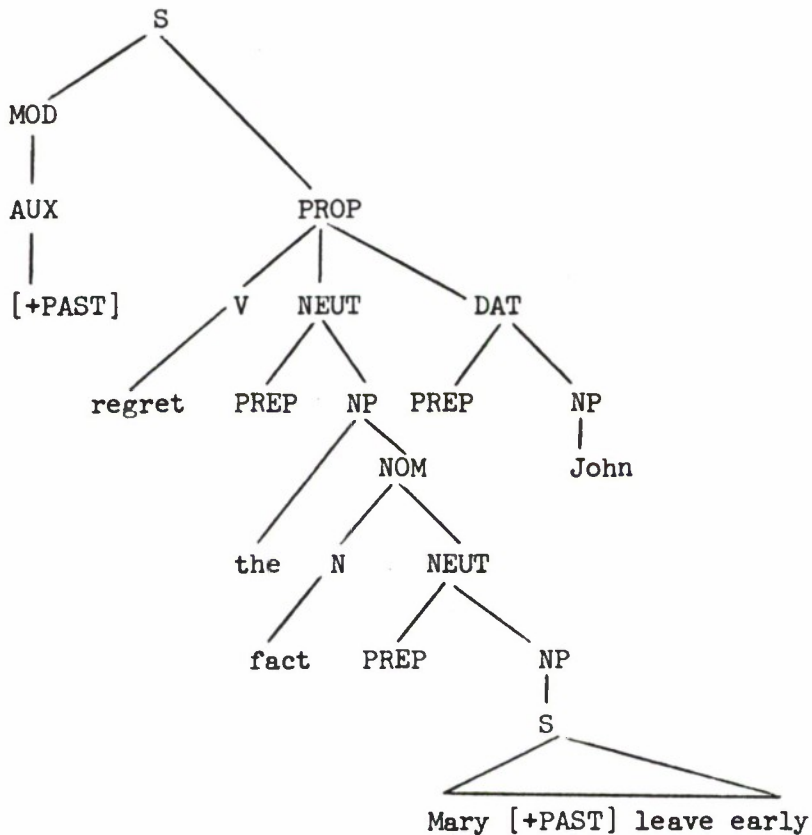
Given any instance, then, of a verb that has not undergone agreement with a subject, for any of these reasons, the rule of TO-REPLACE-AUX applies to insert the form to in the position of the Auxiliary: more precisely, to replaces tense and modal, retaining Perfect and/or Progressive and inserting Perfect in case the tense was Past:

- (69) (a) He expected -- She would have done it.
 He expected her to have done it.
- (b) He supposed -- She did it.
 He supposed her to have done it.
- (c) He ordered her -- She SJC do it.
 He ordered her to do it.
- (d) He believed -- She is working on it.
 He believed her to be working on it.

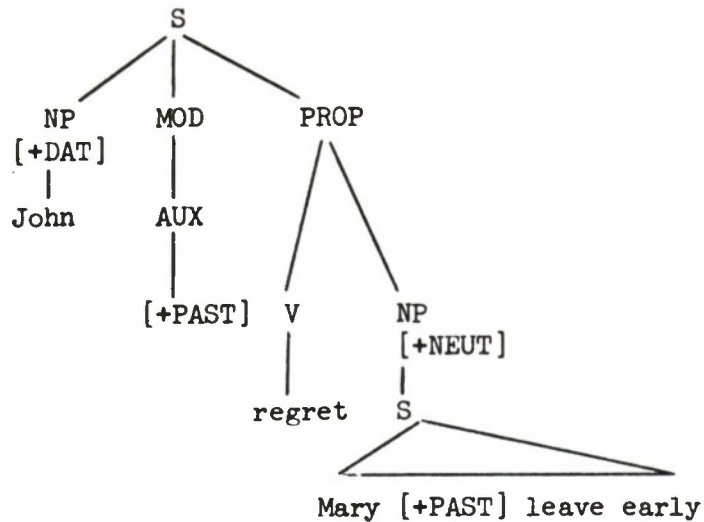
2. Illustration of 1.a: Derivation of Infinitivals with [+EMOT] Predicates

The derivation of infinitival nominalizations with [+EMOT] predicates proceeds roughly along the following lines: given a structure like (70.a) with a factive predicate, the optional rule of FACT-DEL yields (70.b), after the usual rules of objectivalization and subjectivalization have been applied:

(70) (a)



(b)



It might be noted in passing that if only the most general transformations had operated on the structure (70.a), the output would be (70.c); and if the optional GERUNDIVE transformation had been applied, the output would be (70.d), with the preposition of being retained as the marker of the deep structure NEUT.

- (70) (c) John regretted the fact that Mary left early.
- (70) (d) John regretted the fact of Mary's having left early.

If FACT-DEL has been applied to derive (70.b), that structure is then subject to THAT-INSERT, yielding (70.e):

- (70) (e) John regretted that Mary left early.

Since FACT-DEL follows GERUNDIVE, the output could also be (70.f):

- (70) (f) John regretted Mary's having left early.

In those dialects like the Kiparskys' in which regret is a [+EMOT] verb that allows objectivalization, the rule of FOR-INSERT applies to the structure (70.b), of which the output is (70.g):

- (70) (g) John regretted -- for -- Mary PAST leave early

This is subject to obligatory TO-REPLACE-AUX, with the output (70.h):

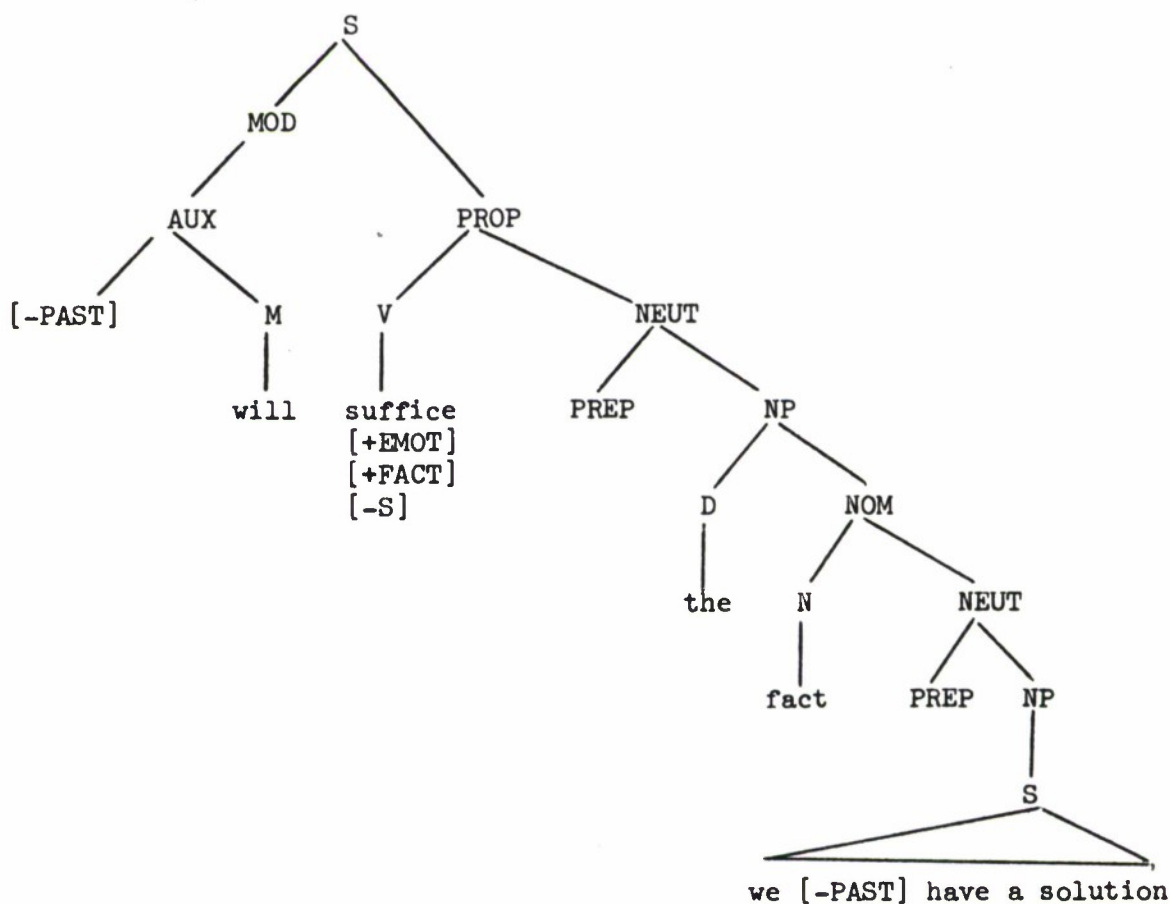
- (70) (h) John regretted for Mary to leave early.

Since (70.h) is ungrammatical in the dialects we have had access to (see discussion in Section III.C.2 above), the generalization about for being dependent upon [+EMOT] predicates is immediately suspect. One almost wonders if the generalization would have been

noticed at all by speakers of a dialect for which regret, resent, and deplore, which are obviously emotive in semantic content, are ungrammatical in constructions like (70.h). But the generalization is valid for such a wide range of examples (Section III.C.2) that these three items must be marked simply as exceptions: i.e. they are semantically [Emotive] but syntactically [-EMOT].

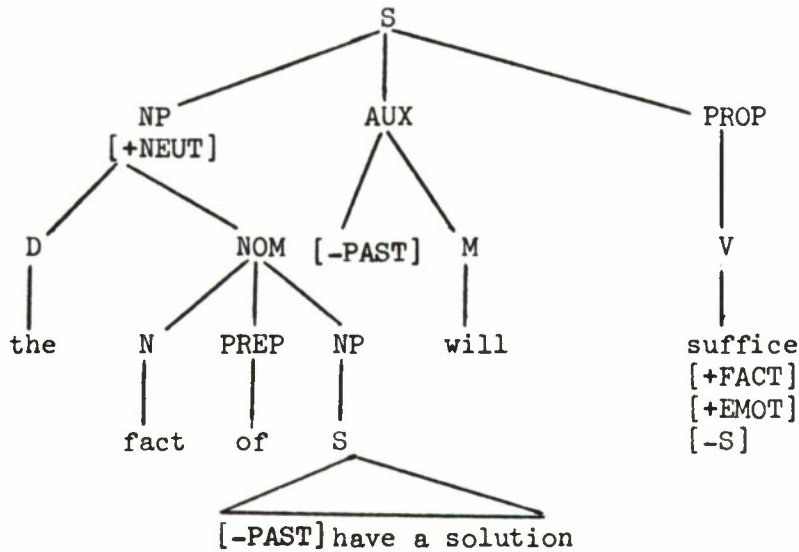
Illustrating further, this time with an example that is not dialectally tainted, consider (71):

(71) (a)



After the usual early rules have been applied, (71.a) has the structure (71.b):

(71) (b)



(71.b) is the structure underlying (71.c) to which PREP-DEL and THAT-INSERT have been applied:

(71) (c) The fact that we have a solution will suffice.

If, instead, the optional rule of FACT-DEL is applied, and then PREP-DEL and THAT-INSERT, the sentence is (71.d):

(71) (d) That we have a solution will suffice.

But if FACT-DEL is applied, and then the rule of FOR-INSERT is applied, followed by the then obligatory TO-REPLACE-AUX, the sentence is (71.e):

(71) (e) For us to have a solution will suffice.

EXTRAPOSITION can optionally be applied either to (71.d) or (71.e):

- (71) (f) It will suffice that we have a solution.
- (g) It will suffice for us to have a solution.

The mention of extraposition brings us to a proposal of the Kiparskys' which we reject, namely the source of it in (71.f,g).

3. The fact → it?

Consider the sentence (70.c), John regretted the fact that Mary left early. The Kiparskys claim that the fact may be pronominalized as it, thus deriving the sentence (70.c'):

(70) (c') John regretted it that Mary left early.

The sentence is certainly grammatical. But the Kiparskys' claim that it derives here from pronominalization of the fact is dubious in the extreme, for the following reasons:

(a) Definite pronominalization cannot be so construed as to end up with a definite pro-form followed by a modifier/complement/sentential object of any kind. Only the "whole NP", a notion that is not totally clear (see PRO), is subject to definite pronominalization. This fact explains, e.g., the ungrammaticality of (72):

(72) *The belief that the world was round replaced it that the world was flat.

(b) Even if there were no general fact such as (a), derivation of it by pronominalization of the fact would run into grave difficulty in the face of the grammaticality of (70.c) when pronominalized as (70.c'), but the ungrammaticality of (70.d) if a similar pronominalization is attempted to yield (70.d'):

(70) (d') *John regretted it of Mary's having left early.

(c) The assumption of the Kiparskys that there really is a head noun in sentences like (73.b,d) but not in sentences like (73.a,c),

(73) (a) I take it that you all know the answer.

(b) I resent it that you all know the answer.

(c) I would hate it for anyone to reveal the secret.

(d) I would resent it for anyone to reveal the secret.

would be greatly strengthened if Ross's Complex NP Constraint (see REL) held for (b) and (d), which are putative pronominalizations of the fact, but not for (a) and (c), which are assumed to come from "vacuous extraposition from object" (Rosenbaum (1967a), accepted by Kiparsky (1968), with the qualification "perhaps"). But in fact relativization on answer and secret is equally good in either member of the pairs:

(73') (a/b) This is the answer which I take/resent
it that you all know.

(c/d) This is the secret which I would hate/resent
it for anyone to know.

That the Complex NP Constraint should hold in these examples (not cited by the Kiparskys) follows from their claim that the ungrammaticality of (73.e,f), which are cited by them, is accounted for by the fact that the Complex NP Constraint disallows relativization across a lexical head noun, namely the fact whether pronominalized or not:

- (73) (e) *This is the book which you reported it that
John plagiarized.
(f) *This is the book which you reported the fact
that John plagiarized.

But (73.e,f) prove nothing, since (73.g) is ungrammatical anyway:

- (73) (g) *You reported it that John plagiarized the book.

This entire argument may be with a straw man, since in the preliminary version (the only one we have seen) there is a footnote #7 in which the Kiparskys point out that "It appears now [i.e. presumably at some time after completing the main body of the manuscript] that questioning and relativization are rules which follow fact-deletion." Their other observations about the blocking of movement transformations (the Complex NP Constraint) by virtue of the presence of the head noun fact (as in NEG-raising, which occurs only with non-factives, and RAIS-TO-SUBJ, which also occurs only with non-factives) may be correct; they do not depend on pronominalization.

Thus while there is no doubt that the Kiparskys' observation that the surface form it-that-S is generally acceptable with factive predicates and unacceptable with non-factive predicates is a correct observation, and while it is appealing to explain this on the basis of pronominalization of the fact, the explanation is unsatisfactory. In this analysis, then, the fact is treated as deletable by the rule FACT-DEL; once deleted, then vacuous extraposition can apply:

- (74) (a) I hate it that she dresses so conservatively.
[Factive, Obligatory extraposition from object]
(b) I regret it that she dresses so conservatively.
[Factive, Optional extraposition from object]

There is a redundancy relation between extraposition from object and factivity. The rule for such extraposition can be framed only given a storable environment, and that environment is storable only by mention of the feature [+FACT] on the governing predicate. But there are indubitably factive predicates like grasp which do not permit extraposition from object (and must be marked with an exception feature):

- (75) (a) He grasped (the fact) that the project was almost over.
 (b) *He grasped it that the project was almost over.

There are factive predicates like hate which require extraposition (so that the rule is not always optional):

- (76) (a) He hates it that the project is almost over.
 (b) *He hates that the project is almost over.

and there are the great majority of factive predicates with which extraposition is optional:

- (77) (a) He regrets that the project is almost over.
 He regrets it that the project is almost over.

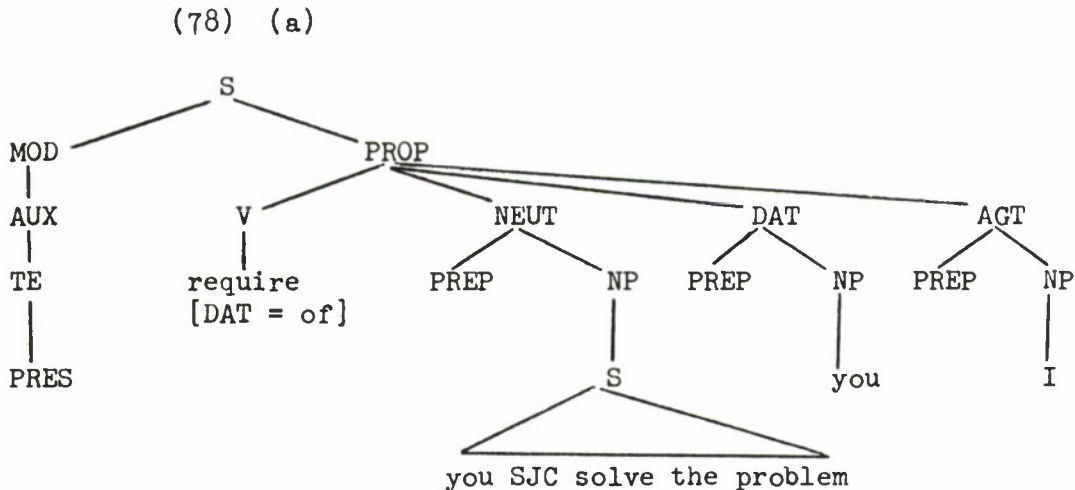
4. Conditions for EQUI-NP-DEL

In outlining the derivation (71) and (72) we were illustrating the operation of the first of three conditions under which a verb does not undergo agreement with a subject, namely when for is inserted under government by the feature [+EMOT], thereby assigning an oblique surface case (whether actually labeled accusative, or blocked from participating in subject-verb agreement by some other device: see the analysis of subject-verb agreement and pronoun form in PRO) which cannot participate in subject-verb agreement rules, in turn forcing the verb into the infinitive form by the rule TO-REPLACE-AUX.

The second condition under which a verb does not undergo agreement with a subject is when the subject has been erased by some coreferential node in the matrix. There are two classes of such coreferential nodes: the transformation of EQUI-NP-DEL must inspect a structure and determine whether the subject of the embedded sentence is identical with a dative, or if there is no dative then with an agent in the matrix sentence. If there is such a coreferential node, the subject of the embedded sentence is erased.

5. Illustration of 1.b: Derivation of Infinitivals with
EQUI-NP-DEL

The first of the two classes of coreferential nodes to which EQUI-NP-DEL applies, erasing the subject node of the sentential object, is a dative node governed by the same head item as the one which governs the sentential object, as in (78.a):



The position of the dative after the object is its normal position:

- (78) (b) I require the answer of you.
I gave the book to you.

Its position before the object in the clausal nominalization (78.a) is presumably the result of a late reordering rule having to do with the length of the constituents, which is supported by the order of elements after extraposition:

- (78) (c) I require of you that you solve the problem.
I require it of you that you solve the problem.

Recall now that the objectivalization rules of this grammar make the realization of the NEUT case into the object unless the verb is marked for objectivalization of a different case. Thus a sentence like He aimed the gun at John is an instance of objectivalization of the instrumental case, and He filled the pool with water is an instance of objectivalization of the locative case. Ordinary datives, in sentences like I gave him the money, are instances of optional objectivalization of the dative. Consider now the sentence (78.c): in it, we have objectivalized NEUT, not DAT. If we had chosen Passive Subject Placement in the early rules, the sentence would be (78.d):

- (78) (d) That you solve the problem is required
of you (by me).

Now, the sentence which illustrates EQUI-NP-DEL with the verb require is (78.e):

(78) (e) I require you to solve the problem.

But this sentence can only be derived from (78.a) if EQUI-NP-DEL has applied, and then objectivalization, since the passive is (78.f):

(78) (f) You are required to solve the problem (by me).

In short, then, the deep structure (78.a) underlies both (78.c) and (78.f), and EQUI-NP-DEL is optional for this verb.

The two derivations from (78.a) resulting in (78.c) and (78.e) are possible only if EQUI-NP-DEL is optional for this verb. Besides require, the verbs ask and request are of this type. More frequently the verbs which share the derivation from structures like (78.a) have obligatory EQUI-NP-DEL if the coreferential NP appears in an embedded imperative. Such verbs are force, allow, implore, permit, persuade, want, warn, encourage, instruct, and remind. If it were not obligatory, the starred examples of (78.g) would result:

(78) (g) I forced him to solve the problem.
 *I forced that he solve the problem.
 *I forced him that he solve the problem.
 *I forced to/of/for him that he solve the problem.

The condition of obligatory EQUI-NP-DEL depends on embedding of an imperative, since remind, persuade, warn, and instruct take both indicative and imperative embeddings = I reminded him_i that he_i was leaving at one = I reminded him to leave at one.

A different set of verbs which also shares the derivation of "I require you to solve the problem" is differentiated from the require class only by the fact that its case frame has Dative optionally, as require does, but if Dative is present then EQUI-NP-DEL is obligatory. Examples are command, order, advise, urge, and desire. The constraint just stated provides for the grammatical examples of (78.h) while blocking the ungrammatical one:

(78) (h) I commanded that he solve the problem. [No dative]
 I commanded him to solve the problem.
 *I commanded him that he solve the problem.

There is a small class which, like those above, takes embedded imperatives, but this class disallows EQUI-NP-DEL:

(78) (i) I insist/demand/suggest that you solve the problem.
 *I insist/demand/suggest you to solve the problem.

Since this class disallows EQUI-NP-DEL (if it allows Dative in its case-frame at all, as in "I insist that you solve the problem for me", which may better be analyzed as a Benefactive case), there is no infinitivalization of the preceding type. Demand, however, allows infinitivalization of the type discussed below, as in (79):

(79) I demand to see a doctor.

The second class of coreferential nodes to which EQUI-NP-DEL applies in the derivation of infinitival nominalizations is those in which there is no dative directly dominated by the governing item, but the relation of coreferentiality holds between the matrix and constituent agents. Agent-agent coreferentiality may be obligatory, as with a verb like learn, condescend, or try:

- (81) (a) He condescended to resign when he came of age.
 (b) He tried to do his homework.
 (c) He learned to analyze sentences.
 (d) *He condescended Mary to resign.
 (e) *He tried Bill to do his homework.
 (f) *He learned Mary to analyze sentences.

Or agent-agent coreferentiality may be optional as with expect, intend, want, forget, remember,...:

- (82) (a) He expected Mary to leave early.
 (b) He expected to leave early.
 (c) He intended for Mary to leave early.
 (d) He intended to leave early.
 (e) He wanted Mary to leave early.
 (f) He wanted to leave early.

A single rule of equi-NP-deletion handles both instances like (78.e) and (81)-(82), since the rule applies first to a coreferential dative, and if it finds none it applies to a coreferential agent. In either instance, the subject of the sentential object is erased, leaving the conditions necessary for infinitivalization with to, namely a verb without a subject to which the agreement rules would apply.

In addition to the two classes of equi-NP-deletion, there is an indefinite subject one which is deletable, but such deletion applies after such rules as for-insertion with [+EMOT] predicates and therefore provides no new basis for infinitivalization:

- (83) (a) For one to see her is for one to love her.
 (b) To see her is to love her.
- (c) In order for one to get good grades, it is necessary for one to study hard.
 (d) In order to get good grades, it is necessary to study hard.
- (e) John's proposal for (some)one to end the war in Viet Nam fell on deaf ears.
 (f) John's proposal to end the war in Viet Nam fell on deaf ears.

6. Conditions for Raising Subject to Subject, or Subject to Object

The third and final condition under which a verb may fail to have a subject remaining to provide for finite-verb agreement is when the subject of the sentential object is raised from its own clause into the next higher S. There are two main classes of raising:

- a. Raise the subject of the sentential object to subject of the matrix verb by the rule RAIS-SUBJ, governed by the feature [+RAIS-SUBJ]. This rule precedes the regular subjectivalization rule early in the cycle. From the structure underlying (84.a) it provides either for (84.b), where the entire neutral case is subjectivalized, or for (84.c) where the subject is raised.

- (84) (a) Is unlikely - He will solve the problem.
 (b) That he will solve the problem is unlikely.
 (c) He is unlikely to solve the problem.

This analysis eliminates the spurious IT-replacement rule of Rosenbaum, since (84.c) is generated directly from the underlying structure (84.a), not from the extraposition of (84.b')

- (84) (b') It is unlikely that he will solve the problem.

The rule of RAIS-SUBJ (read "raise subject to subject") is obligatory with verbs like begin, continue, start blocking (84.f):

- (84) (d) Began - He ran.
 (e) He began to run.
 (f) *That he ran began.

Sentences like (84.e), analyzed as Intransitive Verb Phrase Complementation by Rosenbaum (1967a), have a number of special properties which argue that they belong with the other RAIS-SUBJ verbs. The most striking such property is the occurrence of the expletive there as surface subject of the matrix verb in just those instances where it is possible as surface subject of the embedded verb:

- (84) (g) There began to be rumblings of discontent.
 (h) There were rumblings of discontent.

A counterargument to this analysis, pointed out by Perlmutter (1968b) is that with verbs that appear to require deep structure subject identity, like try, condescend, a verb begin must have a deep structure subject in order to be able to state the constraint that blocks (84.i):

- (84) (i) *I tried to begin to like jazz.

Perlmutter concludes that the verb begin must be permitted to occur in both configurations: i.e. with abstract subjects, as in (84.d,e), and with concrete subjects and complements, as in (84.j):

- (84) (j) He tried to begin to do his work.
 He began to do his work.

There are, however, difficulties in the notion "deep structure constraint" on subject identity. If (84.k) is well-formed, as we believe,

- (84) (k) John tries to be difficult to please.

it must have a deep structure in which John is object of please: i.e., To please John is difficult. The constraint that the subject of try and the subject of its complement must be identical cannot here be stated as a deep structure

constraint, only as a mid-derivation constraint, or conceivably as a surface structure filter of some kind. If (84.k) is judged not to be fully well-formed, then it appears that begin will indeed have to be permitted in both configurations, as Perlmutter claims. But then there will be unexplained derivations of Perlmutter's John began to read the book, which stands as an unsolved problem. The data on which the case rests is not entirely clear, since (84.i), rejected by Perlmutter, is acceptable to most speakers.

- b. Raise the subject of the sentential object to object of the matrix verb by the rule RAIS-OBJ (read "Raise subject to object") governed by the feature [+RAIS-OBJ]. This rule is optional for most verbs, but obligatory with a few like consider which disallow clausal nominalization:

- (85) (a) They expected that he would solve the problem.
 (b) They expected him to solve the problem.
 (c) He believes that she is intelligent.
 (d) He believes her to be intelligent.
 (e) *He considers that she is intelligent.
 (f) He considers her to be intelligent.

Like the rule RAIS-SUBJ, this one precedes the regular objectivalization rule early in the cycle, thus providing, in those instances where it is optional, for either the clausal or infinitival nominalization of (85).

Consider now the motivations for claiming that the subject of the embedded clause in (85.c) is raised to object of believe in (85.d). If the analysis did not raise the clausal subject she to object of believe, there would be no natural explanation of the fact that reflexivization is possible in this position:

- (85) (g) She believes herself to be intelligent.

Reflexivization is not normally possible down into a lower sentence:

- (85) (h) *She persuaded John to like herself.

This argument is not totally convincing, perhaps, in view of the fact that verbs like expect require EQUI-NP-DEL under these circumstances, so that one cannot argue for RAIS-OBJ on these grounds, with these verbs:

- (85) (i) *He expected himself to solve the problem.
 (j) He expected to solve the problem.

Nonetheless the RAIS-OBJ analysis, proposed by the Kiparskys (1968), serves well to bring together all instances of infinitivalization under a single principle of to-insertion and is adopted here. It is quite analogous to the RAIS-SUBJ principle illustrated in (84), which has been accepted in some form by virtually everyone who has examined sentences of this type. In the present analysis, it is extended to cover the so-called "second passive" of (86):

- (86) (a) One says -- He is intelligent.
 (b) *One says -- him -- to be intelligent. [RAIS-OBJ objectivalization]
 (c) He is said to be intelligent. [Passive subjectivalization]
 (d) One says -- He is intelligent
 (e) One says -- that he is intelligent. [Regular objectivalization]
 (f) That he is intelligent is said. [Passive subjectivalization]
 (g) It is said that he is intelligent. [Extraposition]

It is true that this derivation creates one ungrammatical intermediate stage for the verbs say, rumor, and repute; but all the others that are commonly analyzed as second passives have no ungrammatical intermediate stage under this derivation -- suppose, think, consider, believe,...--and there is no reason to set up a different derivation for the verbs say, rumor, and repute when all that is required is either to make the passive obligatory with subject-raising in these sentences, or to claim that some special surface constraint filters out (86.b), since these verbs are idiosyncratic in a number of ways.

There is one strong reason to maintain this derivation of the 2nd passive even in the face of the ungrammatical intermediate stage generated for say, rumor, and repute. The only alternative derivation is by some form of IT-replacement after extraposition:

- (86) (g) It is said that he is intelligent.
 (h) He is said to be intelligent.

But, although this avoids an ungrammatical stage in the 2nd Passive derivation with say, rumor, and repute, it provides another path for the comparable 2nd Passive derivation with think, believe, suppose, etc.:

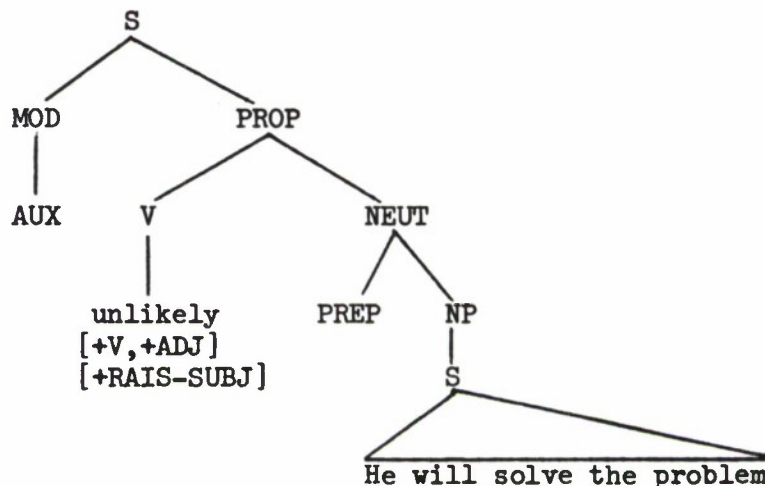
- (86) (i) It was thought that he was intelligent.
 (j) He was thought to be intelligent.

But (86.j) can also be derived through the regular passive from They thought him to be intelligent; since (86.j) shows no trace of structural ambiguity, we believe that the general RAIS--OBJ solution is correct and that IT-replacement should be rejected for 2nd Passive derivations.

7. Illustration of l.c: Derivation of Infinitivals with Subject Raisings

We consider now in detail one example of each type of subject raising. The deep structure of (84.a,b,c) is shown as (84'):

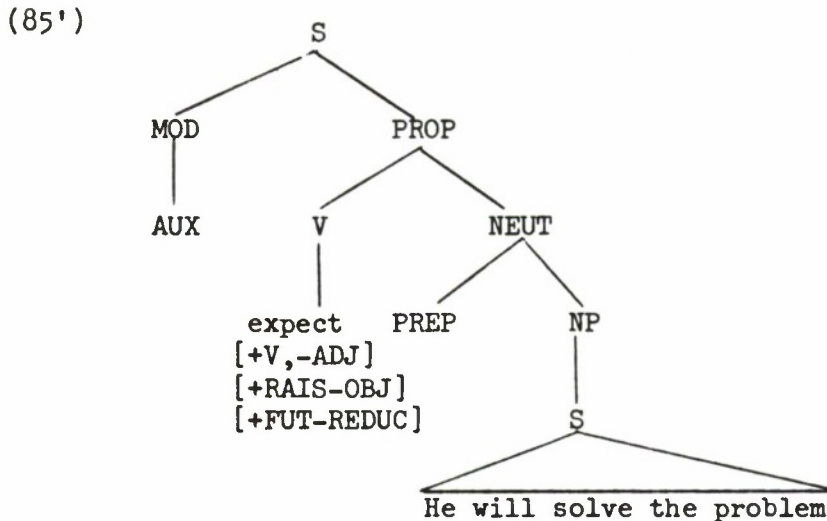
(84')



The general rule of BE-INSERTION inserts be in front of the adjectival predicate. The rule of RAIS-SUBJ, an alternative to the general subjectivalization rule, governed by the feature [+RAIS-SUBJ] on unlikely (which is marked plus/minus this feature in the lexicon, since the raising is optional), applies to move the subject of the sentential object out; this leaves the usual configuration for the rule TO-REPLACE-AUX, and the result is the structure underlying (84.c).

Alternatively, given a structure identical with (84') except for negative specification of the feature [RAIS-SUBJ], the entire sentential object will be subjectivalized, with the output being the structure underlying (84.b).

The deep structure of (85.a,b) is shown as (85')



The rule of RAIS-OBJ, an alternative to the general objectivalization rule, governed by the feature [+RAIS-OBJ] on expect (which is marked plus/minus this feature in the lexicon, since the raising is optional), applies to move the subject of the sentential object out, this time into object position where in (84') it was moved into subject position; this leaves the usual configuration for the rule TO-REPLACE-AUX, and the result is the structure underlying (85.b). Alternatively, given a structure identical with (85') except for negative specification of the feature [RAIS-OBJ], the entire sentential object will be objectivalized, with the output being the structure underlying (85.a).

E. Gerundive/NonGerundive

1. The Relation between Factivity and Gerundives
2. Gerundives after Prepositions
3. Generic Gerundives
4. Adverbial Gerundives
5. ing-of Gerundives

1. The Relation between Factivity and Gerundives

It is now possible to consider in detail the proposal of the Kiparskys that infinitival nominalizations derive from the sentential objects of non-factive predicates only, and that gerundive nominalizations derive from the sentential objects of factive predicates. The

question is, does there have to be a parameter [+/-GER] orthogonal to the [+/-FACT] parameter? If there are gerundive nominalizations that are factive, then the orthogonality of these parameters prevents us from accepting without reservation the claim of the Kiparskys (1968) that there is a redundancy relation between factivity and gerundive, and between non-factivity and infinitival. We have seen examples which violate the latter claim: The fact that she died so young was a tragedy → For her to have died so young was a tragedy; but such factive infinitivals are, it is true, restricted to the [+EMOT] constructions, so that there is indeed a correlation between the infinitivals from RAIS-SUBJ and RAIS-OBJ transformations and non-factivity.

The correlation between factivity and gerundives is also high. There are some verbs with which the gerundive is obligatory, as the form of any sentential object: e.g. avoid, stop,

- (87) (a) She avoided leaving early.
 (b) *She avoided to leave early.
- (c) She stopped typing at 2:00 a.m.
 (d) *She stopped to type at 2:00 a.m. [Ungrammatical in the intended sense; grammatical as Purpose ADV]

The Kiparskys do not deal with these, other than to eliminate them from the class of gerundives that they claim are restricted to factive predicates. It is clear that they are non-factive, since the fact of cannot be construed with them. But it throws no special light on them to assert merely that they "refer to actions or events" (Kiparsky, 1968). The point, rather, is that among all the predicates that accept gerundive nominalizations, only the factive predicates accept non-action gerundives (where non-action means that the embedded S contains a [+STAT] predicate, or that the AUX includes PAST, PERF, or PROG); and that, in turn, is equivalent to the assertion that only the noun fact is compatible with non-action gerundive nominalizations of sentential objects. That is, gerundive nominalization is restricted to actions except when the governing item is fact. In support of this view, consider (88) and (89):

- (88) (a) He hated to leave so early.
 (b) He hated leaving so early.
 (c) He hated having left so early.
 (d) He disliked understanding the problem.
- (89) (a) He continued to work hard.
 (b) He continued working hard.
 (c) *He continued having worked hard.
 (d) *He continued understanding the problem.

Both dislike (factive) and continue (non-factive) are compatible with either infinitival or gerundive nominalizations. But only dislike is compatible with the non-action gerundive (88.c), and the fact of can be construed with both (88.b) and (88.c), even if infelicitously because of the semantic incongruity of disliking the fact of anything.

The number of predicates which are compatible with gerundive nominalizations, outside of the [+FACT] class, is very small, and they should be marked as exceptions. Since all factives allow gerundive nominalizations, there must be a lexical redundancy rule of the form (90):

(90) [+FACT] [+/-GER]

where [+GER] is a rule feature governing gerundive nominalization of the sentential object of fact, with these predicates. Those predicates with which gerundive nominalization is obligatory must be marked [+/-GER], and all others are redundantly [-GER] by the rule (91):

(91) [-FACT] [-GER]

By the general lexical convention that marked features cannot be over-ridden by redundancy rules, the exceptional items marked [+/-GER], if they have been selected with positive specification, remain unchanged by (91). This is equivalent to a marking device:

(91') $\left[\begin{array}{l} \text{-FACT} \\ \text{U GER} \end{array} \right] \text{ [-GER]}$

2. Gerundives after Prepositions

The remaining instances of gerundive nominalizations are of two types: those which appear after prepositions, and generics. There is one more, largely problematic, type which we characterize as adverbial.

After prepositions, two distinguishable situations exist: (1) the preposition is a case-marking (transformationally-inserted) preposition; or (2) the preposition is a deep structure lexical item. In the former instance, the question of gerundivization is determined by the head (see CASE PLACE II.B), since the head may also govern a that-S embedding:

- (92) (a) He insisted on her leaving.
 (b) He insisted that she leave.

That is, insist is lexically marked [+/-GER], and if [-GER] is chosen, then (92.b) is the result, with on deleted late by a general rule deleting PREP before that-S. With other aberrant prepositions - e.g. upon in rely upon - it must be assumed that it is the verb which is governing gerundivization even though in this instance there is no that-S possibility:

- (93) (a) He relies upon her working late.
 (b) *He relies that she work late.

On the other hand, deep structure lexical prepositions allow only gerundives:

- (93) (c) He went out without her hearing him.
 (d) On considering the problem further, he decided to rewrite the paper.

In factive examples the question of the deletion of prepositions is irrelevant, since the rule of FACT-DEL determines the surface structure of sentences like (93.e,f), with the object-marking preposition of retained after nouns and deleted after verbs:

- (93) (e) He appreciated (the fact of) her working so hard.
 (f) His appreciation of (the fact of) her working so hard.

A corresponding non-factive example demonstrates clearly that either the fact of, or some preposition, must be present to protect gerundivization - otherwise the rules that govern infinitivalization will operate.

- (94) (a) He intended to leave early.
 (b) His intention of leaving early was thwarted by too much discussion.

3. Generic Gerundives

Generic gerundives are always subjectless in their surface form:

- (95) (a) Taming lions is dangerous.
 (b) *John's taming lions is dangerous.
 (c) Climbing mountains is fun.
 (d) *John's climbing mountains is fun.

They are paraphrases of for-to (i.e. emotive infinitival) constructions with deleted indefinite subjects:

- (95') (a) It is dangerous (for one) to tame lions.
 (b) It is fun (for one) to climb mountains.

The existence of this paraphrase relationship suggests that generic gerundives have an underlying indefinite/impersonal subject one which is obligatorily deleted in the derivation from for-to to gerundive. This assumption accounts for the fact that only animate subjects are normally "understood" in subjectless gerundives. Given a verb that will not accept an animate subject, subjectless gerundives cannot be formed:

- (96) (a) *Elapsing is dangerous.
 (b) Time's elapsing is dangerous.

4. Adverbial Gerundives

These are essentially a residue class. Consider first the "intransitive" types:

- (97) He began/ceased/continued/finished/quit/started working.

If the general principles of to-insertion proposed by the Kiparskys and elaborated in Section III.D. above have any validity - and they do seem to generalize a number of otherwise apparently idiosyncratic facts - then (97) cannot be said to involve the normal processes of nominalization at all, since EQUI-NP-DEL would remove the subject of the sentential object, and TO-REPLACE-AUX would be obligatory, yielding ungrammatical strings like (97'):

- (97') *He finished/quit to work.

(The other examples of (97) would be grammatical because they do indeed also operate under the normal rules of infinitivalization.) To claim that these -ing forms are adverbial, as they were historically, is difficult to justify on syntactic grounds. In the absence of any well-motivated analysis, we mark these "gerundive infinitives" by the feature [+GER], the same exception feature used for avoid and deny, and generate them accordingly, ordering the rules with the [+GER] rule preceding all the rules having to do with infinitivalization and thereby guaranteeing that such consequences as (97') cannot arise. For lack of a better explanation, we handle the gerundives in "transitive" constructions in the same way:

- (98) I saw/felt/perceived/watched...him moving.

All of these have a corresponding infinitival form generated in the normal way (except with [+TO-DEL]). It is at least possible that they should be generated as normal embedded progressives with [+TO-BE-DEL]:

- (99) (a) I saw him (to be) moving.
 (b) I felt him (to be) moving.

The obvious disadvantage of this proposal is that [TO-BE-DEL] normally applies only when the predicate is adjectival:

- (100) (a) I considered him (to be) intelligent.
 (b) I believed him (to be) intelligent.
 (c) *I considered him moving.
 (d) *I believed him moving.

The semantics of this proposal are also rather bad in some instances:

- (101) (a) I heard him talking.

This does not imply "I heard that he was talking"; rather it implies something much closer to "I heard him in the act of talking" or some similar adverbial paraphrase. Similar semantic observations can be made for most of the verbs in this class.

In short, we have no satisfactory analysis for the adverbial/progressive gerundives. There are various ad hoc ways to generate them, but none seem to shed any light on the way they are interpreted, semantically.

5. ing-of Gerundives

Constructions like The shooting of the lions, labeled "action gerundives" by Lees (1960), are considered to be lexically derived, like the proposal of a solution, his insistence on that answer, in this grammar. That is, shooting is lexically available as a noun, related derivationally to the verb shoot, and as a noun it may take an object (i.e. it has its own case frame). Such nouns cooccur less freely with a full range of determiners than do the proposal, insistence types, but such constructions as Every shooting of lions that we witnessed was unpleasant are so much better than similar attempts to attach quantifiers and relative clauses to true gerundives, as in *Every shooting lions that I witnessed, that no alternative to lexical derivation is appropriate, given prior decisions in this grammar about the kinds of relationships that lexical derivation may be supposed to characterize.

F. Non-Action Infinitival Tense Constraints

One set of the predicates discussed in III.D.6 permits RAIS-OBJ only if the verb of the sentential object is a non-action predicate (i.e. is marked [+STAT], or has PROG, PERF, or PAST in the AUX):

- (102) (a) I believe that he works very hard.
- (b) *I believe him to work very hard.
- (c) I believe that he is working very hard.
- (d) I believe him to be working very hard.
- (e) I believe that he has worked very hard.
- (f) I believe him to have worked very hard.

(102.f) is ambiguous between simple past tense, and perfective aspect:

- (103) (a) I believe that he worked hard yesterday.
- (b) I believe him to have worked hard yesterday.
- (c) I believe that he has worked hard all his life.
- (d) I believe him to have worked hard all his life.

The only constraint which differentiates these structures from the RAIS-OBJ structures with verbs like expect is this restriction to non-action predicates when they undergo infinitival reduction:

- (104) (a) I expect that he will work very hard.
- (b) I expect him to work very hard.
- (c) I expect that he will be working very hard.
- (d) I expect him to be working very hard.

What is needed, then, in order to bring these verbs like believe (a substantial list, including acknowledge, assume, imagine, judge, know, maintain, suppose, think... and others which Lees (1960) analyzed as permitting "2nd Passive" constructions, and which Kiparsky (1968) refers to as accepting "the accusative with infinitive" construction) into the basic pattern of infinitival derivation is some constraint which will subject them to the same rules that expect conforms to except that RAIS-OBJ can be permitted to occur with them only if the conditions for stativity are met in the embedded sentence. Their derivation is otherwise like that of "They expected him to solve the problem" in (85'). The problem is to find a way to say that with some verbs (like expect) the rule RAIS-OBJ is optional provided that the tense of the sentential object is future, and with other verbs (like believe) it is optional provided that the verb of the sentential object is non-action (in the sense defined above).

A device which succeeds in stating the correct generalization is for the rule of RAIS-OBJ to apply only if the matrix predicate is not marked [+STAT REDUC] or [+FUT-REDUC]. Thus a verb of the believe class is [+STAT-REDUC] and [+/-RAIS-OBJ]; if under the convention of obligatory specification, the positive value is chosen, the rule of RAIS-OBJ will apply because the verb is marked [+STAT-REDUC]. There is no constraint on the verb of the embedded sentence, but infinitival reduction will only occur if the predicate is a non-action one, since RAIS-OBJ operates only on non-action predicates if governed by a [+STAT-REDUC] verb. This is, however, an ad hoc condition on the rule, which suggests that some insight into the nature of the similarity between the believe class and the expect class has been missed in this analysis. If the matrix verb is marked [-STAT REDUC] the rule of RAIS-OBJ cannot apply. Similarly, a verb of the expect class is [+FUT-REDUC] in the lexicon, and [+/- RAIS-OBJ]. If the positive value is chosen, and the matrix verb is marked [+FUT-REDUC], the rule of RAIS-OBJ will apply; if the negative value is chosen, the rule of RAIS-OBJ cannot apply. The verbs believe and expect differ only in the exception features [STAT-REDUC] and [FUT-REDUC].

A small subclass of the [+STAT-REDUC] predicates permits only infinitival reduction, and only non-action complements:
e.g. consider:

- (105) (a) *I consider that he is intelligent.
(b) I consider him to be intelligent.

These are marked [+/-S] (i.e. they don't have to take a sentential object), but [+STAT-REDUC] and [+RAIS-OBJ], so that a sentential object is always infinitivally reduced.

As noted earlier, the verbs say, rumor, claim, and repute are like the believe class except that passivization is obligatory after RAIS-OBJ:

- (106) (a) Someone says that he is intelligent.
(b) *Someone says him to be intelligent.
(c) He is said to be intelligent.

G. Deep Structure Constraints

1. Tense/Aspect Constraints on the Sentential Object
 - a. Future
 - b. NonFuture
 - c. Stative
 - d. NonStative
2. Case Constraints between Matrix and Constituent
 - a. Agent Identity
 - b. Dative Identity

1. Tense/Aspect Constraints on the Sentential Object

Earlier in several places (III.C.2, III.D.6, III.F) mention has been made of the necessity to specify the tense of the sentential object, for some predicates. Since we have a parameter already having to do with the mood of the predicate in the sentential object (Imperative, Indicative, Interrogative), it must be shown that the present constraint in respect to tense is orthogonal to that one. Consider the verb insist:

- (107) (a) I insist that she take the medicine.
 (b) I insisted that she take the medicine.
 (c) I insist that she takes the medicine.
 (d) I insisted that she takes/took the medicine.
 (e) I insist that she will take the medicine.
 (f) I insisted that she would take the medicine.

(107.a,b) are imperative embeddings. (107.c-f) are all indicatives; the verb insist is factive in these instances and is compatible with any tense or modal: all factives are, since the head item fact is. We must consider, then, non-factive examples. Most of the predicates that the Kiparskys (1968) label with the feature [+FUT] in fact require embedded imperatives (Section III.C.2 above). We do not view these as containing a future auxiliary (should, according to the Kiparskys). But three items on their list are incompatible with imperatives: predict, anticipate, foresee. Others with the same property are expect, promise, stipulate, prophecy. They are incompatible with subjunctive, and therefore [-IMPER]; but among indicative possibilities, they are compatible only with future:

- (108) (a) *I predict that he go bankrupt.
 (b) *I predict that he went bankrupt.
 (c) *I predict that he goes bankrupt every day.
 (d) I predict that he will go bankrupt.
 (e) I predicted that he would go bankrupt.

These verbs, unlike the [+STAT-REDUC] non-action verbs above (III.F), which are compatible with action sentential objects unless they are infinitivally reduced, are compatible with future sentential objects only, regardless of whether they are infinitivally reducible. In order to take this distinction into account, then, two features are needed with respect to stativity (a strict subcategorial feature [+/-STAT], and a second feature [+/-STAT-REDUC] to provide for reduction); and two features are needed with respect to futurity, a strict subcategorial feature [+/-FUT], to provide for the correct selection, and [+/-FUT-REDUC] to provide for reduction.

There are, then, predicates like predict, anticipate, foresee, expect, promise, stipulate, and prophesy marked with the feature [+FUT], which is an abbreviation, in the form of the features [INDIC] and [IMPER] (65.c,d), requiring that the tense of the predicate in the sentence dominated by NEUT contain the auxiliary will (present or past, in accord with rules of tense sequence). Some of these are also marked [+/-RAIS-OBJ], and therefore permit infinitivalization--e.g. expect, for most dialects, and predict, foresee, and prophesy for some dialects. Promise is [+FUT], [+IDENT], [-RAIS-OBJ], as in (109):

- (109) (a) I promise that I will leave.
 (b) I promise to leave.
 (c) *I promise Mary to leave.
 (d) *I promise that Mary left.
 (e) I promise that Mary will leave.

It is not clear whether there are predicates that must be marked [-FUT]. Consider recollect, recall, remember:

- (110) (a) ?I recollect that she will finish the paper
 tomorrow.
 (b) I recollect that she finished the paper
 yesterday.
 (c) I recollect that she said she would finish
 the paper tomorrow.

The sense of (110.a) is that of (110.c), suggesting that perhaps (110.a) is a blend that should not be directly generated. There are, however, no syntactic consequences of the type associated with [+FUT] constraints (infinitival reduction), and the negative feature [-FUT] is therefore not marked in the lexicon.

The predicates with adverbial ("action") gerundives, as in (97), for which in any case we have no satisfactory analysis, appear to be constrained to tense identical with the matrix tense:

- (111) (a) He will continue -- He will work/be working
 He will continue working.
 (b) He continued -- He worked/was working
 He continued working

No provision is made for this fact in the present analysis.

The feature [+/-STAT] is redundant on the strict subcategorial feature [+/-[AGT]] (see LEX). It is included here because of its relation to the feature [STAT-REDUC], which constrains infinitival reduction to non-action predicates in the sentential objects of the believe class. Except for this syntactic consequence, stativity would be treated in this grammar like such features as [+/-LIQUID], a selectional feature that accounts for the unacceptability of (112):

- (112) (a) ? The water broke in two.
 (b) ? He chewed on the milk.

We would, then, generate (113) without the stativity feature:

- (113) (a) *He was believed to depart.
 (b) *I considered him to solve the problem.
 (c) *I thought him to run the race.
 (d) *He tried to know the answer.
 (e) *He refused to be certain of the analysis.

2. Case Constraints between Matrix and Constituent

One feature of this type that plays a role in nominalization is identity between the agents of the matrix and constituent sentences. The predicates of (114) require agent identity; those of (115) require agent non-identity.

- (114) (a) He tried to do it.
 (b) *He tried Mary to do it.
 (c) He began to do it.
 (d) *He began Mary to do it.
 (e) He continued to do it.
 (f) *He continued Mary to do it.
- (115) (a) He yelled for Mary to do it.
 (b) *He yelled to do it.
 (c) He advocated for Mary to do it.
 (d) *He advocated to do it.

The feature [+/-AG IDENT] marks this requirement of agent identity; and EQUI-NP-DEL applies at the appropriate point in the derivation to erase the coreferential agent of the constituent sentence.

A second feature, like [AG-IDENT] except that the matrix dative is required to be identical with the constituent agent, provides for examples like (116):

- (116) (a) I forced John to go to prison.
 (b) I commanded the sergeant to organize the troops.

This feature, [+/-DAT-IDENT], guarantees that sentences like (117) will not be generated:

- (117) (a) *I forced John that Mary leave.
 (b) *I persuaded Mary that Jane go to prison.

It is possible that such nonsentences can be blocked without this feature, since force requires EQUI-NP-DEL, a rule which would not apply to a string like (117.a). But since EQUI-NP-DEL is not a boundary-erasing rule, it is not obvious how (117.a) would be blocked merely by the failure of this rule to apply. What the feature [DAT-IDENT] does is guarantee identical dative and agent so that EQUI-NP-DEL will always apply in such cases. With sentences like (118), where [DAT-IDENT] is optional, the positive value of the feature provides for infinitival reduction, and the negative value for the clausal form:

- (118) (a) I warned Mary to leave.
 (b) I warned Mary that she must leave.
 (c) I warned Bill that Mary must leave.

Sentences like (119) are only apparent counterexamples to the deep structure identity conditions [AG-IDENT] and [DAT-IDENT] because they are derived (though the rule is not provided in this grammar) as optional variants of the "get-passive":

- (119) (a) I tried to be examined by the doctor.
 (I tried to get examined by the doctor.)
 (b) I forced Bill to be examined by the doctor.
 (I forced Bill to get examined by the doctor.)

H. Indirect Questions

In section III.B we set up a feature [+/-WH-S] for embedded interrogatives. It is necessary to distinguish, in respect to the diagnosis of this feature, between true embedded interrogatives and pseudo embedded interrogatives, the latter deriving from relative clauses on deletable head nouns. The following are true indirect questions:

- (120) I didn't { (a) know
(b) care (about)
(c) remember
(d) realize
(e) take into account } { who left early
what happened
where they went
when they arrived
why they did it
how they did it }

All such sentences may be paraphrased by inserting "the answer to the question" in the blank between the column of predicates and the column of questions in (120). The following, on the other hand, are pseudo embedded interrogatives:

- (121) I didn't { (a) like
(b) hate
(c) recognize
(d) suspect
(e) deny } { what happened
where they went
why they did it }

The pseudo embedded interrogatives of (121) appear to involve deletable head nouns (with appropriate morphophonemic changes) of the form shown in (121'):

- (121') I didn't { (a) like
(b) hate
(c) recognize
(d) suspect
(e) deny } { the thing that happened
the place to which they
went
the reason for which they
did it }

There are little-understood restrictions on the formation of pseudo interrogatives, such as the impossibility of *I didn't like who left early from I didn't like the person who left early, but it is clear that their interpretation is quite different from the interpretation of true embedded interrogatives, and only the latter may be derived as nominalizations.

The true indirect questions, but not the pseudo ones, are subject to infinitivalization under the same conditions as other nominalizations, namely whenever the subject of the embedded sentence is removed from the possibility of subject-verb agreement. The only condition that will remove it, since there is no possibility of RAIS-SUBJ or RAIS-OBJ or FOR-INSERT with such structures, is EQUI-NP-DEL:

- (122) (a) I don't know -- What will I do
 I don't know what I will do.
 I don't know what to do.
- (b) I didn't take into account -- How would I do it
 I didn't take into account how I would do it.
 I didn't take into account how to do it.

For all such infinitivalizations, the indirect question must be future in its auxiliary, a constraint which is handled exactly as with verbs like expect (Sections III.F, III.G.1). For reasons which remain mysterious, clauses with why disallow infinitival reduction: *I don't know why to do it.

I. Miscellaneous Exception Features

1. TO-DEL
2. TO-BE-DEL
3. EXTRA
4. RAIS-OBJ-TO-SUBJ
5. SUBJ-SUBJ-IDENT

1. TO-DEL

The analysis provided for infinitivalization in a wide range of cases (e.g. those with raising of subject to object, like expect; those with the dative erasing the embedded subject, like force; those with the matrix agent erasing the embedded agent, like try; those with raising of embedded subject to matrix subject, like likely) also provides for predicates like see, watch, observe, make, help, hear...except that an ungrammatical intermediate stage is generated:

- (123) (a) I saw -- He dug a hole in the ground.
 [Like expect]
 *I saw him to dig a hole in the ground. [by
 RAIS-OBJ, TO-INSERT]
 I saw him dig a hole in the ground. [by TO-DEL]
- (b) I made him -- He dug a hole in the ground.
 [Like force]
 *I made him to dig a hole in the ground. [by
 EQUI-NP-DEL, TO-INSERT]
 I made him dig a hole in the ground.
 [by TO-DEL]
- (c) I helped -- I dug a hole in the ground. [Like
try]
 I helped to dig a hole in the ground. [by
 EQUI-NP-DEL, TO-INSERT]
 I helped dig a hole in the ground. [by optional
 TO-DEL]

These are analyzed, then, as perfectly normal infinitival nominalizations with the single peculiarity of to-deletion (obligatory in most instances, optional at least with help).

2. TO-BE-DEL

"To be" is optionally deletable in infinitival nominalizations with verbs like consider, believe, think, and obligatory with the verb elect:

- (124) (a) I consider him (to be) intelligent.
 (b) They elected him president.

The predicates which allow or require this deletion must be marked with the exception feature [+TO-BE-DEL], since it is not deletable on any general or configurational basis:

- (125) (a) I want him to be president.
 (b) *I want him president.
 (c) I expect him to be intelligent.
 (d) *I expect him intelligent.

3. EXTRA

Extraposition, as discussed in Section III.D.3, is a dimension orthogonal to factivity. It is, nevertheless, a highly redundant feature and needs to be marked as an exception feature, either plus or minus, in only a small number of instances. All the factive predicates that have subjectivalization of the sentential object or instrumental allow extraposition optionally:

- (126) (a) It is significant/odd/tragic/exciting/
 irrelevant...that she can't solve the
 problem.
 (b) It doesn't matter/count/make sense/suffice/
 amuse me/annoy me/amaze me...that she
 can't solve the problem.

All the non-factive adjectival predicates with subjectivalization of the sentential object require extraposition:

- (127) (a) It is likely/sure/possible/true/false that
 she solved the problem.

All of the non-factive verbal predicates with subjectivalization of the sentential object require extraposition:

- (128) (a) *That she solved the problem seems/appears/
happens...
(b) It seems/appears/happens that she solved the
problem.

With all examples of the types (126-128), then, extraposition is predictable from other features. That is, extraposition from subject position is an ungoverned rule.

But extraposition from object position is governed by an unpredictable exception feature [+/-EXTRA]. The evidence that it is governed is cited above (II.B.5). This is a surprising fact, for which we have no general explanation. Somehow, extraposition from object is a dubious rule.

4. RAIS-OBJ-TO-SUBJ

Consider now the famous examples always cited in demonstration of the distinction between deep and surface structure:

- (129) (a) John is eager to please.
(b) John is eager -- John will please one.
(c) John is easy to please.
(d) One pleases John -- is easy.
(e) For one to please John is easy.
(f) It is easy to please John.

(129.a) is a straightforward instance of obligatory EQUI-NP-DEL, and deletion of the indefinite/impersonal object one. But nothing in the analysis so far will derive (129.c). We can derive John is certain to learn the secret, which depends on an early RAIS-SUBJ rule, as discussed in section III.D.6. But here we have an otherwise similar instance, except that it is the object of the embedded sentence which is raised to subject of the matrix sentence. (The same distinction between easy and certain would hold under any other analysis -- IT-Replacement (Rosenbaum), or a version of the present analysis in which (129.f) is taken as an intermediate stage between (e) and (c).) It appears, then, that a feature [+/-RAIS-OBJ-TO-SUBJ] must appear on adjectives like easy, difficult, hard..., governing the same early rule of raising to subject that is governed by [RAIS-SUBJ]. What is curious, however, is that in other instances where an NP is raised out of a lower sentence, infinitivalization is automatic because no subject remains to agree with the verb; in this instance, the subject remains, but since the

only predicates which have this feature also have the feature [+EMOT], infinitivalization takes place anyway, and provided that the subject is indefinite/impersonal and therefore deletable, the sentence (129.c) turns out, by a very abstract derivation of several steps, to have the same surface structure as (129.a):

- (130) (a) Easy -- One pleases John.
- (b) Easy -- for one to please John.
 [FOR-INSERT, TO-REPLACE-AUX]
- (c) John is easy -- for one to please
 [RAIS-OBJ-TO-SUBJ, BE-INSERT]
- (d) John is easy -- for to please.
 [ONE-DEL]
- (e) John is easy to please.
 [PREP-PREP-DEL]

IV. THE RULES OF NOMINALIZATION

- A. GER
- B. FACT-DEL
- C. FOR-INSERT
- D. EQUI-NP-DEL
- E. RAIS-OBJ
- F. RAIS-OBJ-TO-SUBJ
- G. RAIS-SUBJ
- H. TO-REPLACE-AUX
- I. TO-DEL
- J. TO-BE-DEL
- K. ONE-DEL
- L. THAT-INSERT
- M. EXTRA
- N. THAT-DEL

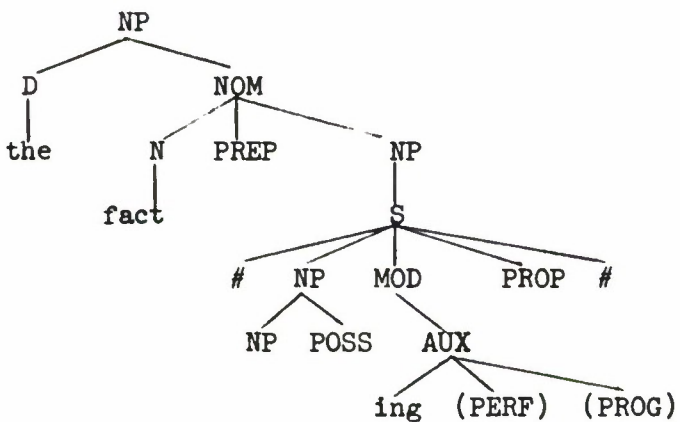
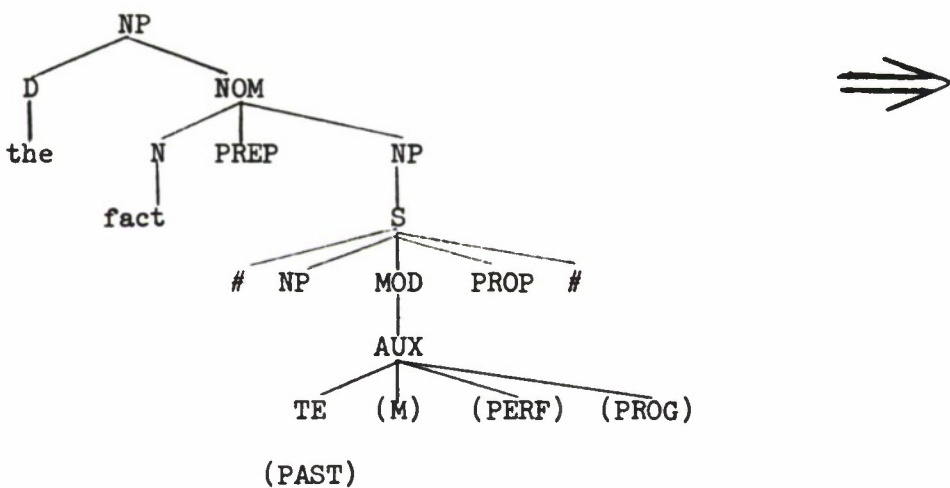
A. GER (Factive), GER (Non-factive)

Factive gerundivization applies first, and appropriate conditions exclude non-factives from participation in this rule. Non-factive gerundives are assumed either to be governed by a feature [+GER] or a preposition, or to be generic alternatives of for-to constructions (see Section III.E.3) generated by late optional rules. Only the factives and governed gerundives are provided for in the rules below. Adverbial gerundives (III.E.4) are treated as governed.

This rule is strictly ordered in respect to a number of subsequent rules: it must precede FACT-DEL because "the fact of" is part of

the environment essential to stating the permitted gerundization; it must precede all the rules of infinitivalization, since the "tense" category of the embedded sentence is replaced by to unless it has already been removed by gerundivization.

1. Schematic of GER (Factive)



2. The rule GER (factive)

S.I. | X NP[the fact PREP NP[S[#] NP AUX[TE (M) (PERF) (PROG)]] X
 1 2 3 4 5 6 7

- S.C. (a) Attach [+GENITIVE] to 2
 (b) If 3 = PAST and 5 = \emptyset , attach PERF as left sister of 6
 (c) ing replace 3 + 4
 (d) [-EQUI-NP-DEL] replaced by [+EQUI-NP-DEL]

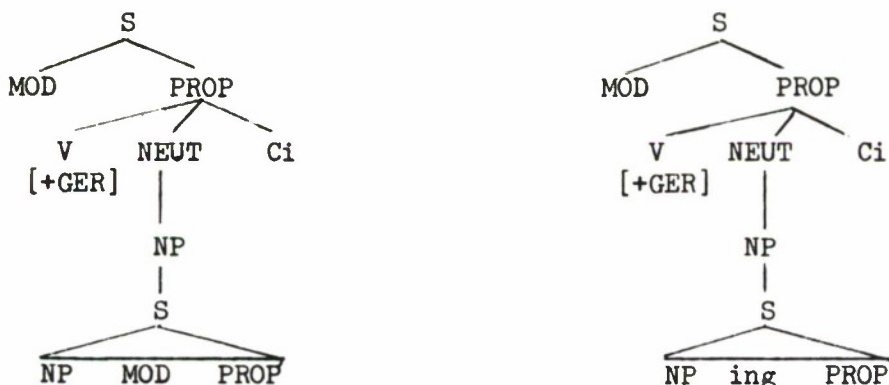
3. Notes on the rule: for discussion see Sections III.E.1, III.E.2.

4. Examples: see (88), (93).

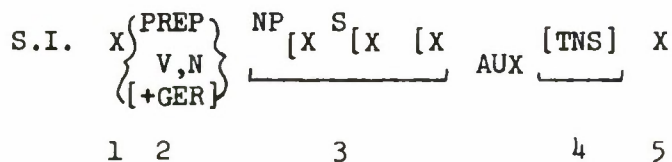
GER (Non-factive)

Since the factive gerundive rule depends on the presence of fact as the head item governing the actant which dominates the nominalization, structures to which the non-factive gerundive rule applies do not meet the structure index above, nor do the factive ones meet the structure index below, since it is a governed rule requiring the feature [+GER], or a preposition.

5. Schematic of GER (Non-factive)



6. The rule of GER (Non-factive)



- S.C. (a) ing replaces 4
 (b) [-EQUI-NP-DEL] replaced by [+EQUI-NP-DEL]

7. Notes on the rule: for discussion see Sections III.E.1, III.E.2, III.E.4.
8. Examples: see (87), (89), (94.b).

Problem. There is a major unresolved problem not discussed earlier nor handled in this rule, in connection with EQUI-NP-DEL in gerundive nominalizations. Consider the following examples:

- (131) (a) Bill imagined that he was leaving.
 (b) Bill imagined himself to be leaving.
 (c) Bill imagined leaving.
 (d) *Bill imagined to be leaving.

Suppose imagine is marked [+/-RAIS-OBJ], [-EQUI-NP-DEL], and [+/-GER]. It is, like consider, [+STAT-REDUC] also. Now, if [+GER] is chosen (131.c) is the output. If [-GER], then there is no way to block (131.d), since EQUI-NP-DEL will apply and then TO-REPLACE-AUX. If it is marked [-EQUI-NP-DEL], as is the case for verbs of the consider class, then (131.d) will not be generated, but neither will (131.c). Clearly within this grammar some important generalization has been missed, since we must enter imagine twice in the lexicon: once with [+/-RAIS-OBJ], [-EQUI-NP-DEL], and [+STAT-REDUC], like verbs of the consider class; and again with [+GER] and [+EQUI-NP-DEL], like avoid.

But the problem of EQUI-NP-DEL meets a much more difficult obstacle when it appears that we have no effective way to state EQUI-NP-DEL at all in gerundive nominalizations. Consider the following examples:

- (132) (a) I told Mary about seeing John.
 (b) I asked Mary about seeing John.

In (132.a) the embedded sentence is "I saw John." In (132.b) it is, in one reading, "Mary saw John." Probably (132.b) should be explicated in a way parallel to the explication we propose for (133):

- (133) (a) I asked him what to do.
 (b) I asked him to tell me what to do.
 (c) I told him what to do.

That is, we claim that the peculiarity in the EQUI-NP-DEL of (133.a) results from deletion of the underlined material of (133.b), which is completely regular as to EQUI-NP-DEL:

I asked him --
he tell me --
I do wh-something

But now, in order to provide for EQUI-NP-DEL, we are introducing deletions of strings that are difficult or impossible to recover. Consider a more extreme case of the same sort:

- (134) (a) Mary told me about the plans for shooting
 himself that John had been laying all summer.
 (b) *Mary told me about the plans for shooting
 herself that John had been laying all summer.

Why is (134.b) bad? Because we only discover in the final relative clause that the subject of "plan to shoot herself" must be John, not Mary. But how can EQUI-NP-DEL come about correctly in (134.a) when there is no noun present to be deleted? It is only inferred from the relative clause that the agent of plan would be "John," if it were present. If it were present, it would correctly delete the subject of "John shoot himself," but there would be nothing to delete the John of "John's plan," unless there is some sort of totally mysterious rule that permits deletion upward from a relative clause.

A related problem in stating EQUI-NP-DEL in gerundive nominalizations resides in the general fact that nouns have subjects (i.e. AGT or DAT in deep structure) which often have to be inferred at two or three removes, and yet which can bring about EQUI-NP-DEL of noun subjects of clauses embedded as cases under the head noun. Thus:

- (135) (a) He has no objections to studying French.
 (b) He spoke at some length about the various
 objections to studying French that had prevented
 him from doing it in high school

Clearly, even if the POSS of "objections" in (135.a) is relatively accessible as the matrix subject, it is thoroughly buried in (135.b); yet in both cases the deleted subject of the gerundive may be "he" under one reading. It is possible, however, that such readings are wrong: it may be in both examples that the correct reading is either subjectless or perhaps one's (studying French). But the problem remains in examples like (136), where the indefinite subject, or

or subjectless, interpretations are hard to defend:

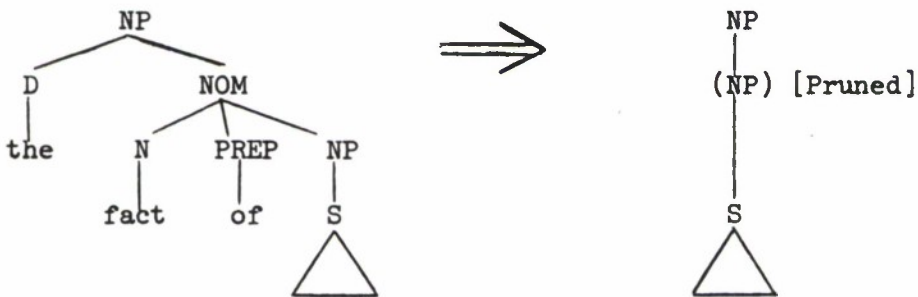
- (136) (a) The interest in visiting Las Vegas that Mary displayed...
- (b) The addiction to smoking pot that caused John's death...
- (c) The exhaustion from overindulging in sex that eventually ruined his eyesight...

In sum, we cannot yet state the conditions for EQUI-NP-DEL in gerundive nominalizations; we have included the regular instances ("He avoided leaving") in the regular EQUI-NP-DEL rule, along with the ones that produce infinitives, avoiding the problem of imagine by a form of double-entry book-keeping; and we suggest, in our discussion of the rule, a way to handle the almost-regular examples like "She has no objections to studying French"; but examples like (134) and (136) are beyond these rules.

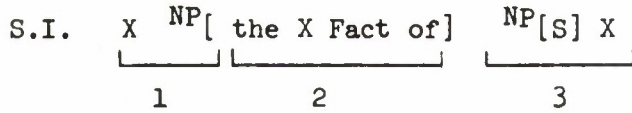
B. FACT-DEL

This rule deletes the noun fact, its determiners and any prepositioned modifiers (e.g. very in The very fact of his having crashed proves it), and the preposition of that marks its object. The rule must precede FOR-INSERT in order to guarantee that those predicates which are both factive and emotive can appear in either that-S or for-to-S constructions (e.g. It was a tragedy that he did that, It was a tragedy for him to do that); the latter possibility would be blocked if FOR-INSERT preceded this rule. It must precede EQUI-NP-DEL to guarantee getting I regretted solving the problem but not *I regretted my solving the problem, since EQUI-NP-DEL does not apply across an intervening head noun fact; from this it follows that these rules claim that I regretted the fact of my solving the problem is grammatical, but that *I regretted the fact of solving the problem is not (unless it is from indefinite-NP-deletion).

1. Schematic of FACT-DEL



2. The rule of FACT-DEL



S.C. Erase 2

Condition: The rule is optional unless 1 contains the feature [-FACT-DEL], in which cast it cannot apply.

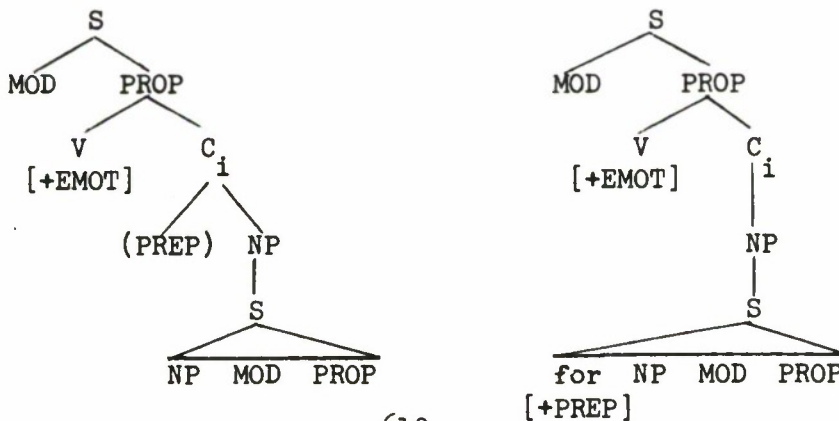
3. Notes on the rule: A general convention prunes the NP which is exclusively dominated by another NP. The condition on the rule is to prevent deletion of fact with a small number of predicates which do not permit it: *He contemplated that she was leaving/
He contemplated the fact that she was leaving.

4. Examples: see (50)-(54), (57), (61).

C. FOR-INSERT

The rule must follow FACT-DEL, since a sentential object of fact may become object of a [+EMOT] predicate after fact is deleted and thereby subject to this rule, and it should also be ordered prior to EQUI-NP-DEL in order to guarantee that "It scared him for Mary to jump" and "It scared him to jump" will have parallel derivations-- i.e. both from [+EMOT], with EQUI-NP-DEL in the second instance, giving "It scared him for-to jump", with for deleted by the general PREP-PREP-DEL rule. The reverse order would derive "It scared him to jump" by EQUI-NP-DEL, without FOR-INSERT applying at all, or perhaps applying vacuously. It is convenient, but not mandatory, to order the rule prior to the general case placement rules, since with that ordering the governing item is to the left of the sentential complement, whether that complement is subsequently to be placed to the left of the predicate, as its subject, or to the right, as its object.

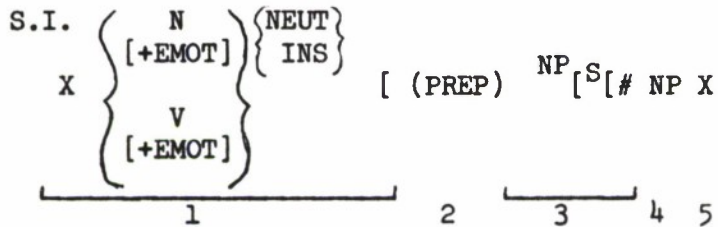
1. Schematic of FOR-INSERT



$C_i = \text{NEUT or INS}$

PREP present if non-factive; in the factive instances, it has been deleted by FACT-DEL

2. Rule of FOR-INSERT



S.C. (a) 2
 (b) Attach for as left sister of 4
 [+PREP]

3. Notes on the rule: The optionality of the rule is regulated in the lexicon, so that desirable, e.g. is [+/-EMOT] to provide for both "It is desirable that he do it"/"It is desirable for him to do it."

4. Examples: (70), (71).

D. EQUI-NP-DEL

This rule must precede RAIS-OBJ, since that rule raises the subject of the embedded sentence up into the object of the matrix, where reflexivization would be expected (*He wanted himself to go) rather than deletion (He wanted to go): i.e., EQUI-NP-DEL erases the subject of a lower S on the basis of a coreferential NP in the higher S. The rule must follow FACT-DEL in order to account for He forgot about having done it, and it must follow GER to account for He insisted on doing it. The rule operates with a set of priorities, such that a coreferential dative in the higher S has first erasure; in the absence of a coreferential dative a coreferential agentive may bring about the erasure. This priority principle, for which we can provide no explanation, implies that the derived structure is always unambiguous, i.e. that the deleted item is uniquely recoverable. With all instances that result in infinitivalization this appears to be true: such types as He persuaded me to leave, He wanted me to leave, He told me to leave, He expected to leave, He taught her how to do it, etc. are unambiguous. There are

examples with gerundives in prepositional phrases, however, which are ambiguous: He told her about solving the problem, where one sense is factive ("He told her about the fact that he had solved the problem"), the other sense apparently non-factive ("He told her how to solve the problem"). In the first sense, the wrong item performs the erasure (the agentive he, not the dative her): in the second sense, the dative performs the erasure, and the sense is correct if we assume a subjunctive in the embedded sentence ("He told her about - she SJC solve the problem"). A priori, one feels that the second sense has a dummy manner nominal that has been deleted: He told her about - (a way of) - she SJC solve the problem - He told her about (a way of) solving the problem, which provides some explanation of the fact that it paraphrases He told her how to solve the problem. With this possibility of a source for the second sense in mind, we may reexamine the problem of the first sense in an example like He argued with her about reporting the accident, which seems ambiguous as between "they report the accident," "the fact that he had reported the accident," and "the fact that she had reported the accident." If He argued with her comes from He and she argued..., one reading would be explained, but the ambiguity would not be, since He and she argued about reporting the accident clearly does not have either of the other interpretations. From such examples we conclude that the dative-agentive priority erasure principle is valid, if at all, only for nominalizations directly dominated by the actant NEUT in the same case frame as DAT and AGT. This does not explain the difficult examples above with about: it merely sets them aside for some different principle, or some modification of this one, to explain. (It sets them aside on the assumption that about NP in tell about NP and argue about NP are instances of some actant other than NEUT, perhaps "Associative"; at any rate a case can be made from "tell something about" and "argue the decision about" that they are not ordinary neutral objects marked with about.)

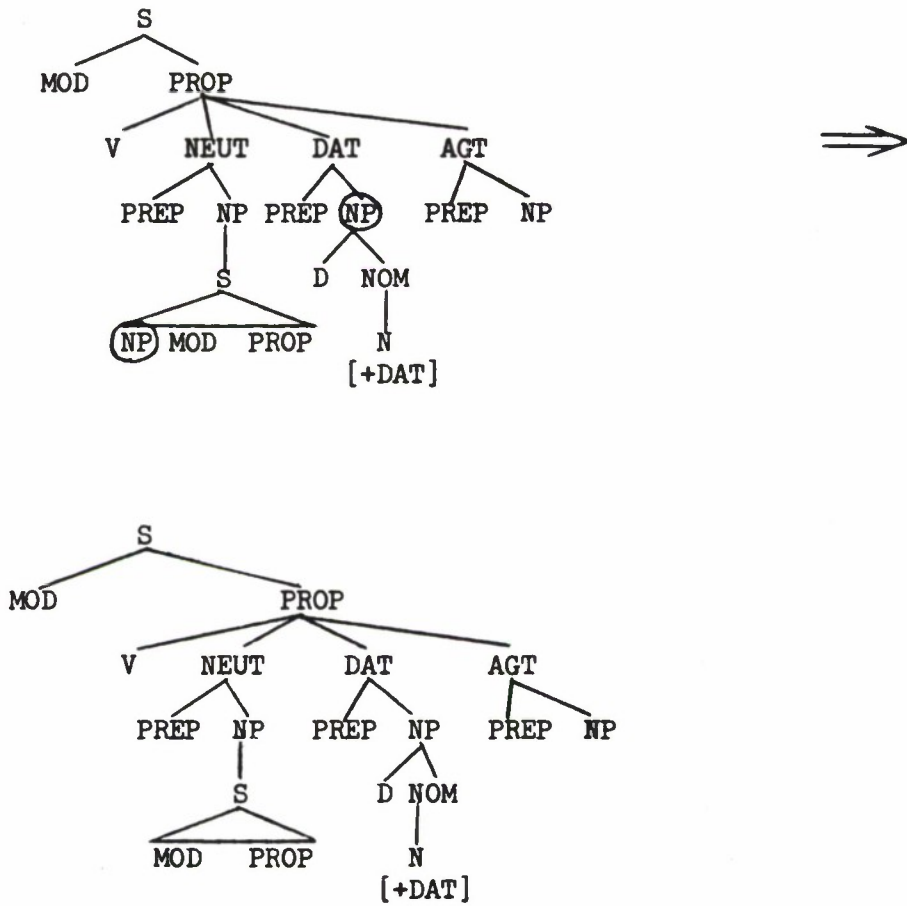
A second problem has been alluded to above in the discussion of the gerundivization rule: namely the fact that in some kinds of sentences the rule of EQUI-NP-DEL seems to apply transparently through noun heads which directly govern the embedded sentence.

- (137) (a) Mary has a certain fondness for telling lies.
 (b) I have no objection to studying French.
 (c) I take great pride in working hard.

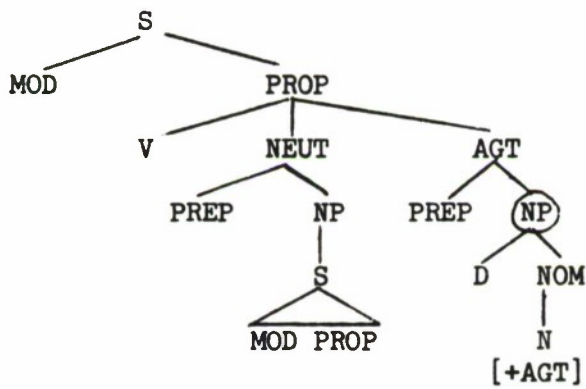
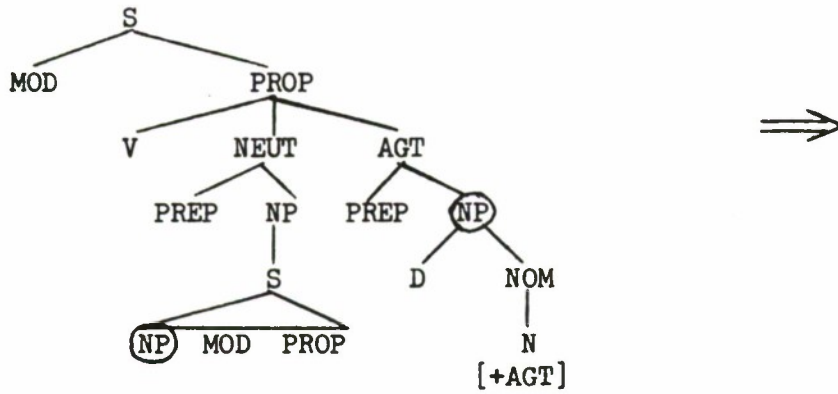
It may perhaps be argued that "have fondness" = "be fond", "have objections" = "object", and "take pride" = "be proud" or the like; but there are grave difficulties in the way of such a proposal. Assuming that such phrases are neither lexical units nor transformationally derived, the rule of EQUI-NP-DEL must see through them to the subject NP: i.e. such nouns are "transparent" in some quite unclear sense, for this rule - this fact is left unformalized in

the rule as formulated below.

1. Schematic for EQUI-NP-DEL with erasure by coreferential Dative (the circled NP's are coreferential)



Schematic for EQUI-NP-DEL with erasure by coreferential agentive
 (the circled NP's are coreferential)



2. Rule for EQUI-NP-DEL

S.I. X NP S [NP X] DAT [X NP] X AGT [X NP]
 1 2 3 4

S.C Erase 2

Condition: 2 = 3, or if 2 ≠ 3 or if 3 is null, then 2 = 4.

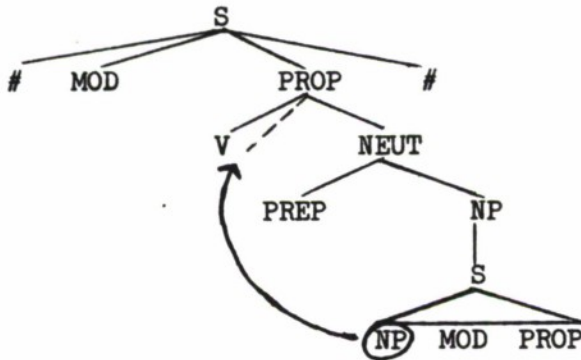
3. Notes on the rule: see discussion in Sections II.B.6, III.D.4, III.D.5. Examples of the type He screamed to jump perhaps should be taken as [+EMOT], i.e. He screamed for someone to jump - they may achieve infinitivalization by the [+EMOT] route, rather than by the EQUI-NP-DEL route: this is borne out partially by the fact that *He screamed to Mary to jump is ungrammatical, whereas He screamed to Mary for her to jump is well-formed.

4. Examples: (79) - (83).

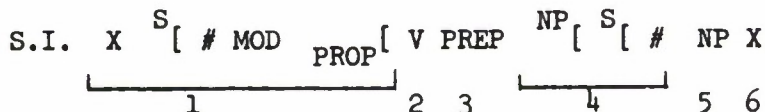
E. RAIS-OBJ

This rule applies before the early objectivalization rule, to which it is an optional alternative for most predicates, the former rule being inapplicable if this one has applied. It takes the subject of an S dominated by NP and attaches it as right sister of the V in the immediately dominating proposition, i.e. it makes it the object of the matrix verb. The optionality of the rule is determined by the convention of obligatory specification which permits the selection of either plus or minus on the feature [RAIS-OBJ] except for a few predicates like consider which are plus only.

1. Schematic of RAIS-OBJ



2. The rule RAIS-OBJ



- S.C. (a) Attach 5 as right sister of 2
 (b) Erase 3 and 5

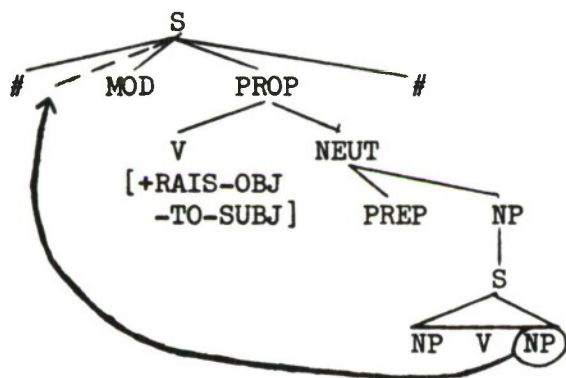
Condition: 2 contains the feature [+RAIS-OBJ] and does not contain the features [-STAT-REDUC] or [-FUT-REDUC].

3. Notes on the rule: for discussion see Sections III.D.c.b, III.D.7, III.F. PREP (3) is erased because the general objectivalization rule, which would have erased it, is no longer applicable.
4. Examples: see (85), (85').

F. RAIS-OBJ-TO-SUBJ

This rule is disjunctively ordered with respect both to RAIS-SUBJ and the general case placement rules. It takes the object of an S dominated by NP and attaches it as right sister of the boundary of the next higher S - that is, it makes it the subject of the matrix sentence. The optionality of the rule is determined by the convention of obligatory specification which permits the selection of either plus or minus on the feature [RAIS-OBJ-TO-SUBJ].

1. Schematic of RAIS-OBJ-TO-SUBJ



2. The rule RAIS-OBJ-TO-SUBJ

S.I. $X \text{ } ^S [\# \text{ MOD } \text{PROP} [X \text{ } ^{NP} [\text{ } ^S [X \text{ V } \text{NP } X$

$\underbrace{\quad\quad}_1 \quad 2 \quad \underbrace{\quad\quad}_3 \quad 4 \quad \underbrace{\quad\quad}_5 \quad 6 \quad 7$

- S.C. (a) Attach 6 as right sister of 2
 (b) Erase 6

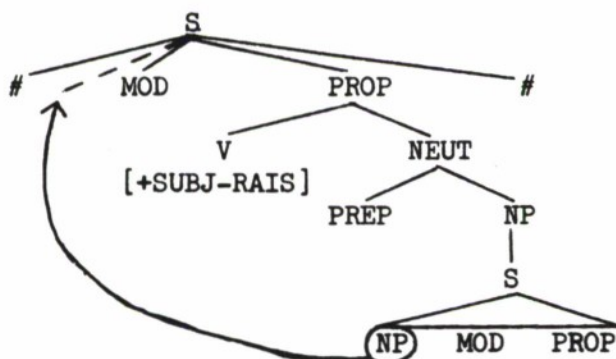
Condition: 4 contains the feature [+RAIS-OBJ-TO-SUBJ]

3. Notes on the rule: for discussion see Section III.I.4.
4. Examples: see (129), (130).

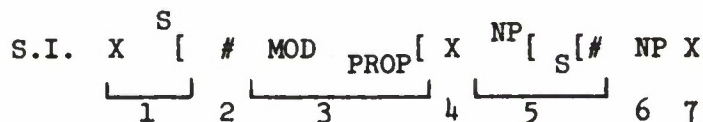
G. RAIS-SUBJ

This rule applies before the early subjectivalization rule. It takes the subject of an S dominated by NP and attaches it as right sister of the boundary of the next higher S--that is, it makes it the subject of the matrix sentence. The rule is an optional alternative to the general subjectivalization rule, the latter being inapplicable if this one has applied. The optionality of the rule is determined by the convention of obligatory specification which permits the selection of either plus or minus on the feature [RAIS-SUBJ].

1. Schematic of RAIS-SUBJ



2. The rule RAIS-SUBJ



- S.C. (a) Attach 6 as right sister of 2
 (b) Erase 6

Condition: 4 contains the feature [+RAIS-SUBJ]

3. Notes on the rule: for discussion see Sections III.D.6.a, and III.D.7.

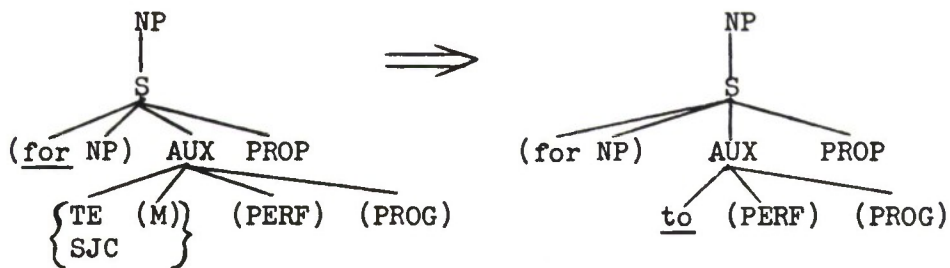
4. Examples: see (84c), (84').

H. TO-REPLACE-AUX

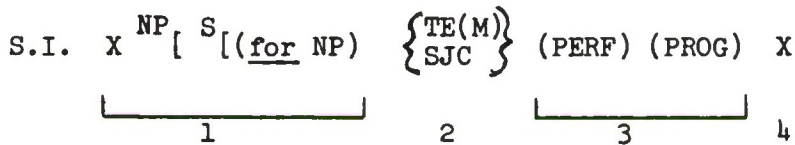
The rules which set the stage for this rule--i.e. which establish the conditions necessary for it to apply, namely the

condition that there be no NP on which subject-verb agreement can be hinged--have applied in the order presented above, except for the rule which assigns accusative case to the NP's after prepositions and verbs (see PRO paper), which applies also before this rule. RAIS-OBJ has removed the erstwhile subject of the sentential object of verbs of the expect class; RAIS-SUBJ has removed the subjects of the sentential objects of predicates of the likely class, and also of the "II Passive" class; FOR-INSERT has provided the condition for assigning accusative to the subject of sentential objects of the [+EMOT] class.

1. Schematic of TO-REPLACE-AUX



2. Rule for TO-REPLACE-AUX



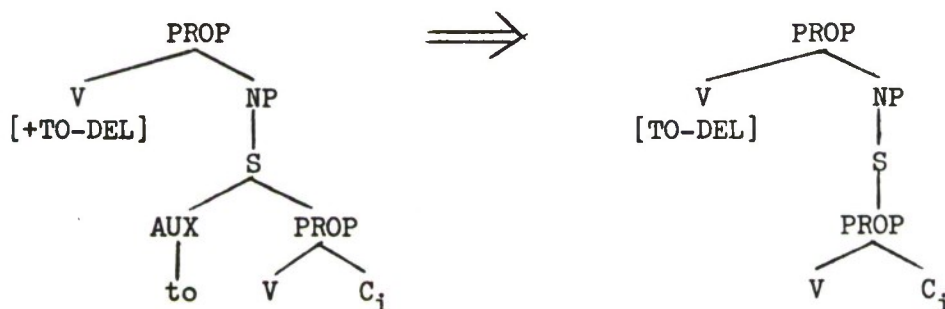
- S.C. (a) to replaces 2.
 (b) attach PERF as right sister of 2.

3. Notes on the rule: The rule must apply after subjectivalization, since otherwise the subject with which the verb would agree would still be under PROP. For further discussion, see III.D.

4. Examples: (69), (79), (81), (84), (85), (86).

I. TO-DEL

1. Schematic of TO-DEL



2. Rule for TO-DEL

S.I. X PROP [$\underbrace{V [+TO-DEL]}_1$ NP [S [# AUX [to X] V X]]] $\underbrace{\hspace{10em}}_2$ $\underbrace{\hspace{5em}}_3$

S.C. Erase 2.

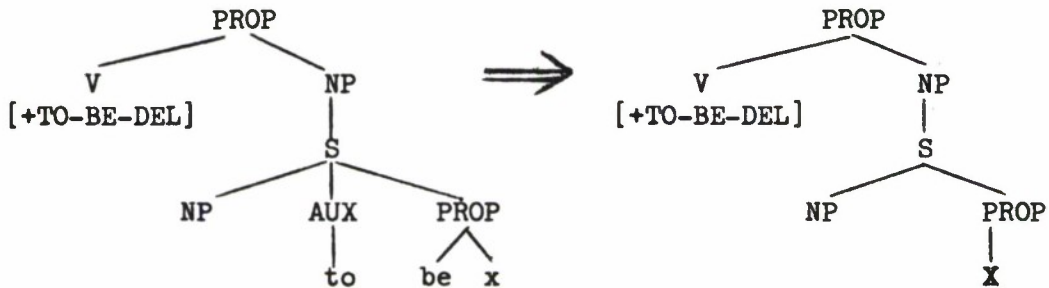
3. Notes on the rule: for discussion see III.I.1.

4. Examples: (123).

J. TO-BE-DEL

The be which is deleted by this rule comes either from the base as a V (with a following NP), or is supplied by the early rule of BE-SUPPORT (with adjectives). The rule does not delete be from PROG (i.e. the auxiliary be), which in fact is still simply PROG at this stage in the derivation and therefore not available for deletion.

1. Schematic of TO-BE-DEL



2. Rule of TO-BE-DEL

S.I. X PROP [$\underbrace{V [+TO-BE-DEL]}_1$ NP [S [X to PROP [be X]]]] $\underbrace{\hspace{10em}}_2$ $\underbrace{\hspace{5em}}_3$ 4 5

S.C. Erase 2 + 4

3. Notes on the rule: for discussion see III.I.2.

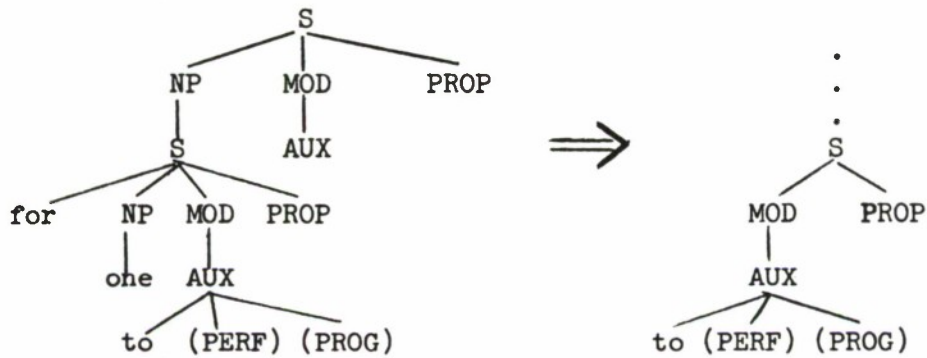
4. Examples: (124), (125).

K. ONE-DEL

The deletion of the indefinite/impersonal one can only occur in for-infinitival or POSS-ing constructions derived from them; and only when these are subjectivalized or essive. The appropriate deletion in infinitives linked by the copula is not provided for here, since the derivation of such nominalizations has not been provided for in this grammar.

There is some reason to believe that sentences like "to know her is to love her" are derived from conditional sentences. In any case, they provide a special problem for this grammar, since we have no natural way to explain why they are infinitives at all, there being not [+EMOT] governing item in the fuller form "For one to know her is for one to love her."

1. Schematic of ONE-DEL



2. Rule for ONE-DEL

S.I. $X \text{ NP} [\text{S} [\# \text{ for NP } \text{AUX} [\text{to X}]]]$

└───┬───┘
└──┬──┘
└──┬──┘
1
2
3

S.C. Erase 2

Condition: The rule is optional.

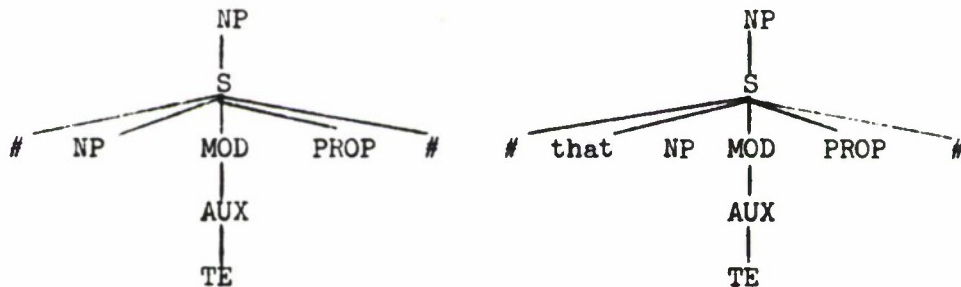
3. Notes on the rule: the rule as it stands is useless for all examples like "To know her is to love her", since no provision is made for them. For examples like "It is amusing to collect butterflies", however, the rule does provide. Since generic gerundives are assumed to derive in turn from these infinitivals (i.e. "To collect butterflies is amusing" is taken to be the source of "collecting butterflies is amusing"), though not provided for in these rules, there are necessarily no examples

of one + POSS deletion; the ungrammaticality of "One's collecting butterflies..." is explained in this way. These infinitivals, in turn, may derive from conditional sentences in ways we do not yet understand.

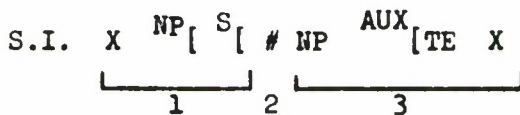
L. THAT-INSERT

This rule must be placed quite late in the grammar; at least after relativization (for reasons see REL paper). The conditions for its operation will obtain at any middle-to-late stage in the derivation. All that is really needed is to be able to identify an S dominated by NP, where the AUX of the S still contains tense, and the S still has a subject.

1. Schematic of THAT-INSERT



2. The rule of THAT-INSERT

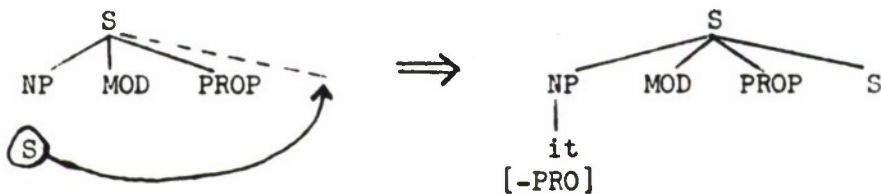


S.C. Attach that as right sister of 2.

M. EXTRA (from Subject and Object)

Extrapolation is extremely general and applies not only to nominalizations but also to relative clauses. The rules below are specified only for nominalizations, since the conditions under which extrapolation is permitted for relative clauses are more restricted than those for nominalizations, and not as well understood.

1. Schematic of EXTRA (from Subject)



2. Rule of EXTRA (from Subject)

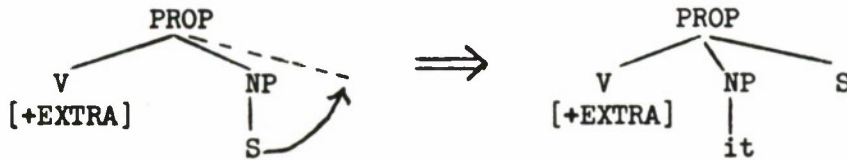
S.I. X^S [NP[S] MOD PROP] X
 1 2 3 4 5 6

S.C. (a) Attach 3 as right sister of 5.
 (b) it replaces 3.

Conditions: (1) Obligatory if 5 dominates [-TRANS,-FACT];
 (2) 4 ≠ ing + X

3. Notes on the rule: the it which replaces the extraposed sentence has the feature [-PRO] because it is non-anaphoric; it is, however, still dominated by NP in order to participate in verb agreement. The first condition stated is for non-factive intransitives like seem, happen. The second condition blocks extraposition of gerundives.

4. Schematic for EXTRA (from Object)



5. Rule for EXTRA (from Object)

S.I. X PROP [V NP[S] X
 [+EXTRA]
 1 2 3 4 5

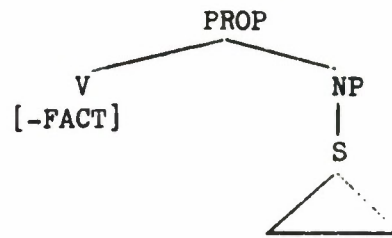
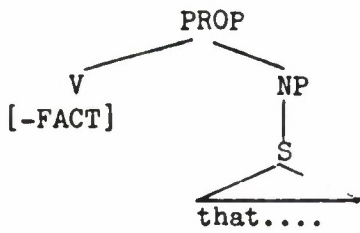
S.C. (a) Attach 4 as right daughter of 2.
 (b) it replaces 4.

6. Notes on the rule: this is "vacuous extraposition", obligatory with verbs like hate, like, optional with factives like prefer, regret. For discussion see III.D.3. Note that the rule feature [+EXTRA] is redundant on the feature [+FACT] and does not have to be lexically specified, except for hate, like, and the seem/appear class.

N. THAT-DEL

This rule optionally deletes the item that which was inserted by the rule THAT-INSERT, but only if the NP dominating the S from which that is deleted is not a subject, and only if the head V is non-factive. That is never deletable after a Noun head.

1. Schematic for THAT-DEL



2. Rule for THAT-DEL

S.I. X PROP[V NP^S[that X
 [-FACT]
 └───┬───┘ 2 3
 1

S.C. Erase 2.

May 1969

INTERROGATIVE

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II. INTRODUCTION

A. Accepted Analyses

1. The Analysis of AUX

Chomsky (1957) proposed the following analysis of the node
 AUX:

(1) AUX → C (M) (have + en) (be + ing)

[where C = Tense, M = Modal]

This analysis, as Chomsky showed, allows for a simple and uniform
 account of the behavior of auxiliaries in interrogative, negative
 and emphatic structures.

Recently (e.g. in Ross (1967a) it has been suggested that
 the material to the right of the arrow in (1) does not represent
 the proper deep-structure analysis of AUX; but the general adequacy
 of (1) as an account of the structure of AUX that is relevant to
 the interrogative, negative and emphatic transformations has not
 been seriously challenged. In the present grammar, we assume an
 analysis of AUX similar to Chomsky's (cf. Base Rule 3), but leave
 open the question of whether this analysis represents a deep or
 a **deepest**, structure.

2. The Triggering of Interrogative (and Other) Transformations

Katz and Postal (1964) suggest that projection rules which ascribe meaning to transformations can be dispensed with in the grammatical theory if certain transformations that were considered to be optional (cf. Chomsky (1957)) are instead obligatorily 'triggered' by an optional dummy node in the P-marker (pp. 79-117). Katz and Postal support their suggestion with both semantic and syntactic arguments. The semantic arguments have to do with synonymy, paraphrase relations and the simplification of the projection rules. The syntactic arguments are generally along the lines of contextual restrictions which distinguish between the products of certain transformations and their previously-assumed sources (e.g. between interrogative and declaratives), and "explanation" of previously unmotivated rules.

The triggering of T-rules which change meaning by a dummy node in the P-marker has been accepted by most generatively-oriented linguists.

B. Analyses Not Generally Accepted (or at least not incorporated into this grammar)

1. Q as a Separate Trigger

In the work cited already, Katz and Postal assume two triggers for the interrogative: (1) Q, which is parallel to NEG for negation and IMP for imperatives and (2) WH, which is a "scope marker" for Q, and is a constituent of an Adverb (WH-either-or) in the deep structure underlying yes-no questions, but a constituent of a Determiner in the Deep structure underlying WH questions. It is the Q that, according to their analysis, triggers AUX inversion (and WH fronting), carries the various features for contextual restrictions, and, in the semantic interpretation, accounts for paraphrase relations.

In their justification for the node Q, Katz and Postal propose the following arguments:

a. Semantic Argument:

Q accounts for the paraphrase relation that holds between the questions in example (2) below, and the respective sentences in example (3):

- (2) (a) Did Bill see John?
 (b) Who saw John?
 (c) Who(m) did Bill see?
- (3) (a) I request that you answer: "X Bill saw John."
 (b) I request that you answer: "X saw John."
 (c) I request that you answer: "Bill saw X."

"where X (in (3.a)) is one of a special class of sentence adverbs including yes, no, of course, etc." (p. 85).

b. Syntactic Arguments:

(i) There is a class of sentence adverbials that cannot occur with yes-no questions, though they can occur in declaratives and in tag-questions: e.g.,

- (4) (a) $\left. \begin{array}{l} \text{Certainly} \\ \text{Perhaps} \\ \text{Probably} \end{array} \right\}$ he is a doctor.
 (b) $\left. \begin{array}{l} * \text{Certainly} \\ * \text{Perhaps} \\ * \text{Probably} \end{array} \right\}$ he is a doctor?
 (c) John is $\left\{ \begin{array}{l} \text{certainly} \\ \text{perhaps} \\ \text{probably} \end{array} \right\}$ a doctor, isn't he?

(ii) Some negative preverbs do not occur in questions: e.g.,

- (5) (a) He hardly/scarcely eats.
 (b) *Does he hardly/scarcely eat?

For some speakers, examples like (5.b) appear to be grammatical in a suitable context.

(iii) Some preverbs can occur in questions but not in the corresponding statements: e.g.,

- (6) (a) *He ever eats.
 (b) Does he ever eat?

(That is, some-any alternation, of which sometimes-ever alternation is a special case, is tied to questions (and negatives, etc.).

- (7) (a) You have some bread.
 (b) Do you have any bread?

(iv) Katz and Postal also argue, although mostly by implication, that the trigger nodes are in some sense an explanation for the inversion of AUX and the subject and for the fronting of WH, while an optional question transformation gives no reason for such transformations. One could, that is, equally well expect any other kind of operation in an optional transformation, but the trigger nodes can be said to "attract" both AUX and WH. In general however, the inversion of AUX depends on the sentence-initial position of any [+AFFECT] morpheme (in the sense of Klima, 1964), including NEG and WH; and since the fronting of WH-elements is common to both interrogatives and relatives, it cannot be explained by the presence of Q.

There is one major problem with the analysis proposed by Katz and Postal: if Q and WH can be independently chosen, strings containing only a WH will not yield a surface structure. Katz and Postal propose that such strings are, in any case, necessary for relative clauses and indirect questions. (In our view, the WH in relative clauses not only shows different syntactic behavior (cf. Section II.B.3 below) but is also predictable, and should for the latter reason not be in the deep structure at all.) Presumably, then, some kind of "blocking" transformation will be required in cases where an S dominating WH but not Q is generated in non-embedded position.

2. Q as the only Trigger

Malone (1967) proposes a trigger Q for both yes-no questions and WH questions but no separate WH trigger. The difference between yes-no and WH questions, according to Malone's analysis, depends on where the Q is attached: if it is directly dominated by S, (i.e. attached to the ART of the NP questioned) a WH question will result. (In other words, Malone's Q is equivalent to Katz and Postal's WH.) In addition, Malone has an "internal valence" and an "external valence", the former to account for the re-ordering in the surface structure of questions, the latter to account for interrogative intonation.

Leaving the problem of valences aside for the moment, it seems certainly desirable to have only a single trigger. As was indicated above, if Q and WH can be independently chosen, structures containing only the latter will not yield a surface structure. Furthermore, the semantic and syntactic characteristics that Katz and Postal attribute to their Q may equally well be attributed to their WH (Malone's Q). (In our analysis, which makes use of a single interrogative trigger, we use the symbol WH for this trigger. We interpret WH as a feature that may occur either on the conjunction or or on the Determiner of an NP. In the former case, the resultant sentence is an alternative question, which, under certain circumstances, may be reduced to a yes-no question. In the latter case, the resultant sentence is a WH

question. Where yes-no questions and WH questions show different syntactic characteristics, the differences may be associated with the position of the WH feature in the underlying structure.)

Turning now to the Internal and External Valences proposed by Malone, it appears that an analysis that uses both Valences and Q proliferates triggers needlessly. That is, Malone reduces the two triggers used by Katz and Postal to one, but then introduces two more of his own, Of these two, Internal and External Valences, the Internal Valence provides for syntactic inversion and thus corresponds closely to the Q of Katz and Postal. In effect, Malone's analysis is the same as that of Katz and Postal with respect to Q and WH except for the labels.

"External Valence" is intended to provide for intonation in questions, specifically the differences between yes-no and WH questions, and between echoic and non-echoic questions. Syntactically, however, the assumption of a valence does not explain the differences in intonation, because the difference between the echoic and non-echoic questions is due to the fact that the former are embedded in a sentence of the form: 'did you say, "X? "'. Echoic questions are thus direct quotations and behave syntactically and intonationally exactly like other direct quotations. Malone's analysis however, cannot exhibit this parallel in the behavior of echoic questions and other quotations. Because Malone's analysis fails to capture this generalization, his positing of an External Valence is not explanatory. If there is also a way to explain the difference in intonation between yes-no and WH questions without having to posit a valence (or a Q), then we could do without valences altogether. The basis for such an analysis does, in fact, exist in the form of alternative yes-no questions. Malone's analysis with valences is insufficient for these in any case, because it would have to show how alternative questions relate to both yes-no and echoic questions (according to Malone, all three types have the same External Valence.)

3. WH in Questions and Relative Clauses as One Morpheme or Two

Katz and Postal (1964) and by implication Chomsky (1957) and Lees (1960a), as well as others who have dealt with interrogation and relative clauses, have analyzed the WH in questions and relative clauses as the same morpheme. There are several factors that argue against such an analysis, and thus for an analysis which describes them as two different morphemes. The first of these can be summarized by saying that the WH in Rel clauses is always predictable. That is, given the configuration unique to a Rel clause, plus the requisite identity (NOM, NP, or N, depending on the analysis), then the grammar will obligatorily delete the identical head item and attach the feature [+WH] under the ART node.

The relative pronoun is thus derived in much the same way as are other pronouns, i.e., by the syntactic process of pronominalization, and thus need not occur in the deep structure at all.

The rest of these factors fall under the heading of "different syntactic behavior"; there are several of these which will be discussed below.

a. Pied Piping

Ross (1967c) notes that there is a constraint on Rel clauses (Pied Piping) which does not apply to WH questions. It is for this reason that we get sentence pairs like:

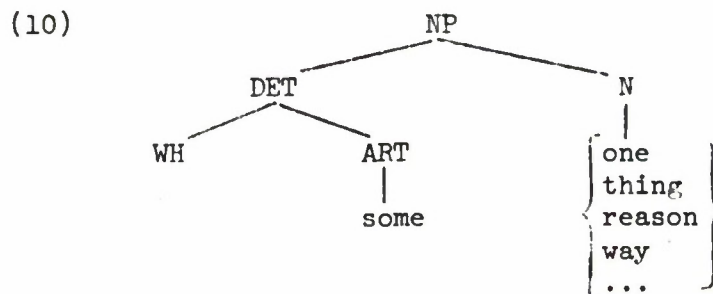
- (8) (a) ...the table of which the leg was broken.
 (b) ...*the table of which what was broken

where (8.b) is ungrammatical because Pied Piping does not apply to interrogatives.

b. Ross also noted (op. cit.) that questions, but not Rel clauses, may contain an "existential" there is phrase. Thus, we get:

- (9) (a) Who is there in my bedroom?
 (b) *I didn't know the young woman who there was in my bedroom.

c. The WH-word in questions is normally analyzed as:



The configuration yields who, what, why, how, etc., in the surface structure. Two facts about this analysis are noteworthy. The first is that there are a number of question words, but only two relative pronouns (who and which). The second is that the noun in (10) must be [+PRO], and the ART [-SPEC], in order to yield the proper semantic interpretation of interrogatives. The ART in Rel clauses, on the other hand, is only [+SPEC] in the NOM-S analysis (cf. REL section). If the noun in the question configuration is [-PRO], then the ART can be either plus or minus SPECIFIC to provide for the contrast shown in (11):

- (11) (a) Which boy did he see?
 (b) What boy would wear an outfit like that?

From the foregoing discussion it seems clear that the WH in questions and in Rel clauses should indeed be two different morphemes, and that the latter should be transformationally introduced.

4. Attachment Transformations

Kuroda (1965b and 1966a) claims that certain sentence adverbials, among them WH, can occur only once in each #S#. They are then placed into the proper positions and attached to the proper node by what Kuroda calls "attachment transformations." The merits of this analysis with respect to adverbials like just, even, etc. do not concern us here. What does concern us, is the fact that his analysis forces him to ascribe the same deep structure to sentences like:

- (12) (a) Who saw some $\left\{ \begin{array}{l} \text{thing} \\ \text{one} \end{array} \right\}$?
 (b) What did someone see?
 (c) Who saw what?

Since we have tried to maintain wherever possible the Katz-Postal hypothesis that semantic differences should correspond to deep-structure differences, the deep structure introduction of WH as a feature on individual determiners seems preferable. Furthermore, (12.c) would appear to disconfirm the claim that WH is one of these elements (if indeed there are any) which can occur only once per #S#. In any case, WH is certainly not freely attachable to nearly any constituent, as are, e.g., only and every.

5. Indirect Questions

Katz and Postal (op. cit.) claim that one justification for Q as a trigger lies in the fact that it "attracts" the AUX, and that, therefore, the difference between direct and indirect questions can be expressed by not having a Q in the latter, since they do not have AUX attraction. It seems to us that this fact can be captured fairly simply by having AUX attraction a last-cyclic rule, and hence there is no need for the node Q with indirect questions.

6. Alternative Questions

The existence of alternative questions such as:

- (13) (a) Are you coming or aren't you?
 (b) Will John eat fish or won't he?
 (c) Should I give her a present or shouldn't I?

has been recognized for some time. In fact, Katz and Postal utilized the alternative question structure to derive indirect yes-no questions of the type:

- (14) (a) Does he know whether John is home?
 (b) He doesn't know whether John is home.

which they then analyzed as being related to the respective sentences in (15):

- (15) (a) Does he know the answer to the question:
 "X either John is home or John isn't home"?
 (b) He doesn't know the answer to the question:
 "X either John is home or John isn't home."

We believe that the Katz and Postal analysis of indirect questions (yes-no) is correct. In fact, we suggest that all yes-no questions are derived from alternative questions. Such an analysis has the following advantages:

- a. It unifies the derivation of direct and indirect yes-no questions.
- b. It automatically accounts for the intonation contour in yes-no questions and thus obviates the need for Malone's External Valence.
- c. It eliminates any need for the trigger Q, since the difference between yes-no and WH questions is accounted for by deriving yes-no questions from alternative questions.
- d. It makes yes-no questions part of a larger pattern of alternative questions like in (16):

- (16) (a) Did John come to the party, or did he stay home?
 (b) Are you cooking dinner, or do we eat out?
 (c) Is Fred going to marry Abigail, or is he going to stay a fool all his life?

This analysis of yes-no questions does not require the creation of any new rule apparatus, since that part of the derivation that has to do with two sentences is available in the conjunction rules, and the part of the rules particular to questions is needed for WH questions in any case. Rules deleting one of a pair of identical sentences, or portions thereof, are also needed elsewhere in the grammar.

Lastly, it would appear that the analysis proposed here not only fits the semantic analysis given in Katz and Postal, but extends that analysis, since according to the analysis proposed here, the sentence corresponding to (3.a) is:

- (3') (a) I request that you answer: "Yes, Bill saw John, or no, Bill didn't see John."

Turning now to the co-occurrence restrictions that Katz and Postal ascribe to the node Q, we note that they are of three kinds:

- a. a class of sentence adverbials: certainly, perhaps, probably;
- b. some negative preverbs: hardly,...
- c. some preverbs: ever, and some-any alternations

The sentence adverbials do not really constitute a clear case, because some of them (e.g. probably) are acceptable in questions, while others (e.g. certainly) are not, as shown in the following:

- (17)
- (a) Will he { probably } come?
 { *certainly }
 - (b) When will he { probably } come?
 { *certainly }
 - (c) Why did he { probably } come?
 { *certainly }

For this reason, it seems to us that there is not a grammatical co-occurrence at work here, as Katz and Postal think, but a semantic incompatibility. In that case, we do not want to ascribe the incompatibility to any one node, but we want to have the semantic component declare the whole sentence as unacceptable.

As for the preverbs mentioned in (b) and (c) above, it appears that the restrictions that were ascribed to Q hold true for all questions, as well as for a number of other sentence types. Thus, preverbs of the type ever, as well as some-any alternants, occur whenever a sentence is marked as containing [+AFFECT]. This feature is part of negation and several other words having the negative in their semantic interpretation, e.g. scarcely (cf. NEG), as well as being part of interrogation. Preverbs of the type hardly, on the other hand, are negative in the same way as scarcely as can be seen by applying Klima's tag-question test:

- (18)
- He hardly ate, { did he } ?
 { *didn't he }

These negative preverbs have various other co-occurrence restrictions, e.g. they cannot occur in imperatives; for example:

- (19) *Hardly eat!

nor with some verbs taking an embedded imperative that ends up in the surface structure predicate; as in,

- (20) (a) *I persuaded him to hardly eat.
 (b) I expected him to hardly eat.

In all, then, it seems to be as possible to ascribe the co-occurrence restrictions of types (b) and (c) to the node:

- (21) CONJ
 [+or]
 [+WH]

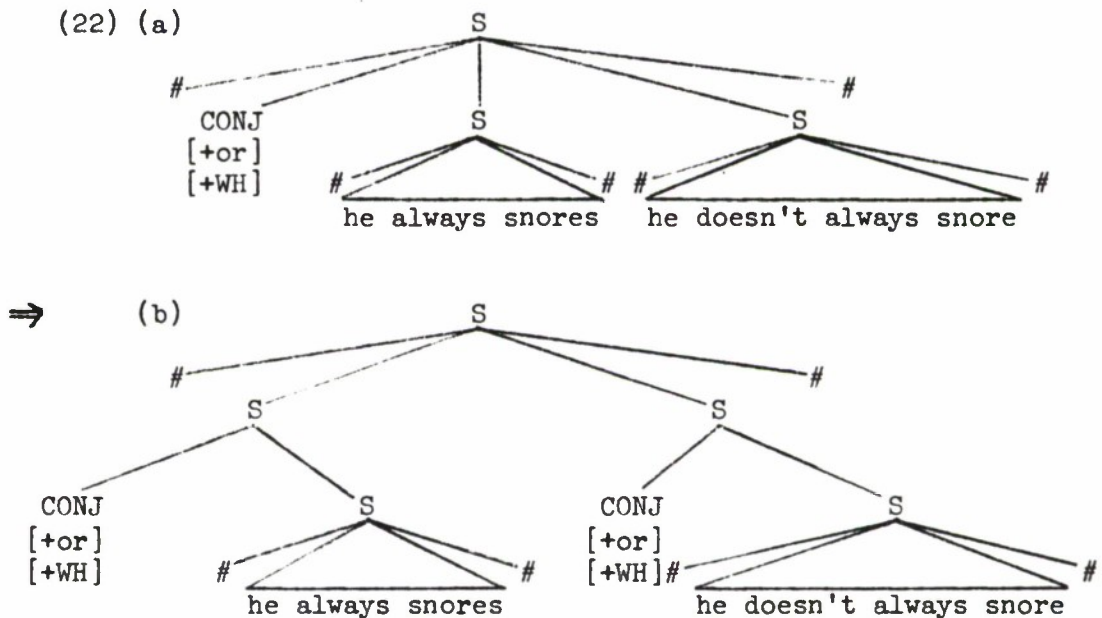
as it is to ascribe them to the node Q.

III. THE DERIVATION OF INTERROGATIVE STRUCTURES

A. Alternative Questions

1. Conjunction Spreading

WH spreading will be carried out in part by the Conjunction Spreading schema (cf. CONJ section) since all conjunctions are spread from the one which is the leftmost daughter of the top S. The Conjunction Spreading schema changes the deep structure tree of (22.a) to (22.b):



2. WH Spreading

The WH must next be brought into the lowest S's. This rule must follow the one discussed above, but precede the Initial Conjunction Deletion rule.

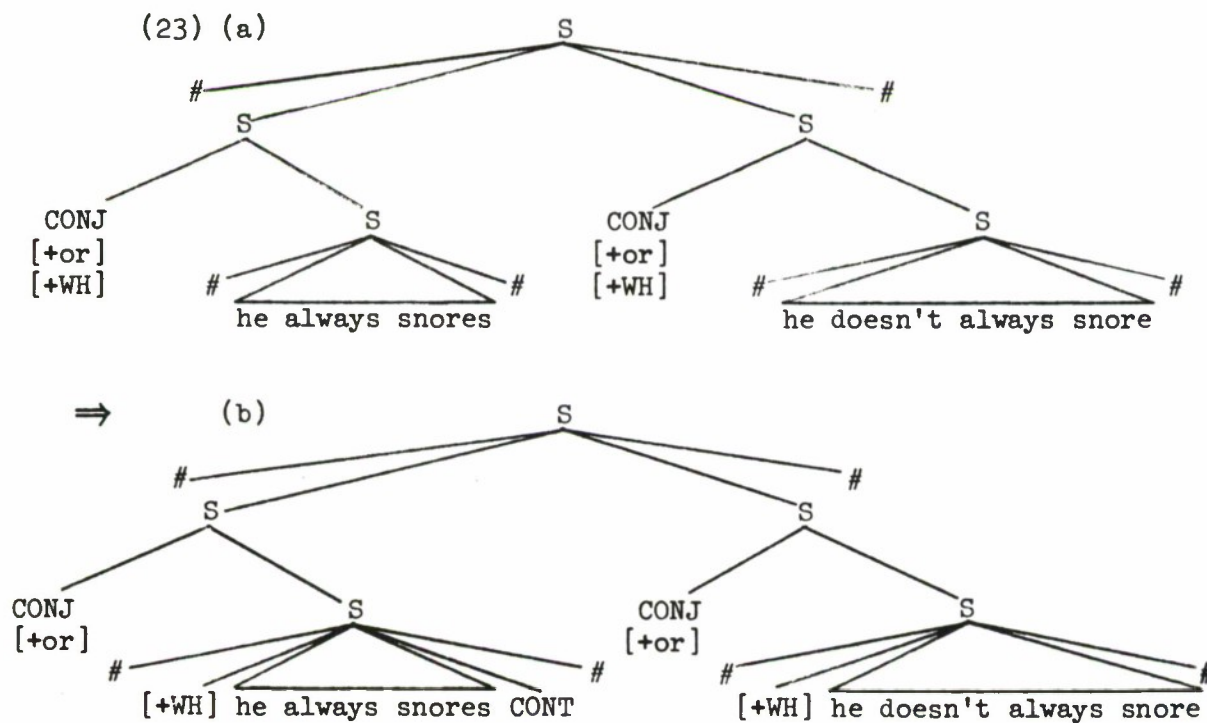
SI: # CONJ [+WH] # X # CONJ [+WH] # X # #
 1 2 3 4 5 6 7 8 9 10 11

- SC: 1. Attach 3, 8 as right sisters of 4, 9 respectively.
 2. Delete 3, 8 from complex symbols of 2, 7 respectively.
 3. Insert CONT (trigger for continuing rising intonation pattern) as left sister of 6.

COND: The rule is obligatory.

Notes: This rule has the peculiar effect of introducing a feature ([+WH]) into a position not dominated by any lexical rule. Perhaps ADV should also be inserted. Cf. next rule.

Example in Tree Format:



3. AUX-Attraction

SI: (S CONJ)* # $\left\{ \begin{array}{l} \text{ADV} \\ \text{NP} \end{array} \right\} [X \left\{ \begin{array}{l} [+WH] \\ [+NEG] \end{array} \right\} X] X \text{ TNS } \left(\begin{array}{l} M \\ \text{HAVE} \\ \text{BE} \end{array} \right) (\text{NEG}) (\text{ADV}) X \#$

1 2 3 4 5 6 7 8 9 10

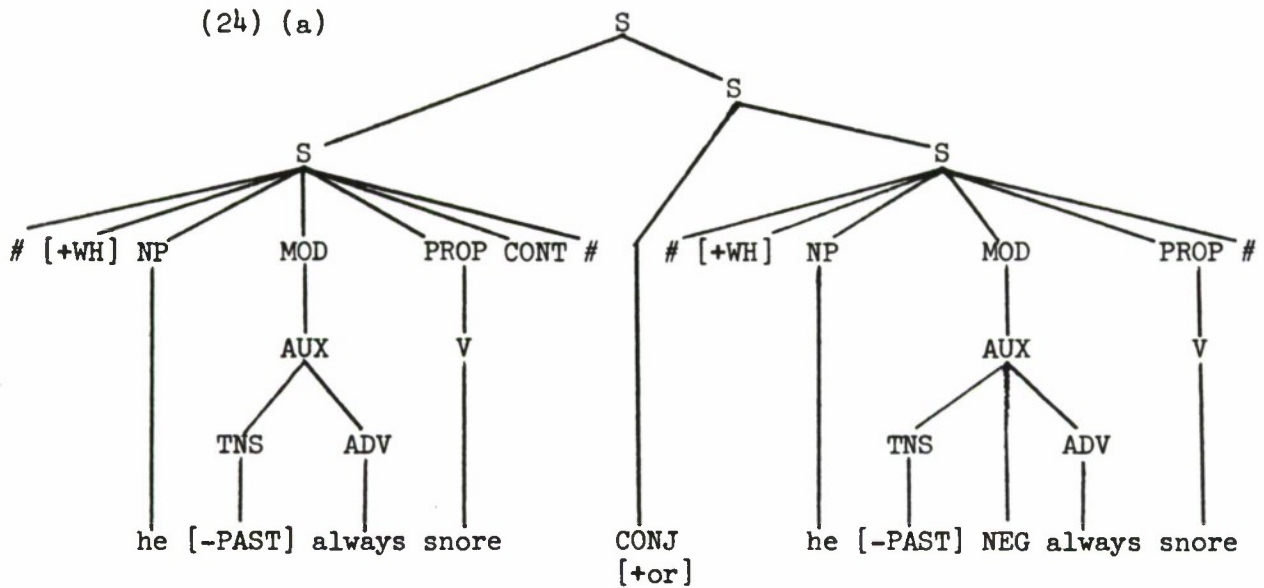
SC: 1. Attach 5, 6, 7 as right sisters of 3.
 2. Delete (original) 5, 6, 7.

COND: 1. If 6 is null, 9 = $\left\{ \begin{array}{l} [+V] \\ [-BE] \end{array} \right\} + X$
 2. The rule is obligatory.
 3. The rule applies last-cyclically.

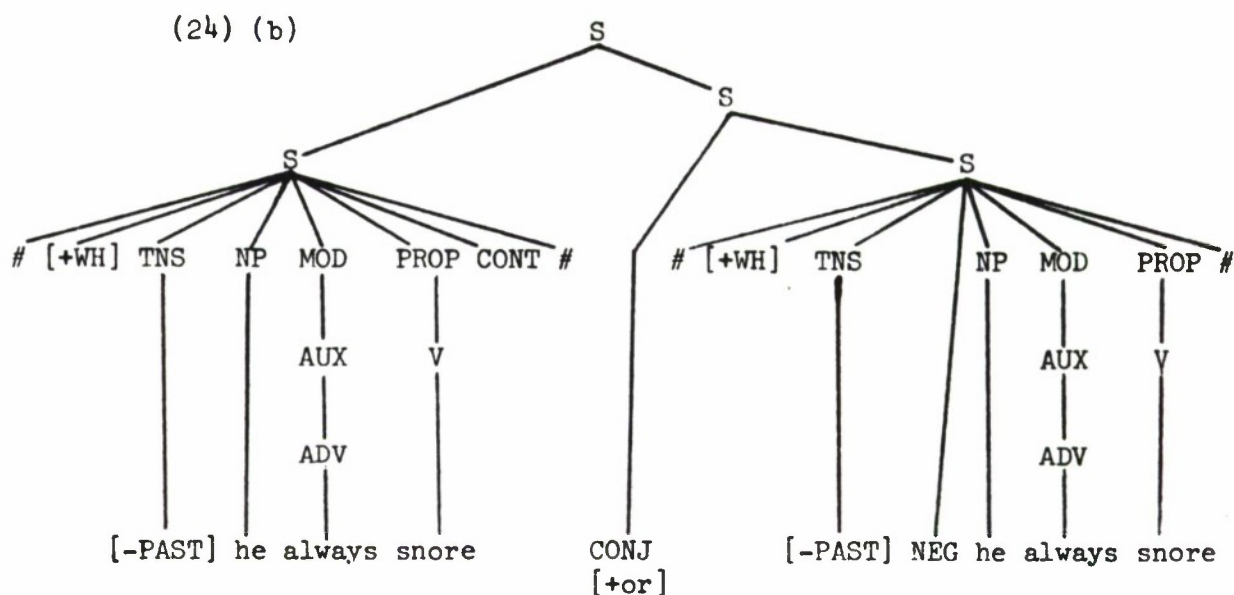
- Notes: (i) There appear to be no strong arguments for ordering the Initial Conjunction Deletion rule prior to this rule. It must precede the Reduced Alternative Question rule. The trees in this section are drawn as though the rule had already applied to remove the initial conjunction.
- (ii) The rule is intended to apply to WH questions (see below), alternative questions and sentences with preposed negative adverbials (cf. NEG). In fact, the rule will not apply to alternative questions unless the WH-spreading rule were to insert a node ADV dominating the feature [+WH]; alternatively, constituent 3 of the S.I. could be stated to be any single constituent immediately dominated by S.
- (iii) The X at 4 is probably tantamount to (NP).
- (iv) Condition (1) blocks the derivation of such forms as *Does he be going (or doesn't he be)?, *Where did he have gone?
- (v) Condition (3) prevents [+WH] from triggering AUX-attraction in Rel clauses and indirect questions.
- (vi) This rule follows a number of rules which affect the order of elements within MOD, e.g. Pre-verbal ADV placement, Pre-verbal NEG placement (cf. NEG). The application of these rules accounts for the discrepancy between the order given here of elements 6, 7, and 8 and their deep structure order.
- (vii) We accept Ross's (1967c) output condition (3.27) that S's containing internal S's dominated by NP's are unacceptable, as the explanation for the ungrammaticality of *Did that John showed up please you? and therefore put no special condition on this rule to exclude such sentences.

- (viii) The HAVE in 3 of the S.I. of the AUX-attraction rule cannot be [+V]. Thus the WH-deletion rule generates (25.d) but not (26.a) (which is grammatical in British English). Since AUX-attraction is a last-cyclic rule, NEG must already be in the position indicated in the S.I. of this rule (i.e. following HAVE). Therefore, we would derive Has he something to do or doesn't he? but not (26.a). (cf. NEG p. 53).
- (ix) Apparently the usual condition on conjunction constraining the conjoining of identical sentences ($S_1 \neq S_2$) does not obtain in the case of alternative questions. Thus sentences like (25.f), which achieve their effect by seeming to offer a choice without actually doing so, are both grammatical and common.

Example in Tree Format



⇒ (by applying AUX-ATTRACTION to each subtree dominated by S)



Examples:

- (25) (a) Does he always snore or doesn't he always snore?
- (b) Could he have left yesterday or was he being detained?
- (c) Are you a man or are you a mouse?
- (d) Has he left or does he have something to do?
- (e) Can't you hear me or aren't you listening?
- (f) Is Chomsky right or is Chomsky right?
- (g) Was his doing that a surprise or had you expected it?
- (h) Was it a surprise for him to do that or had you expected it?
- (i) Was it a surprise that he did that or had you expected it?
- (j) Is it raining or is it snowing?
- (k) Is there a book on that table or isn't there one there?

Ungrammatical and disallowed:

- (26) (a) *Has he something to do or hasn't he?
- (b) *Does he be going or doesn't he be?

4. WH-Deletion

SI: # [+WH] TNS X
 1 2 3

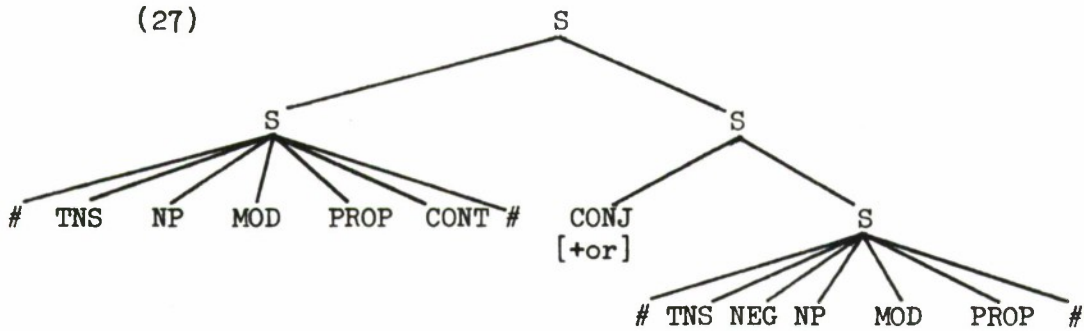
SC: Delete 2.

COND: The rule is obligatory.

Notes: This rule deletes the [+WH] that has been moved to sentence initial position by WH-Spreading, after the application of AUX-Attraction.

Example in Tree Format:

Tree (24.b) is changed to (27) by this rule.



5. Reduced Alternative Question (including yes-no questions)

SI: #TNS $\left\{ \begin{matrix} M \\ \text{HAVE} \\ BE \end{matrix} \right\}$ (NEG) NP X CONT # OR #TNS $\left\{ \begin{matrix} M \\ \text{HAVE} \\ BE \end{matrix} \right\}$ (NEG) NP X #

1 2 3 4 5 6 7 8 9 10

SC: 1. Delete 9 or:
 2. Delete 6, 8, 9 (where 7 = NEG) or:
 3. Delete 5, 6, 7, 8, 9, 10

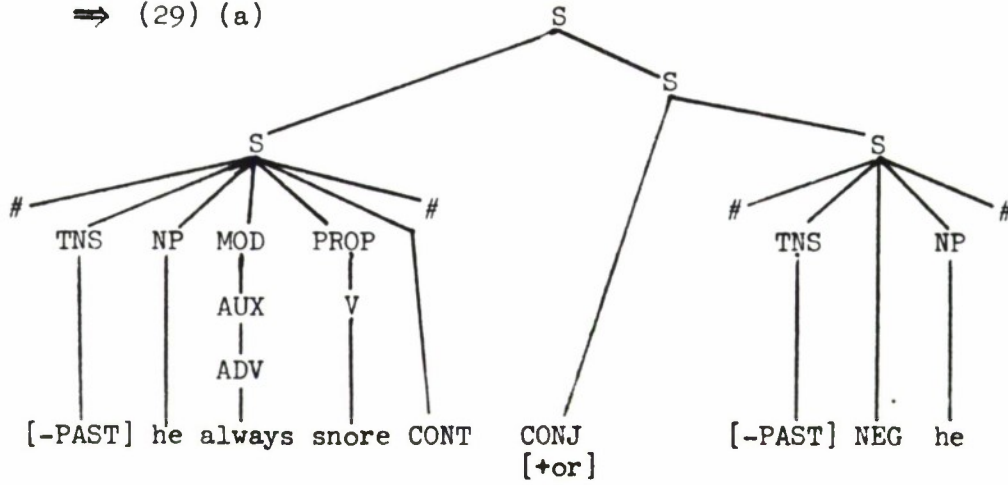
COND: 1. 1...3 = 6...10, except 2 ≠ 7
 2. The rule is optional.

Notes: (i) The three SC's are all optional. Their products are considered stylistic variants of each other and of non-reduced alternative questions.
 (ii) Yes-no questions are generated by SC (3).

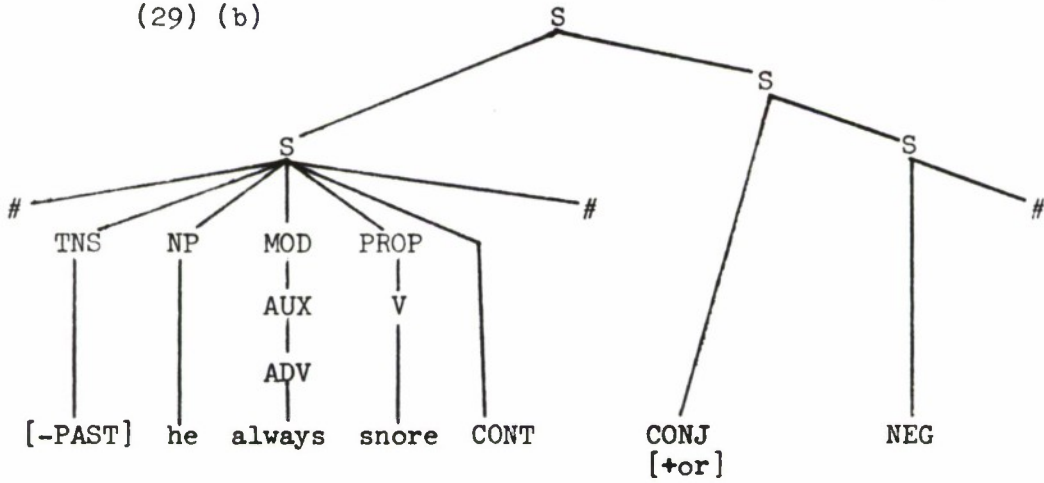
Example in Tree Format:

The REDUCED ALTERNATIVE QUESTION rule operates on the tree of (27) converting it by the three SC's into the respective trees of (29).

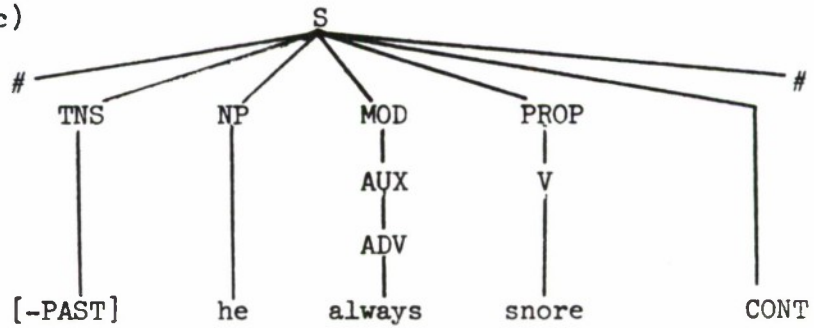
⇒ (29) (a)



(29) (b)



(29) (c)



Examples:

- (30) (a) Does he always snore or doesn't he?
 (b) Does he always snore or not?
 (c) Does he always snore?
 (d) Doesn't he always snore or does he?
 (e) Doesn't he always snore?
 (f) Did you say he always snores?
 (g) Did you (just) say, "He always snores."?
 (h) Did you (just) say, "Does he always snore?"
 (i) Do you have a son or a daughter or don't you?

Ungrammatical and disallowed:

- (31) *Doesn't he always snore or?

Grammatical but not generated by this rule:

- (32) (a) He always snores? (derived from (30.g) by T-ECHO-QUESTION)
 (b) Does he always snore? (homophonous with (30.c) but derived from (30.h) by T-ECHO-QUESTION)
 (c) Doesn't he always snore? (homophonous with (30.e) but derived as stylistic variant of He always snores, doesn't he? by T-TAG-QUESTION)
 (d) Do you have a son or a daughter? (This is a simple alternative question, with two simplex sentences in its deep structure, as opposed to (30.j): Do you have a son or a daughter? (which is generated by this rule and has the meaning 'Do you have a child?'.) (30.j) has four simplex sentences in its deep structure. The intonation contours clearly differentiate the graphically identical questions.)

Justification:

(i) The major justification for deriving yes-no questions as stylistic variants of (a subset of) alternative questions is semantic. That is, sentences like (30.a,b,c) are perfect paraphrases of one another, and all are perfect paraphrases of the underlying full alternative question, Does he always snore or doesn't he always snore?

(ii) A further justification is the fact that this derivation automatically relates the rising intonation pattern of yes-no questions to the rising pattern of the first part of alternative questions.

(iii) This analysis agrees with Katz and Postal's analysis of yes-no questions in having WH plus OR (in Katz and Postal, WH plus either-or) in the deep structure of yes-no questions. It is not clear, however, whether Katz and Postal consider yes-no questions to be reduced alternative questions, or whether they would say that alternative questions include an additional S in their deep structures that is absent in the deep structures of yes-no questions.

(iv) Malone's (1967) analysis of yes-no questions, which distinguishes such questions from statements on the basis of interrogative (vs. declarative) "sentence valences", cannot account for the relations between yes-no and alternative questions, and is rejected on these grounds.

(v) The condition on SC (2) excludes strings such as (31).

Problems:

(i) There is some doubt about whether negative sentences such as (30.e) are in fact yes-no questions. The present treatment assumes that they can be, i.e. that (30.d,e) can be derived as alternative stylistic variants of: Doesn't he always snore or does he always snore? (This latter sentence, however, is itself rather peculiar unless the auxiliaries are stressed: You said he doesn't always snore, but now you seem doubtful. Well, doesn't he always snore or does he always snore?) In any case, it seems clear that the usual interpretation of Doesn't he always snore? is a paraphrase of He always snores, doesn't he?--see (30.c)

(ii) It is perhaps a problem for this derivation of yes-no questions that the answers to such questions are different from the answers to alternative questions:

(33) Does he always snore, or doesn't he always snore? { He does. }
 { He doesn't. }

(34) Does he always snore? { Yes (, he does). }
 { No (, he doesn't). }

(iii) SC (1) retains only the pre-subject part of AUX, in the second of the conjoined questions. Thus from Should he have been doing that or shouldn't he have been doing that? SC (1) derives: Should he have been doing that or shouldn't he? But the following are also grammatical: Should he have been doing that or shouldn't he have? Should he have been doing that or shouldn't he have been? The same patterning of AUX retention is found in other kinds of conjoined structures--He should have been doing that and she should (have been), too.--so perhaps the general conjunction-reduction rules are all that is

necessary to account for the sentences generated by SC (1). Similarly, SC (2) seems only to be a special case of a more general phenomenon: cf. He loves Jane and not Mary, Either he loves Jane or not.

B. WH Questions and Other Question Types

1. WH Question Words

Since the WH's which yield question words are introduced as features on the determiner of the indefinite NP, there is no need for a WH-ATTACHMENT rule with interrogative structures. The various question words (and relative pronouns) are derived from the feature complexes under the determiner node. The actual "spelling" of the feature complexes takes place in the second lexical lookup. The discussion and justification of this procedure, along with the rules, are found in the DETERMINER section.

2. WH Fronting

SI: # X (PREP) NP [D [+WH] X] X
 1 2 3 4

SC: 1. Attach 3 as right sister of 1.
 2. Erase (original) 3.

COND: 1. 2 ≠ X [+WH] X
 2. The rule is obligatory.

Notes: (i) The fronting of [+WH] will trigger AUX-ATTRACTION.
 (ii) In some cases the constituent with WH may be fronted from within a subordinate clause: When has he decided to leave? Where did she tell him to go? What did it surprise him that she did?

Fronting must be prevented, however, when the constituent with WH occurs in a relative clause or an indirect question. Rel clauses are one of the configurations where the movement across a variable is blocked by Ross's COMPLEX NP CONSTRAINT. The fact that interrogation is also impossible out of an indirect question suggests that the deep structure of indirect questions should have a lexical head. For example:

- (35) (a) The man $\begin{array}{c} \text{S} \\ \diagup \quad \diagdown \\ \text{the man killed who} \end{array}$ came \rightarrow
 (b) *Who did the man who kill came?

- (36) (a) You know $\begin{array}{c} \text{S} \\ \diagup \quad \diagdown \\ \text{who came} \end{array}$ \rightarrow
 (b) *Who do you know came?
 (c) *Who did you know come?

(iii) Condition (1) is needed to prevent the stacking of WH's.

- (37) (a) *Why where when did you see him?
 (b) Why, where and when did you see him?

(iv) A sentence with WH can be conjoined only with another sentence containing WH:

- (38) (a) He died where and when?
 (b) Where and when did he die?
 (39) (a) *He died here and when?
 (b) *Here and when did he die?

3. Tag Questions

There are certain requisites that any solution for tag questions should meet. First, they should not be generated as optional variants of yes-no questions, since they are semantically distinct from them. That is to say, they appear to be either negative or positive statements with an appended question element. They do not have the neutral disjunctive either/or characteristic of the alternative question. Tag questions are underlying suppositions, hopes, fears, etc., for which the speaker is seeking confirmation. An alternative question seeks only information.

In addition, there is a co-occurrence restriction that holds for yes-no questions but not for Tag questions. As pointed out by Katz and Postal (1964), some sentence adverbials can not occur in yes-no questions, but can occur in Tag questions (and in declaratives--cf. II.B.2 above); e.g.,

- (48) (a) Certainly John is a doctor.
 (b) Certainly John is a doctor, isn't he?
 (c) *Is John certainly a doctor?

This means, that if we were to derive Tag questions from yes-no questions, we would have to constrain these sentence adverbials so as to trigger the "optional" Tag transformations. Such a constraint seems a very unlikely one.

Second, we would want the same rule for AUX ATTRACTION that applies to alternative questions to apply to the AUX in the Tag.

Third, the obligatory occurrence of the opposite value of negation in the Tag to that in the main statement should be shown to be a function of the value of negation in the supposition underlying the tag question and not inherent to the tag in the deep structure. For example, in (49):

(49) John has left, hasn't he?

the NEG in the tag results only because there is no NEG in the main statement. While in (50):

(50) John hasn't left, has he?

the non-occurrence of NEG in the tag results from the NEG present in the main S.

Previous analyses of tag questions have failed to meet one or more of these requisites. Klima's analysis (1964c) fails with respect to the first requirement given above. The second and third are recognized. Thus for Klima (51) and (52) are two sets of optional variants:

(51) (a) Has John left?
 (b) John has left, hasn't he?

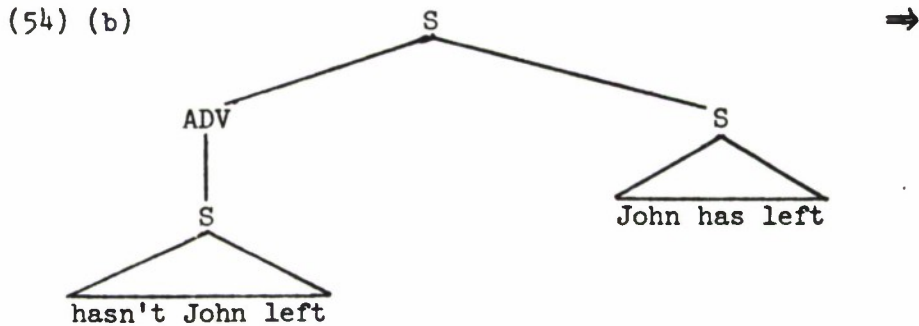
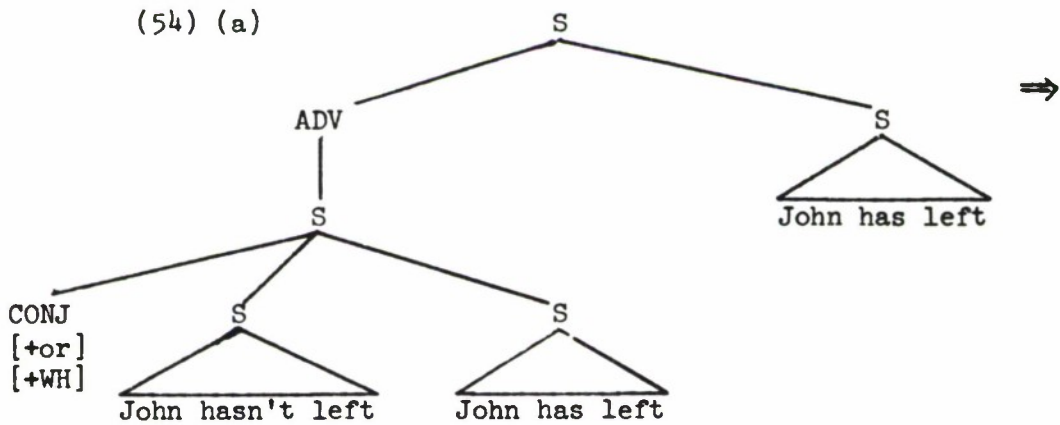
(52) (a) Hasn't John left?
 (b) John hasn't left, has he?

Rosenbaum (1966) fails with respect to the first and third of the above requisites. For Rosenbaum all tag questions are optional variants of negative yes-no questions. Tag questions with a negative in the tag are derived by optionally moving the negative of a main sentence negative into the tag. This results in the claim that (53.a,b,c) are all optional variants:

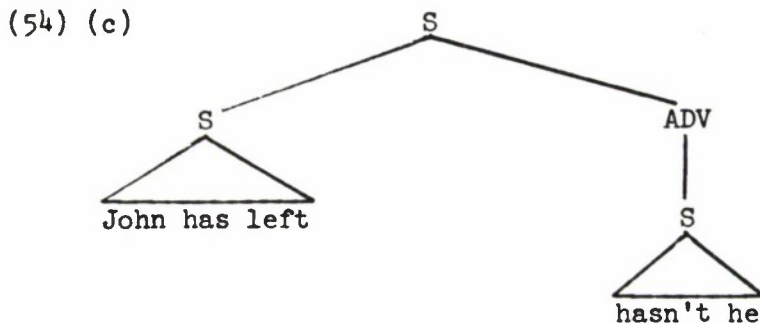
(53) (a) Hasn't John left?
 (b) John hasn't left, has he?
 (c) John has left, hasn't he?

There are two possible analyses that we have considered. They both present certain difficulties. For this reason we shall not present specific rules in this section, but rather we shall briefly outline the alternative analyses.

One possibility is to suppose that tag questions are the result of a statement plus a following alternative question which has been further reduced. This alternative question might originate in a sentence adverbial. (54.a) would be the deep structure for John has left, hasn't he? The alternative question in (54.a) would then undergo CONJ SPREADING, WH SPREADING, CONJ DELETION, AUX FRONTING, WH DELETION, and ALTERNATIVE Q RED, to yield (54.b):



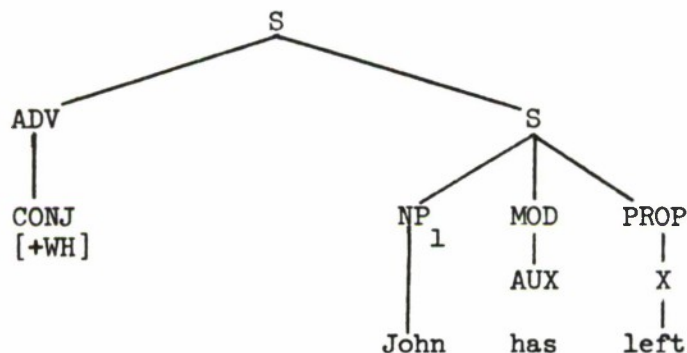
(54.b) then undergoes the tag rule which moves adverb to post-position and further reduces the question in the tag which results in (54.c):



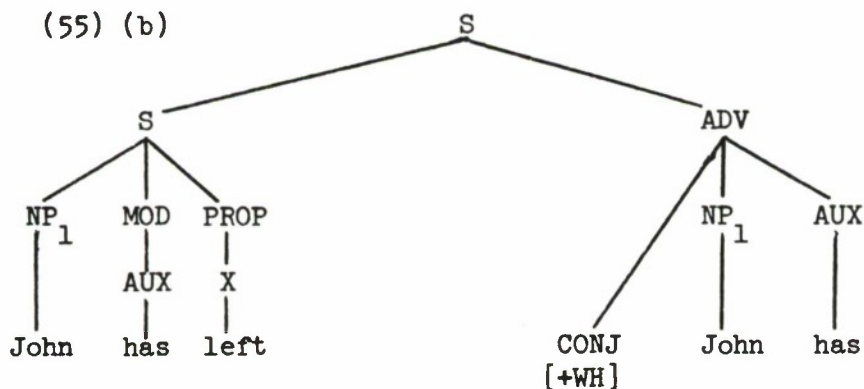
The principle difficulty with this analysis is the stating of the identities in the tag reduction rule. We want to state that the S of the tag (i.e. ADV) is identical to the main sentence S with the exception of NEG. (This must be stated as a condition.) However, since the tag S has undergone AUX FRONTING it is no longer formally identical. As a result we must tortuously list the elements in both S's and their identities. Thus, although it is possible to write such a rule, it is rather complicated to state. A main virtue of this approach is that it does not add any new symbols to the base structure (except ADV S) and employs the mechanism needed for alternative questions plus one additional rule.

A second possibility which we have considered is that tag questions result from a copying rule which copies the subject NP and the relevant parts of AUX after a sentence and makes the tag opposite to the main sentence in negation. This, however, demands a separate trigger in the base. It has been suggested that WH be generated as a sentence ADV for this purpose. The copying rule would then operate on (55.a) and convert it to (55.b):

(55) (a)



(55) (b)



The WH, which has been post-posed, then serves as a trigger for the AUX ATTRACTION rule (as it does in alternative questions) to apply to the tag. There are technical difficulties with this solution, too. First of all, WH coming from ADV may have to be restricted to non-embedded sentences since tag questions, unlike alternative and WH questions, do not appear to tolerate embedding, e.g. *I wonder whether John has left, hasn't he? (This generalization is not entirely correct since for many people the following sentences are grammatical):

- (56) (a) I think
 (b) I'm sure
 (c) I imagine
 (d) I suppose
 ...etc. } (that) John has left, hasn't he?
 (e) ?I know (that) John has left, hasn't he?

Note the presence of that which seems to indicate that tag questions are really quite different from alternative and WH questions; e.g.,

- (57) (a) *I know that who left
 (b) *I know that whether he left or not

Yet there is a peculiar restriction on embedded tag questions which we do not fully understand: they must have 1st person singular pronouns as matrix subject:

- (58) (a) *John thinks that Mary has left, hasn't she?
 (b) *They are sure that we have left, haven't we?

4. Negative Questions from Tag

There is a type of negative yes-no question which resembles tag questions in that it seems to involve an underlying supposition. The supposition is positive, however. This is illustrated in (59):

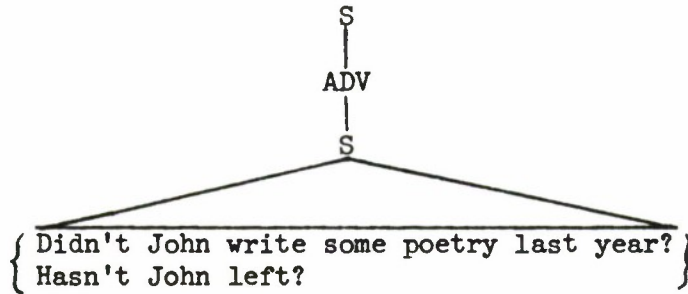
- (59) (a) Didn't John write any poetry last year?
 (b) Didn't John write some poetry last year?

(59.a) is an ordinary alternative question, but (59.b) seems to mean that the speaker supposes that John did write some poetry. We propose that (59.b) has the same base structure as (60):

- (60) John wrote some poetry last year, didn't he?

If we were to choose one of the above alternatives (59.b) could be derived as follows: a tree such as (54.a) for the underlying structure of (59.b) would be reduced by deletion of the main statement S and the right sister S of the tag, to:

(61)



5. Questioned Quote (Including Echo Question)

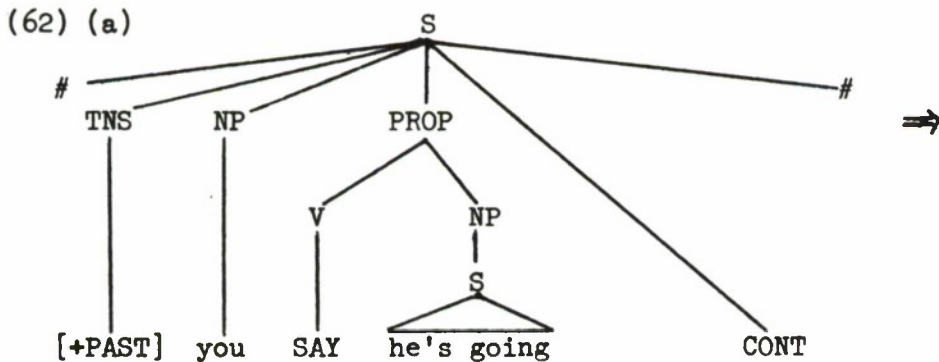
SI: # [+PAST] you say X CONT #
 1 2

SC: Delete 1.

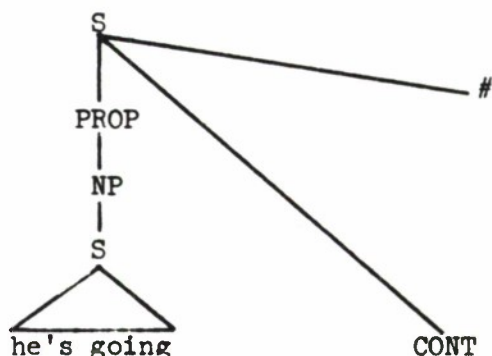
COND: This is an optional (stylistic) rule.

Note: The SI characterizes a subset of the products of REDUCED ALTERNATIVE QUESTION rule: viz., yes-no questions with the subject you and the verb say. Say, which means "(just) say in this linguistic context" is different from the ordinary verb say in that it takes only quotes sentences or pro-forms as objects. Its surface form, however, is homophonous with that of the ordinary transitive verb.

Example in tree format:



(62) (b)



Examples:

- (63) (a) He's going? (cf. Did you (just) say: "He's going?")
- (b) Is he going? (cf. Did you (just) say: "Is he going?")
- (c) Where did he go? (cf. Did you (just) say: "Where did he go?")

Justification and Alternatives:

(i) To date, Malone (1967) is by far the fullest treatment of echo questions and other echoic sentences (see WH QUESTIONED QUOTE, DECLARED QUOTE, below). The present analysis differs from Malone's in that it relates all echoic sentences to deep structures that include the verb SAY (see Notes above). This analysis seems justified by the interchangeability of echoic sentences and sentences with SAY.

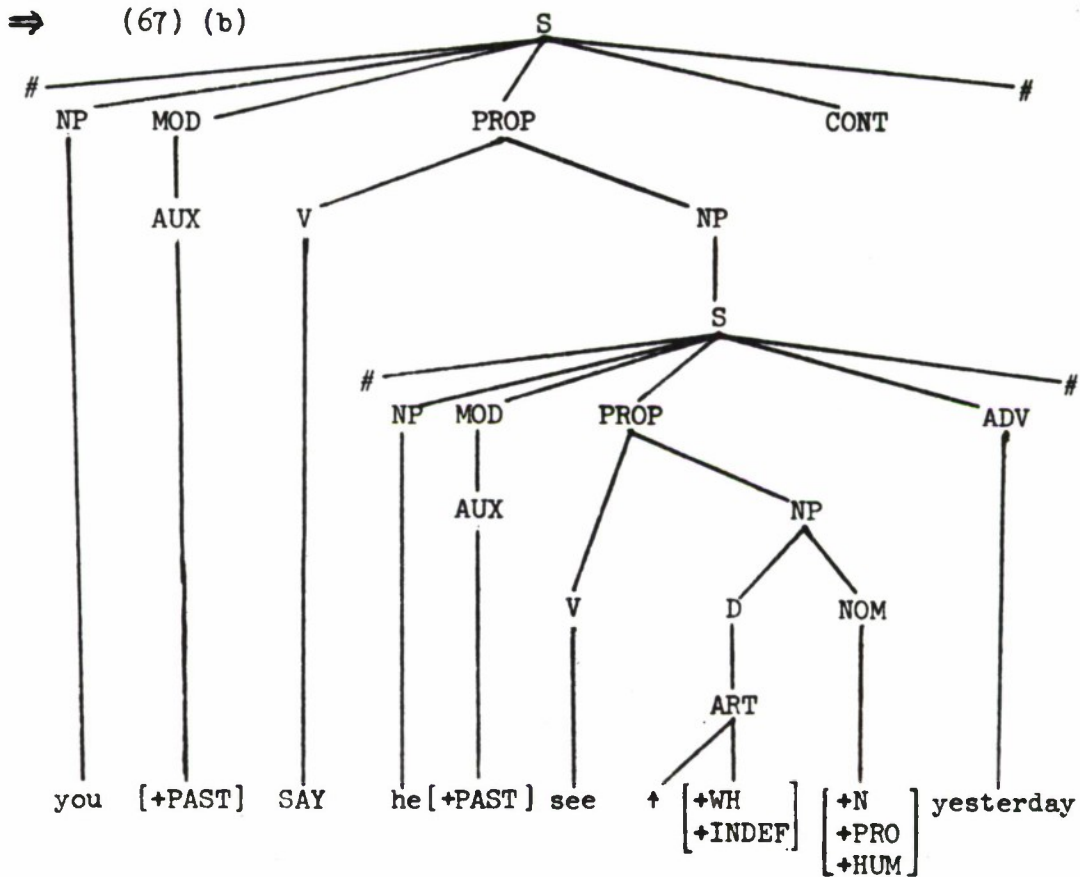
(ii) Examples like (63.b) are homophonous with yes-no questions.

(iii) Examples like (63.c) are distinguished intonationally from two other sentence types with initial WH words: WH questions and WH-questioned quotes. The questioned quotes have a /233+/ intonation pattern, the WH questions a /231+/ intonation pattern, and the WH-questioned quotes a /333+/ pattern:

- (64) 2 33+
- (64) Where did he go? (Echo question)

- 2 31+
- (65) Where did he go? (WH question)

- 3 33+
- (66) Where did he go? (WH-questioned quote)



Examples

- (68) (a) You said he saw † who(m) yesterday?
 (b) You said † who saw him yesterday?
 (c) You said he saw him † when?
 (d) ?You said † what?

Ungrammatical and disallowed

- (69) *Did you say he saw † who(m) yesterday? (Possibly grammatical, but only as a reply to: Did I say he saw (inaudible) yesterday?, in which case it is derived from: You said, did I say he saw † whom yesterday?)

Related examples

- (70) (a) †Who(m) did you say he saw yesterday?
 (b) †Who did you say saw him yesterday?
 (c) †When did you say he saw him?
 (d) †What did you say?

Grammatical but not Related to this Rule:

(71) (a) Did you say he saw him yesterday?

(b) 2 3 1+
 (b) Who(m) did you say he saw yesterday?

(c) 2 3 1+
 (c) What did you say?

Justification

(i) The underlying structure of WH-questioned quotes is differentiated from that of other questioned quotes in two ways: (a) the WH-questioned quotes are derived from declaratives, rather than interrogatives, with you SAY in the matrix S; (b) the WH-questioned quotes obligatorily include WH in the object of SAY. The reason for (a) is that sentences like (68) and (71.a) are grammatical, while sentences like (69) are not.

(ii) The ordinary WH FRONTING and AUX ATTRACTION transformations operate optionally on (68.a,b,c) to yield (70.a,b,c) respectively. In the case of (68.d) the WH QUESTION transformations perhaps operate obligatorily to yield (70.d).

(iii) The need to distinguish SAY from the ordinary verb say becomes clear through a comparison of (70.a) with (71.b) and (70.d) with (71.c). (71.b,c) are simple WH questions, while (70.a,d) are WH questions based on WH-questioned quotes.

b. You-said Deletion

SI: # you [+PAST] SAY X † X [+WH] X

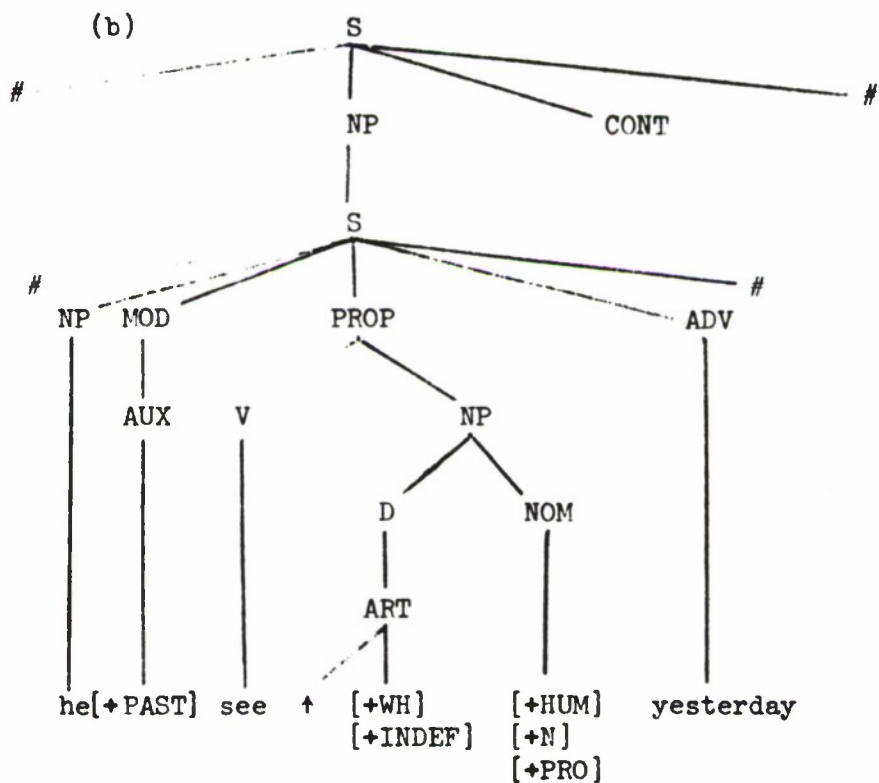
 1 2

SC: Delete 1

COND: The rule is optional.

Example in Tree Format:

(72) (a) (The input tree equals the output tree for the above Intonation Introduction rule, (67.b).)



Examples

- (73) (a) He saw ↑ who(m) yesterday?
- (b) ↑ Who saw him yesterday?
- (c) He saw him ↑ when?
- (d) ↑ What?

Related Examples

- (74) (a) ↑ Who(m) did he see yesterday?
- (b) ↑ When did he see him?

Grammatical but not Related to this Rule

- (75) (a) 2 3 1↑
 Who(m) did he see yesterday?
- (b) 3 1↑
 What?

Justification

(i) Examples like (73) are derived by optional deletion of 'You said' from the examples (68) respectively given for Intonation-Introduction rule above. This derivation is justified on the grounds of semantics as well as on the basis of intonation.

(ii) Examples like (74) reflect the optional operation of the ordinary WH-QUESTION transformations upon (73.a,c) respectively.

(iii) (74) may be contrasted with (75). The latter are simple WH questions, while the former are WH questions based upon WH-questioned quotes that have undergone 'you-said' deletion.

7. Declared Quote

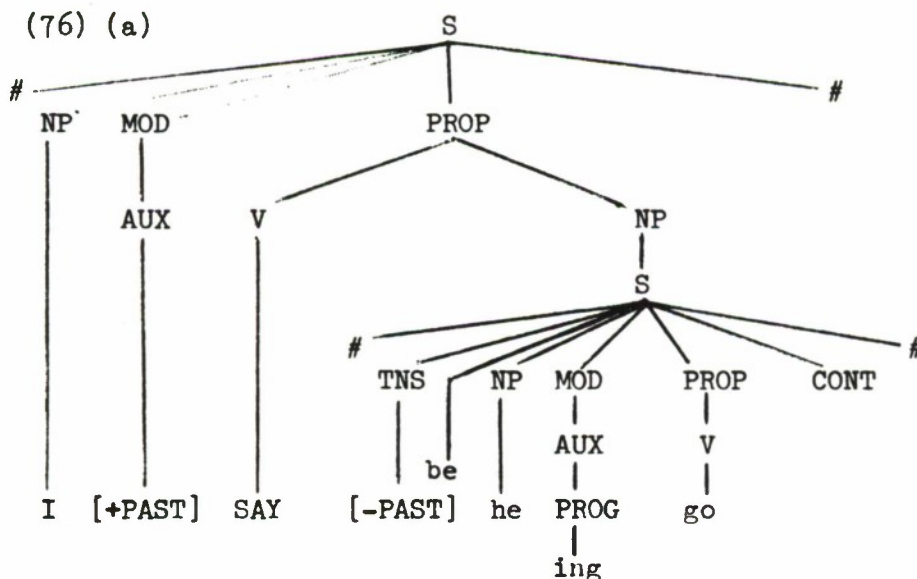
SI: # I [+PAST] SAY # X (CONT) #

1 2 3 4 5

SC: Delete 2 and 4

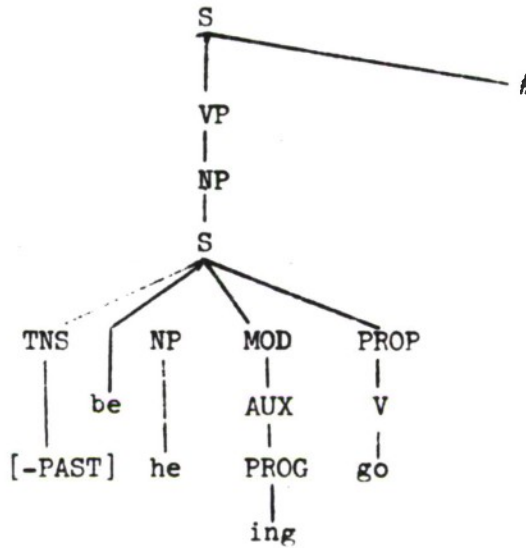
COND: 1. 3 ≠ X + CONT
2. The rule is optional.

Example in Tree Format



(76) (b)

#



Examples

(77) (a) 2 3 1+
Is he going?

(b) He's going. (As reduction of I said, "He's going.")

(c) Who's going? (As reduction of I said, "Who's going?")

Grammatical but not Generated by this Rule

(78) (a) 2 3 3+
Is he going?

(b) He's going. (As non-quoted statement.)

(c) Who's going? (As non-quoted WH question.)

Justification

(i) Examples like (77) are derived by optional deletion of "I said" from the sentences "I said (77)." Semantic and intonational arguments for this derivation may be adduced.

(ii) When the declared quote is a yes-no question, it differs intonationally from a non-quoted yes-no question--compare (77.a) with (78.a). In other cases, declared quotes are homophonous with their non-quoted counterparts--compare (77.b) with (78.b) and (77.c) with (78.c).

(iii) Condition (1) on the rule guarantees that if CONT is indeed present, it must be chosen as element 4 of the S.I. and hence must be deleted.

December 1968

IMPERATIVE

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IMPERATIVE

I. BIBLIOGRAPHY

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II. DISCUSSION AND ANALYSIS

A. The Range of Phenomena Treated

The UESP grammar provides rules for only a small proportion of the constructions which have at various times been regarded as imperatives or as closely related to them. In some cases this is because too little is known about the construction in question. However, in the case of forms like:

- (1) (a) John, come here.
- (b) Will you come here!
- (c) You will come here!

all of which have been regarded by one or another transformational grammarians as directly related to imperatives, there are good arguments against postulating a direct transformational relationship between any of these forms and true imperatives like:

- (1) (d) Come here.

Immediately below are examples of the construction-types which our rules account for, including embedded imperatives (i.e. "subjunctives"). These are followed by examples of types not included in the rules. The question of possible constraints on the deep structure subject of non-embedded sentences is then discussed.

In the course of this discussion we separate vocatives from other sentences which appear to be imperative. What we have called peremptory declaratives are claimed to be declarative sentences which in appropriate context may be interpreted as embodying a wish or command, while requests are a kind of question open to a similar interpretation. Vocatives, requests and peremptory declaratives have been regarded as typical imperative forms in some earlier works. The underlying auxiliary of imperatives is examined next, adopting a position close to that of Lees (1964): the appropriate base rule introduces an element, which we represent as SJC, disjunctive with both modals and tense. Thus, we do not generate a modal such as will in the deep structure of imperatives, but a separate form which behaves in certain respects like modals (in AUX-INVERSION) and in certain respects like affixes (in AFFIX-SHIFT and DO-SUPPORT). In connection with this argument, it is necessary to consider briefly the significance of tagged imperatives, for which we do not provide rules--in fact the grammar does not generate tags, for reasons set out here and in INTERROG.

This treatment of imperatives may be open to the objection that it fails to relate them to a number of constructions which appear to be semantically or syntactically similar. For example, the grammar does not provide directly for the fact that certain readings of (1.a-c) are close paraphrases of (1.d) and that all these, together with (2.a-c) may perhaps incorporate a common semantic element, in contrast with declaratives and questions.

- (2) (a) Go home now and I'll never see you again.
 (b) Let's go home.
 (c) May he go safely.

We claim that imperatives (like (1.d)) are syntactically distinct from all the other examples in (1) and (2); it may be possible in the future to give a more unified account of some of the exemplified constructions, but we consider that any such treatment must recognize the syntactically distinct class of imperatives.

1. Included in the UESP Rules

(a) Plain Imperatives

These rules account directly for plain imperatives and subjunctives (which are here regarded as equivalent to embedded imperatives).

- (3) (a) Go there.
 (b) You go there.
 (c) Somebody go there.
 (d) Don't go there.
 (e) Don't you go there.
 (f) Don't anybody go there.

(b) Complements containing subjunctives

- (4) (a) They requested
 (b) They made the request } that John be publicly chastized.
- (c) He moved
 (d) He seconded the motion } that the governor be recalled.
- (e) It is desirable
 (f) They talked about the necessity } that a bridge be built.

The term subjunctive word, is used here to refer to those head words that can take THAT-complements which contain SJC, the element in AUX that distinguishes imperatives. Since there is no distinct form in FOR-TO and POSS-ING complements for such embedded imperatives (subjunctives) it is difficult to provide purely formal criteria which would indicate when these complements are subjunctive. For example, the insertability of please is not a criterion. Compare (4.e,f) with (5).

- (5) (a) It is desirable to build a bridge.
 (b) They talked about the necessity of building a bridge.
 (c) *It is desirable to build a bridge, please.
 (d) *They talked about the necessity of please building a bridge.

Most subjunctive words are unmarked for the feature [IMPER] in the lexicon since they may take either subjunctive or indicative sentences as their complements. Words like know, which cannot take a subjunctive complement are marked [-IMPER] in the Lexicon. (See NOM and LEX.) Words like move, and perhaps propose, which can only take a subjunctive in a complement clause are marked [+IMPER]. (See LEX .)

2. Not Dealt with in the UESP Rules.

The following four types of constructions have not yet been carefully investigated from a generative point of view. Wishes have been totally excluded from the present treatment of imperatives. Conditional imperatives, permission imperatives, and wish imperatives are treated only in so far as their properties coincide with those of plain imperatives.

(a) Conditional imperatives.

- (6) (a) Come here, and I'll give you a dollar.
 (b) If you come here, I'll give you a dollar.

(7) Scratch a Russian and you will find a Tartar.

(b) Permission imperatives.

- (8) (a) Come home at 3:00 every morning (if you must).
 (b) Buy whatever you like.
 (c) All right, be miserable (I don't care).

(c) Wish-imperatives.

- (9) (a) Be happy.
 (b) Get well soon.
 (c) Sleep well.

(6)-(9) are all much like ordinary imperatives but differ from them semantically, and, to a greater or lesser extent, syntactically. For example, they do not take tags comfortably. Please can occur with none of the examples in (8).

(d) Wishes

- (10) (a) May you be happy.
 (b) May you soon get well again.

In addition, modals of volition with their accompanying verb-phrases have not been dealt with in detail. Such modals have been treated by Boyd and Thorne as realizations of a performative pro-verb IMP. A grammar that treats auxiliaries as main verbs might subsume these modals under the subjunctive words mentioned above (II.A.1.b). This grammar does not treat auxiliaries as main verbs, and the fact that a non-finite verb form follows both the modals and the subjunctive words results from independent factors in the grammar: modals have no affix with them in the deep structure so there is nothing to move onto the verbs which follow, while subjunctive words on the other hand select, to follow them, an embedded sentence containing SJC in the AUX. Since SJC is disjunctive with TNS, there is once again no effect on the form of the main verb. Some examples of modals of volition are:

- (11) You { shall
should
must
may
might
could
ought to } go.

So far in this section we have been dealing with forms which we exclude not on the basis of positive evidence but simply because they have not yet been adequately dealt with from a transformational perspective, or because we have been unable to incorporate them into our treatment of the imperative. There is one more such construction, the let imperative, which has many points in common with the true imperatives but which we do not attempt to deal with in detail.

- (e) Let imperatives.
(i.e. let used with first or third person subject to supply an indirect imperative)

- (12) (a) Let's start at once, shall we.
(b) ?Don't let's start yet. (Let's not start yet.)
(c) Let us both have a try at it.
(d) Let there be no mistake about it.
(e) Let them leave as soon as they hear me call.

We do not have an analysis of these forms. They appear to be closely related to ordinary imperatives but there are differences. For example, quite a number of let imperatives do not admit a tag with will you:

- (13) (a) *Let them do their worst, will you. (defiance)
(b) *Let them all come, will you. (defiance)
(c) *Let there be no mistake about it, will you.
(d) *Let AB equal CD, will you.

Moreover, let imperatives with a first person plural (inclusive) subject differ formally from plain imperatives in which let is followed by a complement with a first person plural (exclusive) subject: the let imperatives admit reduction of let us to let's and some differ in the form of the tag:

- (14) (a) Let us pass, will you }
(b) *Let's pass, will you } (=allow us)
(c) Let us go in, shall we. }
(d) Let's go in, shall we. } (=I suggest that we...)

We turn now to three forms which have been regarded by various grammarians as imperatives. We shall devote the next three sections to demonstrating that although they possess features in common with imperatives, they must all be clearly separated from them. We do not deal with these constructions in the imperative rules for the reasons discussed below.

(f) Vocatives

- (15) (a) John, look at yourself.
 (b) Take off your coat, somebody.
 (c) Boys, come here, please.

(g) Peremptory declaratives

- (16) (a) You will leave immediately.
 (b) Shoes will not be worn in the gym.
 (c) You certainly won't do that.

(h) Requests

- (17) $\left. \begin{array}{l} \text{Can} \\ \text{Could} \\ \text{Can't} \\ \text{Couldn't} \\ \text{Will} \\ \text{Would} \\ \text{Won't} \\ \text{?Wouldn't} \end{array} \right\} \text{you leave immediately, please.}$

Finally, tagged imperatives which are described in detail in section (F) are not dealt with in our rules since we do not have a general Tag rule in the grammar.

(i) Tagged imperatives

- (18) Leave immediately, $\left\{ \begin{array}{l} \text{will you} \\ \text{can you} \\ \text{would you} \\ \text{could you} \\ \text{won't you} \\ \text{can't you} \end{array} \right\} \text{(please).}$

B. The Underlying Subject of Imperatives.

1. Constraints on Imperative Subjects in respect to Person

Chomsky (1955), Klima (1964c), Kiparsky (1963), Katz and Postal (1964b), Lees (1964b) and Hasegawa (1965) all agree that imperatives

have you as underlying subject. This subject may (and in some cases, must) be deleted. They support this claim by the following arguments:

(a) The reflexive in imperatives is yourself/yourselfs:

(19) Look at yourself.

but not:

(20) *Look at myself.

(b) Tagged imperatives have you:

(21) Go home, will you.

but not (as an imperative):

(22) *Go home, will he.

Thorne, however, notes that there are certain kinds of imperatives in which it is less obvious that an underlying you is the subject:

- (23) (a) Nobody move.
 (b) Everybody get out as quick as he/you can.
 (c) Somebody pay the bill.
 (d) John, come here.
 (e) Sit down, boys.

He therefore admits nouns as the subject of imperatives, but requires that the N-node contain the feature [+VOCATIVE]. This feature is always realized by you either as a determiner on the noun, as in you boys come here, or by itself. The feature [+VOCATIVE] (on you) may be deleted in certain contexts, as in (23.d,e). Thorne's disagreement with the conclusions the other investigators drew from sentences (19-22) is thus less radical than it seems — apparently not radical enough.

Thorne fails to take into account, in any systematic way, sentences (23.a-c) on the one hand and (23.d,e) on the other. In the first place there is a major difference in intonation between the two sets of sentences. (23.d,e) alone require a comma-intonation to set off what Thorne considers the vocative subject of the imperative, a fact which alone makes his analysis rather dubious. Secondly, in sentences like (23.d) it is impossible to refer back to John by a third person pronoun:

- (24) (a) John, take off your coat.
 (b) *John, take off his coat.

Sentences like (23.c), however, which do not require comma intonation after the subject, differ also from (23.d,e) in that they admit third person pronominal reference. For many people, his in (26) may refer to the person addressed, the subject of that sentence. Thus, the subject of (26) is much more clearly third person than is the subject of (24).

(25) Somebody take off your coat.

(26) Somebody take off his coat.

Thorne takes (26) to be ungrammatical; he considers it "an erroneous form found among educated speakers", which replaces (25). He points out that one says:

(27) Take off your coat, somebody.

But not, with the same meaning:

(28) *Take off his coat, somebody.

However, the fact that (28) is not acceptable provides no support for regarding (26) as having an essentially [+II person] subject. Even if (28) were transformationally related to (26), it would not be enough to attribute the ambiguity of (26) to analogy or hyperurbanism. Such an "explanation" would give no account of why in contrast with (26), (28) can never have third person anaphora to its subject. In any case, (26) and (28) do not seem to be transformationally related.

It is in fact rather easy to relate (27) and (28) to vocatives like (23.a,e). There are sentences parallel to (27), (28) but with somebody in initial position, separated from the rest of the sentence by comma intonation. Only that intonational difference separates (27') and (28') from (25) and (26), on the surface.

(27') Somebody, take off your coat.

(28') *Somebody, take off his coat.

Notice, however, that (28'), like (28), cannot occur if his is understood to refer back to the subject.

Furthermore, in forms which are unmistakably vocative, like (29),

(29) *John, take off his coat. (coref.)

his cannot refer back to the subject. We are not dealing in detail with the derivation of vocatives in this report (but see B.2). It is enough to suggest that (30') is a likely source for (30):

(30) John, take off your coat.

(30') John, you take off your coat.

Generalizing, we postulate that all the sentences above with comma intonation have you as the underlying subject. You is, of course, usually deleted. In this way, second person anaphoric reference to vocatives, including those where the vocative NP is indeterminate, is explained in the same way as the second person reflexives and tags shown in examples (19) to (22). Thus, what needs explanation is the fact that certain noun phrases, apparently really the subjects of imperative sentences, can nevertheless select third person anaphora. We take this to mean that those sentences have [+III person] subjects.

It might be convenient if in fact it turned out that subjects of imperatives could be quite freely generated. There is apparently no natural way of constraining the subjects of topmost imperatives so that they are second person NP's. Within the present grammar, the only possibility is to block imperatives having subjects with other features on the head N by, for example, leaving the SJC morpheme undeleted just in case the subject of a top imperative fails to meet the relevant conditions. Not only does this necessitate an otherwise unmotivated blocking transformation; it also introduces a major and unexplained difference between (top) imperatives and related sentences dominated by S, i.e. "subjunctives". (See NOM and (4. a-f) above.) (Generally, we refer only to topmost sentences as "imperatives".)

Apart from a few special cases like (26), however, where there really does seem to be a third person subject in an imperative, the restriction to second person subjects appears to be correct. It is beyond question that the subject of an imperative is, in some sense, being addressed by the speaker, even in cases where the subject NP appears to be third person. The impossibility of using in these subjects any third person NP which intrinsically implies that the referent is NOT being addressed makes this quite clear. All of the following are non-sentences whether taken as vocatives or imperatives.

- (31) (a) *Your son come here.
 (b) *My ambassador to you come back.
 (c) *Me go away.
 (d) *Her kiss John.

It is not only in imperatives that certain 3rd person NP's can occasionally be used to refer to the person addressed. Consider the sentence: The reader has undoubtedly noticed several errors in this report. On one reading it can be paraphrased in certain circumstances by, You have undoubtedly noticed several errors in this report of which it seems to be a stylistic variant limited (among other things) to cases where the writer or speaker is uncertain who in particular he is addressing.

In the light of this, consider the range of apparently third person subjects occurring in imperatives. In the first place there are a number of examples which include or could include an underlying second person partitive, either with of or with among. For example:

- (32) (a) The oldest of the girls (among you) sing a lullaby.
 (b) One of the boys (among you) run ahead.
 (c) ?A girl (among you) try to thread that needle.
- (33) (a) Everyone of you pick up $\left\{ \begin{array}{l} ?\text{his} \\ \text{your} \end{array} \right\}$ towel.
 (b) $\left. \begin{array}{l} \text{Every one} \\ \text{Everyone} \end{array} \right\}$ pick up $\left\{ \begin{array}{l} \text{his} \\ ?\text{your} \end{array} \right\}$ towel.
- (34) (a) None of you move.
 (b) *None move.
 (c) No-one move.
- (35) (a) Somebody $\left\{ \begin{array}{l} *\text{of} \\ ?\text{among} \end{array} \right\}$ you run to the door.
 (b) Somebody run to the door.

It would be tempting to argue from (32)-(34) that all superficially third person subjects of imperatives come from NP's which dominate a second person partitive. This would give a syntactically reasonable source for both second and third person features in anaphoric reference to the "third person" subjects--either to the features of the top NP or to those of the partitive. As (33) shows, it seems that second person anaphora in such cases is preferable when the partitive is present while third person pronouns are more readily

used when there is no overt partitive. However, (36) suggests that there are cases (especially those that could NOT incorporate an of partitive, but only one with among--see (36')) which vary rather freely between second and third person anaphora when there is no second person partitive present.

- (36) (a) The oldest of the girls put $\left\{ \begin{array}{l} \text{your} \\ \text{her} \end{array} \right\}$ purse
down and come here.
(b) One of the boys test $\left\{ \begin{array}{l} \text{yourself} \\ \text{himself} \end{array} \right\}$ while I wait.
- (36') (a) The oldest of the girls $\left\{ \begin{array}{l} \text{among you} \\ * \text{of you} \end{array} \right\}$...
(b) One of the boys $\left\{ \begin{array}{l} \text{among you} \\ * \text{of you} \end{array} \right\}$...

Unfortunately for any attempt to relate the second person characteristics of third person subjects of imperatives to the presence within the NP of an underlying and perhaps deleted second person partitive, there is no independent evidence for setting up such a partitive in sentences where it fails to appear at the surface.

Moreover, second person among partitives within third person NP's (as in (36')) allow second person anaphora only in imperatives; they can scarcely be used, therefore, to explain the fact that third person imperative subjects are much like 2nd person NP's. Consider the possibilities of using second person anaphora in the following situations. When in a higher or conjoined NP, [+II person] dominates [+III person] in anaphora, the result is like (37):

- (37) (a) John and you took $\left\{ \begin{array}{l} * \text{their} \\ \text{your} \end{array} \right\}$ shoes to the repair
shop last month.
(b) You of the men who are about to leave should
speak to $\left\{ \begin{array}{l} * \text{their} \\ \text{your} \end{array} \right\}$ supervisors immediately.

On the other hand, when [+II person] is in a partitive with among, dominated by [+III person], it is the latter feature that operates in anaphora in indicative sentences:

- (38) The brightest boys among you have already finished
 $\left\{ \begin{array}{l} \text{their} \\ * \text{your} \end{array} \right\}$ homework.

(Note that when the second person feature is within an of partitive there appears to be a choice, as in, The brightest of you have already finished { your / their } homework. This is irrelevant, however, since (36') demonstrates that among partitives would have to be postulated for at least some third person imperatives.)

Thus, it is only in imperatives, like (39), that second person anaphora can be attributed to an among partitive dominated by a third person NP. But it was a peculiarity of imperatives that the postulation of underlying partitives was supposed to explain

- (39) The brightest boys among you finish { your / ?their } homework
as fast as { you / ?they } can.

There is another reason for rejecting such an explanation, anyway. There are cases of third person NP's acting as imperative subjects which cannot possibly include partitives. One instance of a case where the partitive seems at least a little odd has already been given, in (35.a,b). The following, all of which are acceptable to many people, can not have second person partitives, as we show in (41).

- (40) (a) The boy in the corner stand up.
(b) All the children in the front row be quiet.
(c) The oldest of the girls among the English
in this group sing a folk song.
(d) Nobody move.
(e) Everybody hurry up.
- (41) (a) *The boy in the corner { of / among } you stand up.
(b) *All the children in the front row { of / among } you
be quiet.
(c) The oldest of the girls among the English in
this group { ?of / *among } you sing a folk song.
(d) *Nobody { at / among } you move.
(e) *Everybody { of / among } you hurry up.

(In some cases the starred forms of (41) may be possible but not synonymous with the parallel sentences of (40).)

It seems to be necessary to recognize that while the referent of the subject NP of an imperative is addressed by the speaker, constraining the NP basically to the second person, nevertheless certain third person NP's can occur with second person reference. If a third person NP occurs in this way in an imperative subject it may apparently select either second or third person anaphora. We have no way of representing these facts in the grammar. It seems best to identify reference to the person addressed with the feature [+II person], to ignore second person partitives as irrelevant, and thus to exclude (40.a-e) and (32)-(35) from the grammar until the relationship between reference and the features on the noun can be more adequately dealt with.

There is another possibility, which we have not explored in detail. We have limited the imperative to a rather narrow set of constructions. It is likely that these are related in various ways to a number of the forms that are excluded from this treatment: sentences with modals, Wish-imperatives, Let-imperatives and vocatives, for example. Thus, there are sentences with third person NP's separated from the rest by comma intonation which act like vocatives but include a definite description.

- (42) (a) Boys, come here.
 (b) The boy in the corner, come here.
- (43) (a) Boys, don't (you) break that.
 (b) The boy in the corner, don't (you) break that.
- (a') *Don't boys, (you) break that.
 (b') *Don't the boy in the corner, (you) break that.

It may be that sentences like (42.a) should be derived with you as the deep subject and the third person NP outside the sentence, as for vocatives (cf. B.2). By a later transformation the third person NP could replace you.

Let-imperatives would provide yet another source for third person subjects. All the following are possible.

- (44) (a) Let the boy in the corner stand up now.
 (b) Let nobody move.
 (c) Let all the girls among you leave at once.

The deletion of Let (which is not understood here to mean allow) would produce satisfactory third person imperatives. However, it would be necessary to constrain Let-deletion in all sorts of unexplained ways to obtain:

- (45) (a) Let no-one be fooled by his explanation.
 (b) Let your son come to school properly dressed in the future.
 (c) Let John be the first to go.
 (d) ?Let everybody not pay much attention to him.

While excluding:

- (46) (a) *No-one be fooled by his explanations.
 (b) *Your son come to school properly dressed in future.
 (c) *John be the first to go.
 (d) *Everybody not pay much attention to him.

We therefore limit the grammar to second person imperative subjects. Although it is quite clear that this will not account for all the data, nevertheless it seems to be the nearest approach to a correct, though limited, generalization that can be made at present.

Further evidence that all imperatives have, in some sense, second person subjects may come from dialogs like the following. We are not sure how to weigh this evidence. It appears to be relevant to the question of their deep structure, since third person anaphora from outside the imperative is apparently impossible, even if it occurs within the sentence itself. It is assumed in (47) and (48) that the second sentence of the dialog does not constitute an explanation to a third party but is addressed to the same person.

- (47) The boy in the corner stand up. $\left\{ \begin{array}{l} \text{You have} \\ *He has \end{array} \right\}$ not done
 $\left\{ \begin{array}{l} \text{your} \\ *his \end{array} \right\}$ homework.
- (48) (a) The eldest girl among you take off her shoes.
 $\left\{ \begin{array}{l} ?She \\ You \end{array} \right\}$ brought mud in on them.
 (b) The eldest girl among you take off her shoes.
 Put them in the fireplace, will $\left\{ \begin{array}{l} \text{you} \\ *she \end{array} \right\}$.

The following suggests that the same phenomena occur in tags:

- (49) (a) The boy over there stand up, will you.
 (b) *The boy over there stand up, will he.

2. A Note on the Vocative

We have made no attempt to include vocatives in the formal treatment presented here, but a suggestion of how they might be included is perhaps in place. It may be observed that while we must distinguish between imperative subjects and true vocatives, the two cannot co-occur:

- (50) (a) *You boys come here, boys.
 (b) *Some of you men help me lift this, men.

What may be involved in instances such as these is some process of obligatory pronominalization, or deletion of identical material. Compare the grammatical sentences in (51) with (50):

- (51) (a) You come here, boys.
 (b) Some of you help me lift this, men.
 (c) ?You come here, you boys.
 (d) ?Some of you help me lift this, you men.

Notice that such second person pronominalization seems to apply to all sentences that include vocatives, not just to imperatives:

- (52) (a) *Harry, Harry is wonderful.
 [+VOC]
 (b) Harry, you are wonderful.
 [+VOC]
 (c) You, Harry, you are wonderful.

If we assumed that all sentences could have a vocative, then we could account for the second person pronoun as a result of pronominalization which involved a vocative and any other NP in the sentence which happened to be referentially identical with the vocative. Under this analysis imperatives would be constrained so that the subject of the imperative contained a copy of the vocative NP. The advantage of this analysis would be that it used processes (pronominalization and equi-NP-deletion) needed elsewhere in the grammar.

Alternatively it is possible that the sentence to which a vocative is attached always contains a second person pronominal NP, marked in some way as co-referential with the vocative. Then (52.b) rather than (52.a) would be the deep structure. This would, of course, provide a somewhat more appropriate input to imperative transformations if they demand, as we suggest, a second person subject. Either source would effectively exclude (50).

C. Imperatives and Peremptory Declaratives

Katz and Postal observe that a sentence like:

(53) You will go home.

may be interpreted in either of two ways: (a) as a predictive statement or (b) as an order. Thorne makes the same observation about the sentences:

(54) (a) You, John, will come.

(b) You will be examined by the doctor.

On the basis of such observations, these authors propose that sentences like (53) and (54) are ambiguous and may correspond to either of two different underlying P-markers: one with, and one without, an imperative morpheme.

There are, however, a number of significant syntactic differences between such sentences involving the "peremptory future", and true imperatives, which lead us to analyze (53) and (54) as declaratives (with a possible special interpretation) and not as ambiguously declarative or imperative.

(a) While the subject of a true imperative must include (in the sense suggested above) a 2nd person feature specification, this is not true of the peremptory futures in (55). (Note that though peremptory declaratives are usually future, they may occur in the present tense, e.g., such things are not done here.)

(55) (a) Trousers will not be worn by women in this department.

(b) *Trousers, don't be worn by women in this department.

(b) Sentence adverbs such as certainly may occur in sentences involving the peremptory future but not in true imperatives:

(56) (a) You certainly won't do that.

(b) *Certainly don't do that.

(c) While true imperatives can be conjoined with one another and peremptory futures can be conjoined with one another, a true imperative and a peremptory future cannot in general be conjoined.

- (57) (a) Be a good boy while I'm away and don't touch any liquor.
 (b) You will be a good boy while I'm away and you won't touch any liquor.
 (c) *Be a good boy while I'm away and you won't touch any liquor.
 (d) *You will be a good boy while I'm away and don't touch any liquor.

(Sentence (57.c) is possibly grammatical as a conditional imperative: i.e., in the meaning: "If you're a good boy while I'm away, you won't touch any liquor".)

(d) A peremptory future can be conjoined with a declarative; an imperative in general cannot be conjoined with a declarative:

- (58) (a) I hate girls in trousers, and you won't wear trousers again, my dear.
 (b) You will not go to see that bloody war-picture, and you know why.
 (c) *I hate girls in trousers, and don't wear trousers again, my dear.
 (d) *Don't go to see that bloody war-picture, and you know why.

((58.c-d) must be distinguished from conditional imperatives like Step inside and I'll hit you, which can, and indeed must be conjoined to a declarative following them.)

On the basis of these observations, we conclude that sentences involving the peremptory future are declaratives, and do not contain an imperative morpheme. The imperative-like quality of such sentences is, in our view, a matter of semantic interpretation: any statement about the future--if its confirmation depends upon the compliance of some persona other than the speaker with the wishes of the speaker--may have this interpretation. It may be best to refer to this as a "pragmatic" rather than a "semantic" aspect of the sentence.

D. Imperatives, Requests and Questions

1. Behavior Common to Imperatives and Requests

(a) AUX-attraction

Chomsky pointed out in 1955 that imperatives, like questions, requests and wishes, undergo subject-auxiliary inversion (AUX-ATTRACTION). Compare:

- (59) (a) Don't you drink brandy?
 (b) Won't you drink a glass of brandy, please?
 (c) Don't (you) drink any brandy, now!

In non-negated imperatives such as:

- (60) (a) (You) have some brandy.
 (b) (You) be a good boy.

inversion was said to apply to a \emptyset auxiliary:

- (61) You \emptyset be a good boy \Rightarrow \emptyset You be a good boy.

This vacuous permutation of a zero element permitted a uniform treatment of subject-auxiliary inversion for imperatives but made it hard to account for You come here, as opposed to *Do you come here. Thus while AUX-ATTRACTION seems to apply to negative and perhaps emphatic imperative sentences it is not a clear example of a characteristic that is common to imperatives and requests, because (a) the correct account of the presence of don't in negative imperatives may not involve the general rule AUX-ATTRACTION and (b) plain imperatives do not involve AUX-ATTRACTION (see Section E).

(b) Co-occurrence Restrictions

Requests and imperatives share a number of co-occurrence restrictions. For example:

(i) Stative verbs:

Kiparsky (1963) and others have observed that a certain class of verbs which Lakoff (1965) calls statives, occur neither in imperatives nor in requests:

- (62) (a) *Understand the answer.
 (b) *Want more money.
 (c) *Hope it rains.

- (63) (a) $\left\{ \begin{array}{l} *understand\ the\ answer, \\ *want\ more\ money, \\ *hope\ it\ rains, \end{array} \right\}$ please?
 (b) Would you
 (c)

(ii) Adverbials:

Kiparsky has also observed that certain adverbials fail to occur in imperatives and requests alike. To repeat his examples:

- (64) (a) You (will) learn this language surprisingly fast. [28]
 (b) *Would you learn this language surprisingly fast. [29]
 (c) *Learn this language surprisingly fast. [30]
 (d) Learn this language fast. [31]

(In the surface structure of examples (64.a,b) surprisingly is a modifier of fast.)

Katz and Postal, as well as Lees, have noted that certain preverbs do not normally occur in imperative sentences:

- (65) (a) *Hardly
 (b) *Scarcely
 (c) *Almost } finish your work.

This observation also holds for requests:

- (66) (a) Would you { *hardly
 (b) { *scarcely } finish your work, please?
 (c) { *almost }

Chomsky (1955) makes the observation that imperatives do not occur with a past time adverb:

- (67) *Come yesterday.

Kiparsky notes that the same restriction holds for requests:

- (68) *Would you come yesterday, please?

Please occurs in both requests and imperatives as in:

- (69) (a) Won't you step in, please?
 (b) Step in, please?

On the basis of sentences like (69.a,b), Kiparsky proposed that, in their underlying structures, requests include an IMP(erative) morpheme, and that the underlying structures of requests and true imperatives differ only in the auxiliaries involved.

2. Differences between Imperatives and Requests

There are, however, a number of properties which are not shared by requests and imperatives.

(a) Third Person Subjects

Imperatives and requests differ significantly with respect to the apparently third person subjects which can appear in them. Generative grammarians agree that in English the subject of an imperative must correspond to the person (or at least one of the persons) addressed in the sentence. Kiparsky claims that the subjects of requests (like imperatives) "are confined to the 2nd person singular and plural" and maintains that (70) is ungrammatical:

(70) Would your son look at himself in the mirror, please?

The above sentence, however, is quite acceptable in the following context:

"So your son, the prince, does not believe that Baby Jane kissed him while he was asleep? Would your son look at himself in the mirror, please? The rouge is still on his left cheek."

The following also seem to be grammatical:

- (71) (a) Would your son come over, please, and help us with the planting?
 (b) Could your soldiers please help us build this bridge, General Lee?

Sentences such as (70) and (71) where a request is made of a person not addressed in the discourse, usually imply that the request should be communicated to the person concerned. Sentence (70) perhaps means: "Would you suggest to your son that he look at himself in the mirror?" Sentence (71.b) means something like: "Could you please get your soldiers to help us build the bridge, General Lee?" In true imperatives as we saw above, it is crucial that the subject be the person addressed. Compare the requests in (71) with the true corresponding imperatives in (72):

- (72) (a) *Your son come over, please, and help us with the planting.
 (b) *Your soldiers please help us build this bridge, General Lee.

This difference between imperatives and requests is exhibited rather clearly by:

- (73) Would you and your guests please not make so much noise?

Conjoined NP's like you and your guests may occur as subjects of requests. If such NP's are derived from two underlying sentences, then one expects (74) to be grammatical, as it is:

(74) Would your guests please not make so much noise?

Notice however, that the imperatives corresponding to (73) and (74) are ungrammatical:

- (75) (a) *Please don't you and your guests make so
much noise.
(b) *Please don't your guests make so much noise.

This we consider to be a significant difference between the two sentence types.

(b) Adverbials

The restrictions on sentence adverbs that may occur in requests are not quite the same as those on sentence adverbs that may occur in imperatives. Compare:

- (76) (a) Could you possibly come over please?
(b) Will you perhaps have a cup of coffee with us?
(c) *Possibly come over, please?
(d) *Perhaps have a cup of coffee with us. (cf.
D.1.b.ii above)

(c) Passive Forms

There are passive requests formed with can, can't, could and couldn't (but not with will, won't, would and wouldn't):

- (77) (a) Can the soup be served after the hors d'oeuvre,
please?
(b) Can't the curtains please be drawn?
(c) Could the tables please be decorated with
flowers?
(d) Couldn't the piano be removed, please?

Passive imperatives are generally ungrammatical:

- (78) (a) *Be allowed to leave.
(b) ?Be flattered by what he will say.
(c) *Be elected chairman.

In negative sentences it is apparently much easier to obtain grammatical forms, such as:

- (79) (a) Don't be hurt by what he says.
 (b) Don't be misled by his flattery.

We do not attach too much weight to the fact that imperatives differ from requests in regard to the passive, since it would appear that the imperative modal is more like will than, say, can, and, as we observed, will does not occur in passive requests.

(d) Negatives on Modals

Negatives associated with the modals in requests do not carry negative force. Thus each of the following members of the pair expresses roughly the same request:

- (80) (a) Will you help me, please?
 (b) Won't you help me, please?
- (81) (a) Can you please move over a little?
 (b) Can't you please move over a little?

Negatives associated with the imperative auxiliary, on the other hand, carry negative force. Thus the members of the following pair are obviously not equivalent:

- (82) (a) Help me, please.
 (b) Don't help me, please.

Notice, also, that while (83.a) has a double-negative interpretation, (83.b) is a simple negative.

- (83) (a) ?Please don't not come here any more.
 (b) Won't you please not come here any more.

We do not know how much weight to attach to this observation. It is not clear what the source of the additional semantically rather empty negative is (cf. INTERROG, NEG) and consequently the significance of its appearing in both questions and requests but not in commands is still open.

We suggest, on the strength of most of this evidence, that the underlying structures of requests and imperatives must be distinguished to an extent greater than Kiparsky allows. We believe, in fact, that requests are probably best treated as a special subclass of (yes-no) questions, although this analysis, too, presents

certain problems. Requests and yes-no questions have, in addition to subject-auxiliary inversion, several other common characteristics, which, unlike inversion, are not shared by imperatives.

3. Characteristics Common to Requests and Questions

(a) Negatives on Modals

Negatives associated with modals (and other auxiliaries) in yes-no questions, may, like negatives associated with modals in requests, lack negative force. Compare the following examples with (80) and (81):

- (84) (a) Will he help me?
 (b) Won't he help me?
- (85) (a) Can these people move over a little?
 (b) Can't these people move over a little?

(b) Indirect Quotations

In indirect quotation, embedded requests, like some embedded yes-no questions (which we do not deal with explicitly in INTERROG) are introduced by if:

- (86) (a) He asked John if he would please play the piano.
 (b) He asked John if he thought it would rain.

Embedded yes-no questions may also, however, be introduced by whether, while embedded requests introduced by whether are questionable for some speakers:

- (87) (a) ?He asked John whether he would please play the piano.
 (b) He asked John whether he thought it would rain.

Embedded imperatives, on the other hand, never are introduced by if; they may start with that, which never introduces questions or requests:

- (88) I demanded that he play the piano.

(c) Tags

Neither yes-no questions nor requests admit tags, while imperatives do.

- (89) (a) *Will John come in, will he?
(b) *Will you please come in, will you?

(d) Intonation

Yes-no questions and requests both generally have rising intonation:

- (90) (a) Is it going to rain?
(b) Would you please pass the salt?

But imperatives generally have falling intonation:

- (91) Please pass the salt.

4. Differences Between Questions and Requests

(a) Some-any suppletion

Yes-no questions can undergo SOME-ANY SUPPLETION while requests cannot:

- (92) (a) Will he give you some/any money?
(b) Will you give me some/*any money,

(b) Conjunction

Yes-no questions may be conjoined with other yes-no questions and requests with other requests, but a yes-no question and a request cannot be conjoined very comfortably:

- (93) (a) Is Mary going to do the dishes, and is John going to take out the trash?
(b) Will you please do the dishes, and will you please take out the trash?
(c) ?Is Mary going to do the dishes, and will you please take out the trash?
(d) ?Will you please do the dishes, and is John going to take out the trash?

(c) Please

Notice, moreover, that although please can occur in certain questions as well as in requests, in requests the word please can be inserted after the subject while in questions this is not possible. Compare the following:

- (94) (a) Will you take the trash out, please?
 (b) What is the exact time, please?

- (95) (a) Will you please take the trash out?
 (b) *What please is the exact time?

(d) Negation

Although, as has been pointed out above, a negative on the modal of questions and requests does not result in a negative sentence, it appears that only a request (and not a question) must have a clearly negative interpretation when the negative comes after the subject. Thus, as questions the following can have roughly the same meaning, (96.a) being more formal than (96.b). On this reading neither differs significantly from (96.c).

- (96) (a) Will John not be going to town?
 (b) Won't John be going to town?
 (c) Will John be going to town?

Compare, as requests:

- (97) (a) Will you please not jump in before I get out?
 (b) Won't you please jump in before I get out?
 (c) Will you please jump in before I get out?

It is impossible to get readings of the requests, (97.a) and (97.b), that are paraphrases. In requests, then, a negative not directly associated with an auxiliary must have full negative force, though in questions it may lack this. Such a difference between requests and questions may constitute a rather serious obstacle to the claim that the former are a special sub-type of questions. This is consistent with our analysis of Yes/No questions (see INTERROG) which, we argue, are conjuncts, differing only in that one is negative, the other positive. Either the negative or the positive sentence is deleted on the way to the surface, accounting for the lack of negative force in many negative questions. However, requests cannot be regarded as relatively uncommitted attempts to discover which of a related pair of positive and negative statements is true. A request is an endeavor to bring about one or the other of the two possible states of affairs. For example, in (97.a and b) to bring it about that the person addressed (a) refrains from jumping in, and (b) jumps in (respectively) before the speaker gets out. Only (b) is at all similar in meaning to (97.c).

Thus, any attempt to associate requests and yes/no questions will need to set up a separate semantic apparatus, presumably working on only one of the related conjuncts. It is not clear that this can be done economically or even consistently. This does not, of course, constitute positive evidence for regarding requests as a kind of imperative.

5. Conclusion

In spite of the problems raised by these differences, it may be possible to treat requests as a subclass of yes-no questions with certain special syntactic properties, some at least stemming from their peculiar semantic characteristics.

Just as there is no clear reason to posit an Imperative morpheme, SJC, in the underlying structure of peremptory declaratives, so there is no clear reason to posit such a morpheme in the underlying structure of requests. Requests do not undergo any of the transformations, and do not obey any of the surface constraints which are exclusively characteristic of imperatives. (AUX-ATTRACTION in requests can be triggered by WH just as well as it can by SJC.)

The analysis of requests as questions with a special interpretation receives further support from the fact that in addition to examples in which the form of the request is that of a yes-no question, we find such examples as:

(98) Why don't you (please) leave me alone?

The suggestion is that any declarative or interrogative can be interpreted as a peremptory declarative or request, respectively, provided that it obeys appropriate selectional restrictions. It is not clear how far such a device will make it possible to explain the interrelationships between the various forms which we have noted. However it is clear that the earlier assumptions, which identified imperatives and requests, and failed to account for the close ties between the latter and questions, leave too much of the syntax unexplained.

E. The Underlying Auxiliary of Imperatives

1. The Presence of a Modal

Lees (1964b), and Klima (1964c), both make the following observation: do-support in non-imperative sentences depends on the first element that follows TENSE in the auxiliary or in the verb phrase; do-support does not occur if this element is be, the auxiliary have, or a modal.

- (99) (a) *He doesn't be nice.
 (b) *He doesn't have done it.
 (c) *Does he be nice?
 (d) *He does have done it.

In these cases EMPH or NEG moves to the right of be, have, or a modal. Emphatic and negative imperatives, however, require do-support, even for the verb be:

- (100) (a) Do be nice
 (b) Do be there by five.
 (c) Don't be silly.
 (d) Don't be sitting there then.

They take this as evidence that all imperatives contain a modal element which operates in Preverbal Particle Placement, so that, for example, we get (101) and then (102). (Note that in this grammar SJC covers TNS+Modal but at this point we follow Klima's model.)

- (101) NEG you TNS will be -ing sit there then \Rightarrow (by PPP-rule)
 (102) you TNS will not be -ing sit there then.

If imperatives did not have a modal in their underlying structure, we would instead have a derivation from (101') to (102') by Preverbal Particle Placement, which, on deletion of you would yield the incorrect (101''), or (102'') if AUX-ATTRACTION had also applied.

- (101') NEG you TNS be -ing sit there then \Rightarrow [by PPP-rule]
 (102') You TNS be not -ing sit there then.
 (101'') *Aren't sitting there then.
 (102'') *Be not sitting there then.

If on the other hand we accept Lees' and Klima's claim, appropriate deletions after AUX-ATTRACTION will lead to the application of DO-SUPPORT, giving (100.d) from something like (102).

2. The Choice of a Modal

Chomsky (1955) postulated that imperatives are derived from strings containing any one of those modals which never occur with past time specifications. This would automatically ensure that imperatives would only occur with non-past adverbials, but would permit multiple derivations for apparently unambiguous sentences. According to Klima (1964c) the modal will accounts for the formation of the usual tag question by a copying rule which derives (104) from (103):

(103) (You will) close the door.

(104) (You will) close the door, won't you?

Kiparsky (1963), however, has drawn attention to the fact that other tags occur after imperatives (cf. Section II.E.).

Lees (1964b) argues that the underlying modal element is a zero morpheme, which he calls IMP, but which, in our analysis, is taken to be identical with the subjunctive (SJC). This marker functions as a modal in such rules as AUX-ATTRACTION and PREVERBAL PARTICLE PLACEMENT.

Lees' analysis, incorporating a special zero modal that also acts as an affix, is based on the observation that the ordinary affirmative imperative of the verb be has the form (105) and not (106):

(105) Be there by five.

(106) *Are there by five.

He points out that, morphologically, the imperative in (105) is not the ordinary finite verb-form (resulting from the attachment of the element TNS to the underlying verb-stem). He concludes that the imperative is a verbal affix in its own right, parallel to TNS but with no effect on the verb to which it is attached. No ad hoc rule is then needed for deleting a postulated auxiliary in imperatives, since the auxiliary is a phonologically unrealized morpheme, moved onto the verb or triggering DO-support in appropriate ways. Were it not treated as an affix, but as an ordinary modal, it would require special deletion and would never trigger DO-SUPPORT. As (107) shows, DO-SUPPORT must apply (as if SJC were TNS), when EMPH or NEG has prevented it from moving onto the verb.

(107) (a) Do come here.
(b) Don't come here.

However, the situation is more complicated. Consider the derivation of the following sentence, in which the subject, you, has not been deleted.

(108) You sit down.

After AUX-ATTRACTION has taken place, this sentence would have looked something like (109).

(109) SJC you sit down.

Since the "affix", SJC, would be prevented by you from moving onto the verb, it would trigger DO-SUPPORT, resulting in (110), which is ungrammatical for most speakers.

(110) *Do you sit down.

To generate (108), as we must, we could either delete SJC just in case neither EMPH nor NEG is present, or alternatively perform AUX-ATTRACTION only when one of those morphemes is present. The first solution is essentially the one rejected by Lees. Both involve ad hoc manipulation of the rules, but it appears that there is simply a certain amount of untidiness in the data which Lees' solution could handle no better than any other. In our rules we have chosen another possibility. It is apparent that the rule of AUX-ATTRACTION which is applying here is rather different from the general rule of that name. Apart from possible constraints on the application of the rule mentioned above, there is the fact that we no longer have any motivation for an initial IMP morpheme, since we have a special imperative form in the AUX--i.e. SJC. Hence there is nothing parallel to WH or [+Affect] to attract the AUX. It is possible that we are dealing with a different rule, and thus that this IMPERATIVE-SUBJ-AUX-INVERSION can follow Affix-switching. Since SJC acts as an affix it will then be available for inversion with the subject only if there is a NEG or EMPH present to prevent it from moving onto the verb. To prevent (110) it is necessary to make YOU-DELETION obligatory if do precedes it. This is well motivated, though, as we show in discussing TOP SJC DELETION (rule 3, below), it has some unfortunate consequences.

F. Tagged Imperatives

Two proposals have been made to account for tags in a generative grammar: (a) a copying rule and (b) conjunction reduction. In the copying-rule proposal, (cf. Klima, 1964) a sentence such as (111.b) is derived by copying the auxiliary and the (pronominalized) subject of the input sentence (111.a) and appending them as a tag:

- (111) (a) Writers will never accept suggestions. →
 (b) Writers will never accept suggestions, will they?

Both Lees and Hasegawa have noted that this rule will not account for the peculiarities of imperative tags. In previous analyses, in which imperatives and requests were closely related, it seemed reasonable to derive tag-imperatives from requests, but to do so in fact introduces additional problems; not only is it hard to see how tags such as those in (112) can be accounted for by copying, it is also to be noted that requests do not admit any tags as shown in (113) (cf. Section II.D.3.c, above).

(112) Do help me, won't you?

(113) *Will you please come in, will you?

A copying rule that derived tagged imperatives from requests would require that a modal-deletion rule apply to the underlying request whenever the copying rule has applied. Thus, imperative tags would be the only case where tag-formation entailed an obligatory deletion in the original sentence, for there are indicative sentences with both occurrences of the auxiliary and subject, such as John will come, won't he?

There are other forms which a copying rule can't handle.

As has previously been noted, passives may occur in requests containing the modals can and could:

(114) Could the windows please be opened?

No tagged imperatives exist for such requests:

(115) (a) *The windows please be opened, could they?
(b) *The windows be opened, could they please?

Hence if tagged imperatives are derived by a copying rule from requests, an ad hoc condition must block the application of the rule to passives. For these reasons it seems to us that the copying rule proposal must be rejected for tagged imperatives.

In the second proposal for deriving tagged imperatives, the conjunction-reduction proposal (cf. Lees, 1964), tagged imperatives are derived in two steps: (a) sentence conjunction and (b) reduction of the second sentence, just in case it meets a certain set of conditions. These conditions are: (a) the preceding imperative must not contain NEG and (b) the modal in the tag is will, with or without, not. We can easily extend this condition, however, to include other tags as in the following:

(116) (a)
(b) Come here, { can
 can't } you?
(c) could

A derivation of a tagged imperative would begin with the following two underlying strings. For the moment it is irrelevant whether (117.a) and (117.b) must be conjoined in some way in the base.

(117) (a) You SJC come with us
(b) CONJ [you will come with us]
 [+or]
 [+WH]
 [NEG you will come with us]

The first step in the derivation is the conversion of (117.b) into an alternative question and then to the yes-no question (118.b):

- (118) (a) you SJC come with us .
- (b) WH you will come with us .

At this point a problem arises. (119) is ungrammatical and so, it seems, is any alternative version with a different conjunction.

- (119) *Come with us and will you come with us?

Hartung (1964), pp. 43-45, has argued in favor of extending the power of transformations to combine sentences in such a way that a rule could reduce the two parts of (118) directly to (120).

- (120) ?Come with us, will you come with us.

The repeated material would be removed by rules required independently in the grammar, to give (121).

- (121) Come with us, will you?

We do not in fact provide rules to generate any tags in this grammar. For further discussion see INTERROG III.B.3.

G. BLOCKING PROBLEMS

It is necessary to block imperative sentences if they

- (a) contain a subject NP which is not [+IIperson] (but see section B). This enables us to exclude

- (122) (a) *Me stand up.
- (b) *Your father come here.
- (c) *Him try to run faster.

- (b) have, as subject, an NP which is not an Agent. (This assumes that certain intransitives, such as run have agentive subjects. See LEX for discussion.) In this way we exclude stative verbs from imperatives, as in (123).

- (123) (a) *Understand this part of the book.
- (b) *Be tall.
- (c) *Hear all of the discussion.

These constraints do not apply to embedded imperatives, i.e. those sentences that we refer to as subjunctives. Thus, the following are

quite acceptable:

- (124) (a) It is necessary that I stand up.
 (b) I demand that your father come here.
 (c) It is imperative that you understand this part
 of the book.
 (d) I propose that we hear all of his arguments.

Consequently, the constraints on imperatives must be transformational rather than selectional or sub-categorical. Given our assumption that subjunctives are just embedded imperatives (which may be something of an oversimplification) it is necessary to use a last-cyclic transformation to block imperatives containing subjects which are either not second person or non-agentive. This will recognize the SJC morpheme in the top S. (Recall that we arbitrarily chose not to allow such [+III person] imperatives as (26)).

In subjunctives, it is necessary that SJC be deleted in order to exclude such sentences as (125).

- (125) *I insist that John does not be given that fellowship.

In embedded sentences SJC simply prevents the verb from acquiring an indicative form such as:

- (126) (a) *Bill demanded that John left.
 (b) *Bill will demand that John leaves.

It can then be deleted. Since SJC and TNS are mutually exclusive in our base rules, no other mechanism is required to prevent (126) from being generated. As long as SJC has been generated in the base, that is enough. There is one small problem in using SJC in this way. To prevent (125) it is necessary that SJC be deleted before DO-SUPPORT applies. But the deletion of SJC must be effected by the higher sentence into which it is embedded. Consequently, it must take place on a cycle higher than the sentence in which it appears. If DO-SUPPORT (see NEG page 59) is always to apply later than EMBEDDED-SJC-DELETE the former rule must be last cyclic yet apply to embedded sentences. Although such last-cyclic rules have been discussed (e.g. by Ross (1967)), we have generally assumed in this grammar that last-cyclic rules apply only to the topmost sentence--because of the convention that transformations do not in general look below the sentence on which they are working. Nevertheless, for this particular purpose we assume that DO-SUPPORT is last cyclic, yet applies to all appropriate parts of the string.

The SJC of all embedded sentences will already have been deleted by then, but EMBEDDED-SJC-DELETE only applies to embedded SJC's, because of its form. Consequently, when DO-SUPPORT applies, SJC can still be present in the topmost sentences and it, appropriately, triggers that rule.

We can now return to the problem of blocking third person or non-stative imperatives like (122) and (123) respectively but not subjunctives like (124). If a non-terminal like SJC is left in any output string it is reasonable to assume that that string should block. We have deleted all instances of SJC in lower sentences, by EMBEDDED-SJC-DELETE. Consequently (124) can be generated. We now propose a last-cyclic TOP-SJC-DELETE to follow DO-SUPPORT, deleting SJC just in case both (1) the subject is [+II person] and (2) the subject is [+Agent].

Thus, although like Lees (1964b) we have a single morpheme acting as both modal and affix we do not specifically give it zero phonological shape, allowing it to disappear, but use that same morpheme to block unwanted sentences. The process, as we have described it, is reasonably neat. (Compare discussion of Lees in E.2 above.)

Now, since we no longer have an initial IMP morpheme there is little motivation for having the general AUX-ATTRACTION rule apply to imperatives. (See Katz and Postal (1964b); NEG p.57; and E.2 above.) We can account better for the data, especially examples (108) - (110) above, if we postulate a late rule IMPERATIVE-SUBJ-AUX-INVERSION, which inverts subject and AUX. This must follow AFFIX-SHIFT, to allow SJC to move onto the verb in (110), You come here, leaving nothing dominated by AUX in that sentence. It precedes TOP-SJC-DELETE, of course.

We are probably losing a generalization by completely separating S-INITIAL-AUX-INVERSION and IMPERATIVE-SUBJ-AUX-INVERSION, and there may well be some way of recapturing the fact that these two rules possess much in common while accounting for all the data. However, sentences like Hardly ever did he go, where TNS is prevented from moving onto the verb solely by the presence of he to its right, indicate that S-INITIAL-AUX-ATTRACT must precede AFFIX-SHIFT.

III. TRANSFORMATIONAL RULES

The following rules significantly affect the derivation of imperatives but are given elsewhere in the UESP grammar:

1. Reflexivization PRO Rule (p.46)
2. Affix-Shift NEG Rule 8.
3. DO-Support. NEG Rule 10.
4. NEG-Contraction NEG Rule 11.

1. Embedded SJC Deletion (Obligatory)

S.I. X_S[X SJC X] X

1 2 3 4 5

S.C. Delete 3.

Conditions:

1. Obligatory
2. 1 or 5 is not null

Notes:

1. Condition (2) is intended to ensure that the rule applies to embedded instances of SJC. Depending on the analysis of adverbs in such sentences as Come here immediately, it may be necessary to change the form of this condition.

2. The rule must follow TO-REPLACE-AUX (see NOM) so that the AUX is not empty at the stage when that rule applies. Then we can obtain either (127) or (128):

(127) It is important for John to come soon.

(128) It is important that John come soon.

3. The rule must precede DO-SUPPORT (see NEG), in order to obtain (129) rather than (130). This distinguishes the rule sharply from TOP SJC DELETION. (Rule 3, below).

(129) I insist that John not come so often.

(130) *I insist that John do not come so often.

4. The rule need not precede either AFFIX SHIFT or YOU DELETION.

Examples:

A. Grammatical

- (131) (a) I insist that you not leave as early as John.
- (b) It is important that he understand the answer.
- (c) I demand to see Bill. (with TO REPLACE AUX)

Notes:

1. Example (131.a) is generated rather than (132.a) because SJC is deleted before DO-SUPPORT applies (assuming, as we have not

done elsewhere, that DO-SUPPORT is last cyclic).

2. Example (131.b) is obtained unlike (132.b) because SJC has been deleted independently of TOP SJC DELETE - which would have failed to delete SJC, blocking the sentence, because he is neither second person nor Agent.

B. Ungrammatical - excluded

- (132) (a) *I insist that you do not leave as early as John.
 (b) *He understand the answer.

2. Imperative Subject - AUX Inversion (Obligatory)

S.I. (S CONJ)* # X NP X SJC (NEG), X
 1 2 3 4 5 6 7

- S.C. 1) Add 6 as left sister of 4.
 2. Delete 6.

Condition:

- 1) The rule applies in the last cycle.
 2) 5 does not contain [+V].

Note:

The rule follows AFFIX SHIFT. Condition (2) then prevents it from applying to You come here, since SJC is to the right of come when it would apply.

Examples:

A. Grammatical

- (133) (a) Do come soon.
 (b) Please do hurry.
 (c) Don't run.
 (d) Don't you run.
 (e) ?Do someone help him quickly.

Notes:

1) In (a), (b) and (e) EMPH prevents SJC moving onto the verb; in (c) and (d), NEG does. Compare (a) and (b) with (134.a,b) which contain no EMPH.

2) We include (e) since, although questionable, it is not nearly as bad as (135). The latter can be easily excluded by a well-motivated obligatory application of YOU-DELETION (q.v.), and the data can be handled by more general rules if (133.e) is included. In fact we

have no way of obtaining (133.e) in this grammar because we do not have a [+II person] "someone", and our rules (see rule 3 below) exclude third person subjects in imperatives. But if we could get someone help me! we would generate (133.e).

B. Ungrammatical - excluded

- (134) (a) *Do come soon.
- (b) *Please do hurry.

Note:

These must be understood to contain no EMPH. Consequently SJC is to the right of the verb and condition (2) blocks application of the rule.

C. Excluded by Other Rules

- (135) *Do you help him quickly.

Excluded by YOU-DELETION (rule 4, below)

3. Top SJC Deletion (Obligatory)

S.I. X (SJC) $\left\{ \begin{array}{l} \text{EMPH} \\ \text{NEG} \end{array} \right\}$ NP X (SJC) X

1 2 3 4 5 6 7

- S.C. 1) Delete 6.
 2) Delete 2.

Conditions:

- 1) This rule applies on the last cycle.
- 2) 4 is $\left[\begin{array}{l} +\text{II person} \\ + \text{Agent} \end{array} \right]$

Note:

Because rule 2, IMPER SUBJ-AUX INVERSION, needs to recognize SJC, this rule must follow it. After the application of rule 2, SJC may appear in either of two positions - before the subject (separated from it by NEG or EMPH) and to the right of the verb. The SI of this rule has to be rather complex to handle both possibilities; furthermore only one S.C. can occur on any one application of the rule. The fact that this is necessary suggests strongly that IMPER SUBJ-AUX INVERSION should be stated in some way that avoids reference to SJC - or that this transformation is not the right way of constraining the subjects of imperative sentences.

Examples:

A. Grammatical

- (136) (a) You come here.
 (b) Give me the book.
 (c) Do hurry up.
 (d) Don't run.

Note:

Examples (a) and (b) result from the application of S.C. (1), (c) and (d) from the application of S.C. (2).

B. Ungrammatical - excluded

- (137) (a) *John go home.
 (b) *Me work.
 (c) *Do him go.
 (d) *Understand the answer.

Note:

Examples (a) - (c) violate condition (2) in that their subjects are not [+II person], while example (d) has a subject which is not [+Agent], thus failing to meet the other half of that condition.

4. YOU-DELETION

S.I.	X	NP	X	SJC	X
	+II + Pro + Def				
	1	2	3	4	5

S.C. Delete 2

Conditions:

- 1) The rule applies in the last cycle.
- 2) Obligatory if 1 is not empty but does not contain NEG.
- 3) Optional otherwise.

Notes:

1) This rule must follow REFLEXIVIZATION, to get Shave yourself; and follows IMP-SUBJ-AUX-INVERSION so that condition (2) of this rule can apply correctly. It must also follow TOP SJC DELETION so that you is still in the input to that rule.

2) The fact that condition (2) must be set up in a general fashion to prevent *Please you come here is an argument for blocking *Do you come here by means of that condition rather than by, for example, preventing do from occurring with an overt subject (cf. example (133.e)).

Examples:

A. Grammatical

- (138) (a) Come here
 (b) You come here.
 (c) Don't do that.
 (d) Don't you do that.
 (e) Do try harder.
 (f) Please try harder.
 (g) It is important that you run fast.

Note:

Examples (a) and (b) and examples (c) and (d) are pairs in each of which respectively this rule has and has not applied, according to the option. Examples (e) and (f) are the result of obligatory application. The rule does not apply to (g) because you is in a lower sentence.

B. Ungrammatical - excluded

- (139) (a) *Please you come.
 (b) *Do you come.
 (c) *It is important that run fast.

Note:

Examples (a) and (b) violate condition (2). Example (c) could not be obtained from this rule since even if you had been subject of run, that is in a lower sentence.

May 1969

GENITIVE

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GENITIVE

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II INTRODUCTION AND SUMMARY OF PREVIOUS ANALYSES

Since the term "genitive" has not been widely used in transformational grammar it may be useful to start with a definition. Very roughly, we mean by this term an NP marked with the apostrophe in writing, like John's, the man's and so on. We provide more of an adequate discussion with examples at the beginning of III.A and for the moment it is necessary only to add that we do not intend the term to cover prepositional phrases like of the man, although these are clearly related to genitives.

There have been a number of limited transformational studies of certain aspects of the genitive construction, but no general, overall treatment of the genitive and related forms. It is not obvious in fact that there is a single closely related set of facts deserving separate study and falling under the heading of the "genitive", since on the one hand there appear to be a number of rather clearly distinct sources of genitive marking on NP's, while, on the other, these marked NP's appear in widely divergent surface structures under varying constraints. We have not attempted to investigate all the possibilities of relating genitives and their paraphrases. For one thing, to do so would probably necessitate postulating a more intimate relationship between syntax and semantics than we have been willing to consider. For that reason, and also because their work is somewhat eclectic, we have not seriously discussed the semantic analyses by Bendix (1966) and Lyons (1967). Some of the most interesting unsolved questions relating to genitives lie in the area of semantics. (Especially problems connected with the status of have and be.) Nevertheless it is important that we deal with certain aspects of the grammar of genitives, despite the fact that we have to leave a great number of basic problems unsolved, because the genitive is a pivotal construction in a case grammar incorporating Chomsky's (1967) \bar{x} convention, as this grammar does.

The significance of genitives to the amalgamation of Filmore and Chomsky derives from two related sources: (1) a good number of genitives seem to be surface neutralizations of deep structure cases on nouns, suggesting an important parallelism between genitives within NP and subjects of sentences, and (2) the parallelism in deep structure between NP and S is much easier to maintain if the differences between genitive and subject can be regarded as transformational in origin to a degree impossible to maintain naturally if sentences possess deep structure subjects. We shall

therefore be concerned here with the question how far genitives can be derived from cases generated within NP's and how far this in turn supports our basic theoretical position. It is probably worth while noting, however, that intuition is notoriously vague and capricious in this area, making it difficult to handle the data and unwise to rely too heavily upon the results as evidence.

Because the aims of this paper are somewhat more restricted than is the case in other parts of the grammar, we shall not attempt a detailed critique of previous analyses at this point. For one thing, the literature is rather slight; for another, the analysis of the genitive is very intimately connected with the theoretical orientation of a grammar, so that a critique of other treatments in a vacuum would serve little purpose. Thirdly, for the reasons outlined in the previous paragraph, we are rather more interested, in this paper, in seeing how an \bar{x} grammar with cases would handle genitives than in dealing with problems raised by genitives themselves. The following summary is therefore rather perfunctory.

Most of the arguments concerning genitives originate in Lees (1961a), Smith (1964) or Jackendoff (1967), though Fillmore (1967) and Chomsky (1967) include important points not raised by any of those three.

Lees (1961a) showed briefly how the genitive marker could be introduced by certain nominalizing transformations. In the enemy's destruction of the city, the deep structure subject of the original sentence was marked, while in the city's destruction by the enemy it was the object. Within Lees' framework most genitives could be handled in a fairly uniform manner, though he would probably have needed to deal quite separately with possessives like John's house. Given the basic theoretical position, which we have adopted it is clearly impossible for us to use Lees' arguments or his sources as they stand, since he depends on a sentential origin for many constructions which we argue elsewhere are noun phrases in deep structure (see INTRO).

Smith (1964) formulated rules to obtain possessive genitives (e.g. John's house) from relative clauses containing have, by a derivation closely analogous to that which obtains preposed adjectives from relative clauses containing a copula. Most of her arguments for this derivation appear to be wrong, as we shall show, while there are sometimes strong arguments for using as deep structures, relative clauses quite different from those which Smith proposed.

Fillmore (1967) first suggested the possibility of relating certain genitives to cases on nouns but he did not take his proposal very far, being concerned to exhibit (in ways which we shall argue are inappropriate) a syntactic distinction between "alienable" and "inalienable possession" and to limit deep structure cases on nouns to "inalienable possession". Chomsky's (1967) proposal to derive some genitives in the Determiner in deep structure represents an adaptation of basically the same point of view to a deep structure with subjects, and its extension, too, to include the "subjects" of derived nominals (e.g. destruction) among genitives obtained in this way. The position adopted here represents in effect an amalgamation and extension of the points of view of Fillmore and Chomsky and we shall argue that in fact a great number of genitives can best be derived by preposing ("subjectivalizing") certain deep structure cases, using well motivated rules. (See CASE PLACE.) The problem of distinguishing such genitives from those others which seem to be derived from relative clauses and at the same time showing the relationships that hold between all genitives remains the most difficult; it does not appear to have been seriously discussed before.

Jackendoff (1967) was concerned mainly with the relationship between forms in which the genitive appears to the left of its head (e.g. John's house) and those in which the genitive appears to the right (e.g. a house of John's) or alone, (e.g. the house is John's). He showed that there were a number of interesting relationships holding between various of these forms and proposed a way of accounting for these relationships. Although we find his arguments persuasive, we find it necessary to reject Jackendoff's proposals for reasons which we give in detail.

It is worth mentioning that because of the way in which genitives are dealt with here. This paper should be read in conjunction with CASE PLACE, preferably after it since many of the arguments assume a familiarity with that section.

III. DISCUSSION AND ANALYSIS

A. Preliminary Observations and Definitions

1. The Data

The genitive in English is marked by an /s/ homophonous with the normal plural marker unless (1) the genitive NP is a definite pronoun, when special suppletive forms occur: her, hers, his, etc.;

or (2) the NP already bears the normal plural marker, like tailors', hens'; or (3) the NP is a proper Noun ending in /s/: James', Lees' (in some dialects). All underlined NP's in the following are genitives.

- (1) (a) the man's hat; her coat; John's book
- (b) the man's arm; their heads
- (c) one of John's books
- (d) the enemy's destruction of the city
- (e) the city's destruction by the enemy
- (f) the man's receipt of the letter
- (g) the man's picture (ambiguous several ways)
- (h) the man's careless driving
- (i) the man's driving carelessly
- (j) yesterday's paper
- (k) men's clothing
- (l) the animals' legs

We shall refer to such instances, all of which are to the left of their respective head nouns, as "preposed (attributive) genitives", in contrast with the following, which may be called "postposed (attributive) genitives". In (2) the genitive is to the right of the head noun, separated from it by of.

- (2) (a) a hat of the man's
- (b) a coat of hers
- (c) the picture of the man's that he values most highly
- (d) that incessant talking of John's

There is yet another distinct environment in which genitives occur: to the right of the copula. Examples, of these, which we refer to as "predicate genitives," follow in (3):

- (3) (a) that book is the man's
- (b) the sugar is hers
- (c) the best proposal is John's
- (d) the decision is hers (to take)

There is one more superficially distinct environment in which genitives occur: in noun phrases from which the head has been deleted (after reduction to one by quite general rules. See PRO). It is possible to relate preposed genitives to these, so that we need not consider the two essentially distinct. However, it may be possible to relate these "substantive" genitives, as we shall call them to predicate genitives. The problem, to be discussed in detail later, is whether predicate genitives can always be derived from preposed via substantive forms.

- (4) (a) John's book is on the table but Mary's is here.
 (b) Although Sue left her books at home, I brought mine.
 (c) John's umbrella is near yours.
 (d) Though John believed Sue was Bill's wife, she was in fact mine.

At this point it is necessary to discuss briefly the term "possessive." Jackendoff (1967), for example, makes little attempt to distinguish possessives from what we are referring to as "genitives." Smith (1964) on the other hand was quite clear that she was concerned only with a limited selection of genitives, those in fact which could be related to deep structure relatives with have, (e.g. John's house: the house that John has). For the moment it is convenient to include under the term "possessive" many of those genitives which appear not to be cases on their head nouns, such as the following:

- | | | |
|----------|---|---|
| (10) (a) | John's father | (Kinship) |
| | (b) the book's covers | } (Relational:
Part-whole, etc.) |
| | (c) the hotel's lobby | |
| | (d) John's arm | |
| | (e) John's jacket (?) | |
| | (f) the plank's length | (Measure) |
| | (g) John's expression | (Characteristics,
mental states, etc.) |
| | (h) John's horse [which he
happens to be riding] | (Temporary
possession) |
| | (i) John's horse [which
belongs to him] | (Ownership) |

It will later become possible to distinguish between these forms more sharply but for the moment there is some convenience in being able to keep them all together as "possessives," and this is semantically not too unsatisfactory.

A distinction has been made (e.g. by Fillmore (1967a) and Chomsky (1967)) between alienable and inalienable possession, dividing the examples of (10) into two groups. We shall question the significance of the particular distinction which has been made. Among words which have been proposed (e.g. by Fillmore) as the head of an inalienable possessive are eye, father, secretary (Fillmore 1967a, examples 154-155). Some of these, like eye or nose can enter special constructions like (11.i.a). Although, as

(11.i and ii) show, some kind of syntactic distinction appears to be relevant, it is not clear what is involved. Nor, as we shall show later, is there much justification for the way in which the notion of inalienability has been used. However, we are only trying to exhibit the use of the terms themselves at this stage.

- (11) (i) (a) I touched the man's $\left\{ \begin{array}{l} \text{sleeve} \\ \text{nose} \\ \text{eyelash} \end{array} \right\}$ with my finger.
- (b) I touched the man on $\left\{ \begin{array}{l} \text{his} \\ \text{the} \end{array} \right\} \left\{ \begin{array}{l} \text{?sleeve} \\ \text{nose} \\ \text{eyelash} \end{array} \right\}$ with my finger.
- (ii) (a) I touched the man's $\left\{ \begin{array}{l} \text{desk} \\ \text{brother} \end{array} \right\}$ with my finger.
- (b) *I touched the man on $\left\{ \begin{array}{l} \text{his} \\ \text{the} \end{array} \right\} \left\{ \begin{array}{l} \text{desk} \\ \text{brother} \end{array} \right\}$ with my finger.

2. Summary of the Argument

In Section B we dismiss briefly two analyses of genitives that will not concern us elsewhere. The first proposes that certain genitives originate in the Determiner (where they end up), while the second obtains genitives from the subjects of sentences that are later nominalized. We reject these proposals not because they are untenable, but because within the framework of this grammar they are on the whole less satisfactory than the two main sources discussed here. As a matter of fact it is extremely difficult, as we shall see, to discuss any of the possible sources of the genitive, since solid evidence is hard to find.

In the next two sections, C and D, we consider in detail the two sources from which we derive virtually all genitives: cases, on a noun in deep structure; and NP's within restrictive relative clauses. In the first of these sections we show how, once it is accepted that cases on nouns provide the best analysis for the source of certain "nominalizations," this analysis provides the source for a great number of genitives, including those which have been regarded (e.g. by Fillmore) as inalienable possessives. In the course of this discussion we develop some--not entirely satisfactory, it must be admitted--criteria for determining whether a genitive comes from a deep structure case. At the same time, we argue that the alienable/inalienable distinction is not relevant.

The question of which cases can appear on nouns, and in particular which cases yield specific classes of genitives, cannot be settled with any confidence. It is discussed in section C, where fairly strong arguments are given against a "possessive" case. Moreover, a large number of the possessives simply cannot come from cases on nouns, judging by the criteria developed in Section C. Thus, one of the main results of that section is to show that there seem to be grounds for distinguishing two major classes of genitives: (1) those from cases and (2) those from relative clauses. No effort is made there to demonstrate that it is impossible to find two other differentiated sources, but it is shown that cases and relative clauses are very plausible. However, at the end of this section we bring up a number of difficulties which this proposal seems unable to handle completely.

Section D is devoted to an examination of the adequacy of various relative clauses as the source of genitives not derived from cases. We separate and consider in detail the claims of relatives with have and of those containing predicate genitives (The book that is John's) and argue that though neither is entirely adequate the latter is more satisfactory.

The last significant section, E, deals with a number of problems in the derivation of genitives. The first two subsections are the most important. In these we deal with the origin of postposed genitives and with constraints on the formation of genitives. The first of these provides a detailed discussion of Jackendoff's proposal to obtain postposed genitives from a partitive structure, and shows that although plausible, his argument is inadequate. An alternative derivation is proposed. The discussion of constraints on forming genitives (either from cases or relative clauses) is entirely dependent on this proposal.

Thus, the major problems connected with the genitive are all discussed at some stage in this paper, though, as we pointed out earlier, they are necessarily dealt with from the point of view of the theoretical claims of this grammar and not so much for their own sake.

B. The Deep Structure of the Genitive: Rejected Analyses

There are at least four quite distinct structures that might be proposed as underlying forms for various genitives: (1) elements within the deep structure determiner, (2) subjects (and objects) of sentences to be nominalized, (3) cases on the noun, and (4) relative clauses.

In the course of arguing for our basic position (in INTRO), we used examples showing that some genitives arise from the third source, viz. from a case on the head noun. It has generally been assumed (e.g. in Lees (1960a), Lees and Klima (1963), Chomsky (1965, 1967) and Fillmore (1967)) that relative clauses provide the source of some of the genitives of possession. Smith (1964) argued specifically for this, and it seems that we need to postulate a relative clause source for some genitives. We discuss these two sources in Sections C and D respectively. Here we are concerned with alternatives (1) and (2) above, which in general we reject.

Only in the case of gerunds (e.g. John's playing the piano) do we derive genitives from a deep structure case on a verb that is related to the surface head noun. Genitives in such constructions have an entirely different derivation from all other genitives, in our grammar. This is a natural consequence of the lexicalist approach to nominalization which is justified elsewhere. (See NOM.) The first possibility mentioned above of deriving some genitives within the determiner turns out to be largely a notational variant, within a grammar having deep structure subjects, of derivation from cases on nouns. We discuss, immediately below, each of (1) and (2) in that order.

1. Deep Structure Determiners

Chomsky (1967) suggested that in some instances genitives might arise within the determiner in deep structure, thus yielding a parallel to the deep structure subjects of sentences related to noun phrases; for example, he would presumably derive the enemy's in (1.d) or the man's in (1.f) and (1.h) in this way.

- (1.d) the enemy's destruction of the city
- (1.f) the man's receipt of the letter
- (1.h) the man's careless driving

Chomsky also suggested obtaining the genitive from within the determiner when it represents the possessor in an inalienable relationship to the thing "possessed." Chomsky's derivations of these genitives contain empirical claims which we must at least meet. Thus, he claims to be able to explain the fact that genitives derived from objects never postpose. Thus: the picture of John \Rightarrow John's picture \nRightarrow *the picture of John's (that was taken last week). Certain peculiarities in the behavior of inalienable possessives (as compared with other possessives) are also accounted for. However, it appears that in so

far as the facts require explanation our derivation is at least as adequate. This we now argue in detail, starting with inalienable possessives and going on to genitives derived from objects.

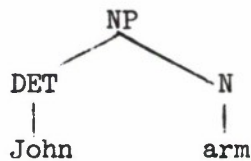
Primarily Chomsky wishes to account for differences in behavior correlated with the two senses of (12.a), paraphrased roughly by (12.b) and (12.c), where the contexts given at (12.b') and (12.c') largely disambiguate the two readings.

- (12) (a) John's arm
- (b) an arm that is part of John's body
- (c) the arm that John happens to have

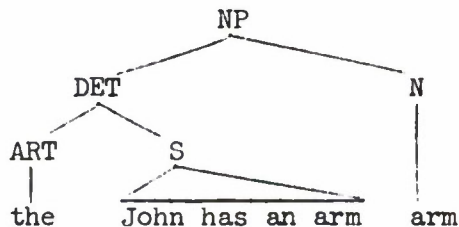
- (b') John's arm is sore.
- (c') John's arm is badly preserved so he is having difficulty dissecting it.

The deep structures proposed by Chomsky for these two readings can be represented roughly as:

(13.b)



(13.c)



Chomsky's proposal follows closely the suggestions made in Fillmore (1967a), where, however, inalienable possession is represented by a Dative on the noun (while alienable possession is a Dative within the relative clause). The possessor is moved into the determiner by a later rule under Fillmore's proposal. Obviously the Fillmore and Chomsky proposals for distinguishing inalienable possession have much in common. It will be convenient to deal with such common factors when considering the justification for deriving genitives from both relative clauses and cases on nouns (Sections (3) and (4) below).

Here we are concerned only with the differences between deriving such genitives from DET and obtaining them from cases on nouns. Clearly our grammar favors the latter choice since (see INTRO) the \bar{x} convention represents a hypothesis that S and NP have close structural parallels in the base, with surface differences attributed to the varying restrictions on the application of such transformations as Subject Placement. However, this scarcely constitutes an empirical difference between the models.

The only evidence offered by Chomsky for generating certain genitives in the determiner and moving others in (as in the city's destruction by the enemy) turns out to be rather weak. His argument makes use of the fact that (14.a) possesses at least one more reading than (14.b). The latter lacks the reading where the picture is a representation of John, i.e. (14.c).

- (14) (a) John's picture
- (b) picture of John's (that is over there)
- (c) the picture of John

(The relative clause required for (14.b) is irrelevant to the argument.) One way of accounting for the differences in paraphrase is to obtain forms like (14.b) from (14.a) by post-posing the genitive. Chomsky implies that (14.c) starts off as (14.c'), with an indeterminate "subject."

- (14) (c') someone's picture of John

The determiner is filled by that NP which would be subject in a related active sentence (e.g. someone took a picture of John). Then the passive rule applies optionally, in two parts, to (14.c'). First, the subject is moved out to the right and marked with by, yielding (14.c'').

- (14) (c'') the picture of John by someone

Then, as an independent option (optional only for noun heads), the object may be moved to the left yielding (14.a')

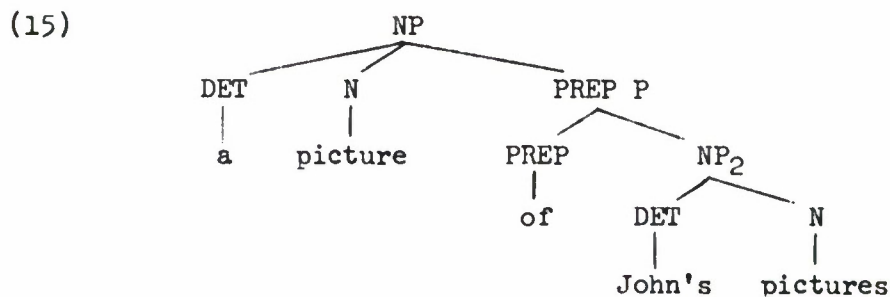
- (14) (a') John's picture by someone

Deletion of the indeterminate by someone by an ungoverned rule that applies also to sentences will yield (14.c) from (14.c'') and one reading of (14.a) from (14.a'). One other reading of (14.a) is that where John took the picture. Then it is John that originates

in subject position, (i.e. in the Determiner) like someone's in (14.c'). Now, if the postposing rule that forms (14.b) from the last-mentioned reading of (14.a) is ordered before the Passive rule that moves John's in to give (14.a'), then there is no way in which that reading of (14.a) can yield (14.b).

However, such ordering is otherwise unmotivated. The present grammar for example, has the passive subject placement rule precede the active one for good reasons (see CASE PLACE), and consequently could make no use of the device.

Furthermore, unless (14.b) and forms like it are produced by a postposing rule of the sort assumed by Chomsky (but not independently motivated), the ordering device may be quite unusable. In fact it has been argued that (14.b) does not arise as a result of a postposing rule operating on a preposed genitive (for further details see III.E.1). Jackendoff (1967) has argued that such forms are obtained from partitive-type constructions, so that (14.b) would look something like (15) at an earlier stage.



If this is correct, there is no way of ordering or constraining a cyclical passive rule operating within NP₂ so as to prevent the formation of John's pictures from, say, the pictures of John just in case NP₂ appeared within such a structure as NP₁. At this point it is enough to point out that there appears to be little immediate advantage in generating some genitives in the determiner while others start out in object position.

Notice that none of Chomsky's arguments give any grounds for deriving inalienable possessives within the determiner as such. Just as long as they are moved into initial position within NP before his postposing rule he can derive an arm of the man's. In this respect they are thus in no sense distinguished from alienable possessives which, although they originate in a relative clause, must be moved into the preposed genitive position before the postposing rule applies.

It is interesting that within this present grammar there may well be semantic arguments for deriving alienable possessives (e.g. John's body) in deep structure determiners, since in such possessives the genitive is clearly not a case on the head noun. We discuss this possibility very briefly toward the end of section D. But in so far as Chomsky was able to adduce any semantic arguments for his source, those same arguments provide support for deriving the same genitives from cases on the noun in this grammar, leaving the Determiner open as a possible source for other genitives.

2. Genitives as the Subjects of Nominalized Sentences

We have already pointed out that Lees (1961a) obtains a good number of genitives, including most of those which we attribute to cases on nouns morphologically related to verbs, by marking the subjects of nominalized sentences. Our arguments against Lees' very general use of transformational derivation for all nominalizations are given above (see INTRO). It follows from the fact that we do not obtain the enemy's destruction of the city from a sentence, that we cannot adopt his account of the origin of such genitives as the enemy's in that construction or, for that matter, the modification which was suggested by Fillmore (1967). Genitives, do not, in general, appear to be the subjects of nominalized sentences.

Nevertheless we obtain the genitives in gerunds, such as John's driving the car slowly..., by rule from embedded sentences. (See NOM) In that case, the nominalizing transformation marks the subject of the sentence as a genitive. For reasons which are set out in detail in CASE PLACE, it seems inconvenient to set up a single genitive marking rule operating on gerunds as well as on deep structure non-sentential NP's like the enemy's destruction. This has the possible disadvantage of making it quite fortuitous that genitives occur in both the following forms:

- (16) (a) John's driving the car carefully...
 (b) John's careful driving of the car...

It may be relatively easy to unify the two distinct derivations (of (16.a) and (16.b)), but within the present grammar, at least, it seems to be necessary to derive the genitives of gerunds in a very different way from all others.

C. The Deep Structure of Genitives: Cases and Relative Clauses

We pass now to the main topic of this paper. In INTRO we argued that nouns take cases. There we used certain examples like

the enemy's destruction of the city in which a genitive occurs where the corresponding sentence would have a subject. Thus it is quite clear that certain genitives must come from cases on nouns--the same cases that occur on verbs. The main question is whether all genitives (ignoring gerunds--as we do from now on) come from cases. The answer to this depends largely upon the criteria used to distinguish cases, and these criteria are greatly affected by the fact that there are a good number of nouns which must be regarded as taking cases but for which the relationship between case and head differs from that found for verbs.

This section as a whole, in which we explore the behavior of case-derived genitives, is divided into three main sections. In the first we establish the extent of the claim that certain genitives come from cases. First we show that there are many nouns which, on the basis of argument used here (e.g. CASE PLACE) we must assume to select cases related closely to those selected by verbs. Then we show how there are other nouns which select cases, too. We examine in some detail the problem of determining which cases underlie Part-whole and kinship genitives and though we are unable to determine what cases are involved, this failure is relatively unimportant since positive progress is made toward achieving an understanding of the role of cases on nouns. In particular, the alienable/unalienable distinction is shown to be irrelevant to case-meaning. In the course of this subsection it is clearly established that there are some genitives that do not come from cases.

In the second main subsection we show that there are several apparent problems with the analysis. The two most serious concern instances where the sharp distinction between case-derived and other genitives seems to break down. No altogether satisfactory solution is given to these problems. It may be that the most important contribution of this report is to raise these particular issues in a fairly manageable form, since the particular theoretical claims of this grammar must be to some extent judged by the extent to which these problems can ultimately be handled.

The final section examines again the problem of determining which cases are involved for kinship and part-whole genitives. This does not seem to be a highly significant problem, however, and the last section is very brief.

1. Distinguishing Case-derived Genitives from "Alienable Possessives"

a. Genitives Derived from Deep Complements on Nouns

It turns out in fact that there are good arguments, independent of our assumptions, for deriving certain genitives from deep structure complements (of some sort) on nouns, but that others, most notably those genitives that we have called alienable possessives, cannot easily be so derived. Between these there is an area of considerable obscurity where we find it hard to obtain clear empirical evidence either way. Most of the rest of this section is devoted to an attempt to provide, whenever possible, arguments for or against deriving various genitives from cases, taking into account both semantic and syntactic considerations.

The strongest independent argument for deriving some genitives from deep structure complements on their nouns depends on the fact that there are genitives which lack a sentential paraphrase. For example:

- (17) (a) Chicago's weather
- (b) the weather in Chicago
- (c) (i) *the weather that Chicago has
- (ii) *the weather that is in Chicago
- (d) (i) *Chicago has some weather
- (ii) *some weather is in Chicago

There are in fact relatively few instances like this, which have no satisfactory sentential paraphrase. Most are Locative in nature, as is (17), or refer to part-whole relations, e.g. body parts. Some examples follow.

- (18) (a) the lake's edge
- (b) *the edge that the lake has
- (c) ?the lake has an edge
- (d) *the edge is to/of the lake
- (19) (a) the man's head
- (b) *the head that the man has
- (c) ?the man has a head
- (d) *the head is to/of the man

- (20) (a) Mary's mother
- (b) *the mother that Mary has
- (c) Mary has a mother
- (d) *the mother is to/of Mary

The force of (18)-(20) is slightly weakened by the fact that the (c) sentences are all more or less satisfactory, especially if an adjective is inserted, thus:

- (18) (c') ?the lake has a muddy edge (cf. the plank has a straight edge)
- (19) (c') the man has a sore head

Nevertheless, it remains true that there is no obvious sentimentally derived paraphrase for any of them. Although this may turn out to be a purely superficial fact, resulting from, for example, obligatory reduction to the genitive, we have no independent evidence for this. To assume such an explanation is to beg the question, ignoring the existence of a perfectly satisfactory alternative source and discounting the available evidence provided by the ungrammaticality of putative relative clause sources.

b. Genitives Derived from Specific Cases on Nouns

There is a large class of nouns like those referred to in INTRO where it is quite clear that specific cases underlie the genitive. Most, but not all, are nominal heads related in some rather direct way in the lexicon to verbs. Almost all, unlike those which we have just been considering, exhibit relations between the head and the dependent cases (some of which form genitives) which are extremely close to the relationship between a related verb and its cases. The following seem fairly representative, the genitives presumably deriving from the indicated cases.

- (21) (a) the enemy's destruction of the city Agent
- (b) the herald's proclamation to the city
- (c) the little boy's singing of the aria

- (22) (a) the city's destruction by the enemy Neutral
- (b) the man's picture
- (c) the train's arrival

- (23) (a) the student's knowledge of music Dative
- (b) John's belief that the world is flat
- (c) his death

For most of these structures, it is true, there are paraphrases that make some use of relative clauses. However, as the following suggest, it is often difficult, and sometimes impossible to find good paraphrases of this form. Where a starred or queried form is given this is because no better paraphrase of this general form has been found.

- (21') (a) the destruction that was wrought by the enemy
on the city
(b) the proclamation that was made to the city by
the herald
(c) *the singing of the arias that was done by the
boy
- (22') (a) the destruction that was wrought on the city
by the enemy
(b) ?the murder in which John was killed
(c) ?the arrival that was made by the train
- (23') (a) the knowledge of music that the student possessed
(b) the belief that John had that the world was flat
(c) ?the death that he died

It is difficult to prove conclusively that there is absolutely no possibility of maintaining that the genitives of (21)-(23) are derived from relative clauses. For one thing, there are a considerable number of other relatives available as sources, and it is possible that even those for which we have only been able to provide dubious paraphrases (if any) could be shown to have other more suitable underlying sentences. However it is clear that at present no single general method of obtaining the phrases in question from relative clauses can be proposed. In particular it is quite impossible to obtain them by reducing and preposing copular sentences of the following form, unless we are prepared to postulate ungrammatical and otherwise unmotivated deep structures:

- (24) (a) *The destruction (of the city) was by the enemy.
(b) *the destruction (of the city) that was by the
enemy.
↓
(c) the enemy's destruction (of the city)

Nor could any of the genitives of (21)-(23) be derived from copular sentences containing a predicative genitive:

- (25) (a) *The destruction (of the city) was the enemy's.
 (b) *the destruction (of the city) that was the enemy's

Thus, while it is not impossible that these genitives come from relative clauses, it is, quite independent of this particular grammar, most unlikely.

There is, of course, the possibility that forms like (21)-(23) are transformationally derived from sentences, in which case, given a deep structure that makes use of cases, the genitive would derive ultimately from a case on the underlying verb, first being moved into subject position. Fillmore (1967a) argues for something like this derivation with the added (and not very well motivated) device of requiring some sort of "identity" between the verb in the deep structure sentence and a non-derived but related no inal between for example destroy and destruction. We will not here argue in detail against such a source for the case-meaning which can be clearly seen in the genitives of (21)-(23) since we have argued elsewhere (INTRO and NOM), as have others (Chomsky (1967) and (essentially) Langendoen (1966.b)), for the existence of deep structure cases on nouns. Given that argument, it is natural to derive the genitives in question directly from such cases occurring on deep structure nouns. In CASE PLACE it is shown that this derivation is indeed quite general and on the whole well motivated for most of these forms, using rules which apply to both sentences and NP's. Thus, in these forms at least it turns out that the rules which prepose the subject of a sentence (whether active or passive) apply under somewhat different conditions to yield genitives.

The examples used so far show that Agent, Dative and (sometimes) Neutral prepose. Whether Instrumental is preposed in deep structure NP's is more problematical. This case does not appear to occur freely on nominal heads anyway, though the -ING OF nominal (:the opening of the door), which we argue (see NOM) is lexically derived, may accept it:

- (26) ?the opening of the door with this key

while the following is probably grammatical:

- (27) the destruction of the city with bombs

If the subject placement rules operate alike on the respective verbs and nouns they will yield:

(26') ?this key's opening of the door

(27') ?the bombs' destruction of the city

Allowance has to be made here for the fact that non-animates are almost invariably (see Section C) unacceptable as genitives, under an output condition. But Instrumental only preposes if Agent is absent, preposing then because of the LAST CASE convention. (see CASE PLACE) It is not easy to distinguish Agent from animate Instrumental unless both Agent and Instrumental are present. Thus in (28.a) a trained falcon is presumably an Instrumental; in (28.b) it is not clear what case it is in.

- (28) (a) He killed the rabbits with a trained falcon.
 (b) A trained falcon killed the rabbits.

(29) The trained falcon's killing of the rabbits...

We take it, however, that (28.b) is ambiguous (between Agent and Instrumental) in subject position, and that the nominal (29) is likewise. If so, Instrumental can presumably prepose.

At first blush, Locative cases on nouns do not seem in general to prepose to form genitives. It has been argued that the underlined phrase in each of the following is a deep structure complement on the noun (cf. Chomsky (1967) and Langendoen (1966.b)) and there are obviously prima facie grounds for regarding them as Locative cases on the verbs. As (31) shows, none of these prepose however.

- (30) (a) The house in the woods
 (b) visibility at the airport
 (c) the intensity of light at a point

- (31) (a) *the woods' house
 (b) *the airport's visibility
 (c) *a point's intensity of light

It might be suggested that the ungrammaticality of (31.a-c) could be ascribed to the output condition already mentioned, which generally rejects inanimate NP's in genitives. However, such a suggestion runs into serious difficulties.

There is a class of nouns relating to phenomena and properties which in a very broad sense may be called "meteorological;

these appear to take Locative cases, and to prepose them. Example (17), repeated here, is one instance of this. Other examples follow.

- (17) (a) Chicago's weather
 (b) the weather in Chicago
- (32) (a) the room's temperature
 (b) the temperature of the room
- (33) (a) the city's cloud-blanket
 (b) the cloud-blanket over the city

Clearly (17) and (32)-(33) are Locatives on Nouns. They prepose. Later we shall look at examples like the water's edge, ?the building's height which also seem to be Locatives, also prepose and, like (17), (32) and (33) ignore the otherwise general condition restricting genitive preposing to animates. Thus, it looks as though preposing should be restricted to certain Locatives on nouns just as it is restricted for verbs.

We observed in CASE PLACE that it is rare for verbs to allow a Locative subject, and nominals related to verbs apparently never do so. For example:

- (34) (a) *The airport arrived (?) John.
 (b) *The airport's arrival of John.

If (35.a) is grammatical and not a gerund formed from (35.b) but a related derived nominal, it is an instance of a genitive formed by the operation of SUBJECT PLACEMENT rules on Locative in parallel verbal and nominal constructions. But the example is dubious on both counts.

- (35) (a) ?the pool's emptying of water
 (b) The pool emptied of water.

There are no clear instances of such Locatives preposing.

What there seems to be is some sort of redundancy rule operating on meteorological nouns, part-whole words like edge, measure words like height, to make them accept Locative subjects (genitives). Notice that this would tie in with Fillmore's account of the relationship between the room is hot and It is hot in the room, where

hot can allow the Locative to prepose (cf. also Langendoen (1966.b)). This makes them quite similar too to verbs like load and fill which are specially marked to allow the Locative to move into subject position, even though, as we remarked above (see example (35)) there are no clear instances of parallel nouns and verbs allowing preposing.

c. The Notion of Case in Relation to Nominal Heads

The preceding discussion of Locatives raises an interesting problem which is in a sense fundamental to this entire paper. What is it that distinguishes a case from other kinds of complements on a head? Fillmore (1967a) discusses the question in a general way in relation to verbs but at the one point where he suggests that cases may appear on certain nouns does not consider whether the notion of case can conveniently be extended to nouns. We merely outline some of the problems here. From time to time we shall return to it, especially when dealing with possessives and above all in Section C.l.e, where we deal with the suggested distinction between alienable and inalienable possessives.

It is essential to recognize that the notion of case which has been developed within transformational theory, especially by Fillmore, appears to be most centrally concerned with the sub-categorical, selectional and other semantic behavior of ordinary lexical verbs so that as soon as one attempts to extend the notion to apply also to nouns at the head of a construction some sort of modifications, on at least subsidiary criteria, seem to be required. The head nouns of (21)-(23) present little major problem for this grammar. There are minor difficulties in maintaining that S and NP are alike in the base, where a noun and the related verbs fail to act alike (the noun sometimes taking a restricted set of cases, for example) but where there are pairs like destruction-destroy, proclamation-proclaim, death-die, an NP which is Agent, Neutral or Dative on the noun appears to be in essentially the same relation to the head and to other NP's in the construction as it would be if Agent, etc., on the verb. The same core of meaning is involved; on the whole, the same selectional restrictions apply in the enemy's destruction of... and the enemy destroyed....

This relationship between the accepted, reasonably well established cases and verbal heads is brought out by considering the criteria used to distinguish one case from another. As we point out in LEX, these are far from satisfactory; nevertheless Agent, for example, is semantically distinguished from Dative by

the degree to which the entity referred to by the NP under the case node is responsible for initiating and carrying out some action characterized by the verbal head. (There are a number of syntactic consequences which need not concern us here.) If the verb involves no action at all, like know, there will be no Agent in the case frame, only Dative. On the other hand, a verb like give selects both these cases since the notion of giving necessarily involves an active giver and a relatively passive receiver. There appears to be a very close relationship still little understood between aspects of the central, essential meaning of a verb and the case frame it selects.

For the present it is enough to show that extending the notion of case to apply to the complements of nouns in the base makes it necessary that there be aspects of the meaning of nouns, like those relations in the meaning of the verb give which determine the case framework selected by the head of a construction. Nouns like destruction offer few serious difficulties, but for head nouns like weather, edge, head, mother, house, etc. (in examples (17)-(20), (30)-(33)) it is necessary to determine whether the notion of case can have any meaning comparable to that which it has in relation to verbs, and, if so, whether the cases that occur on nouns are limited to those that occur on verbs. It is hard to see how a noun like table or dog could be analyzed as possessing relational aspects of meaning in any way comparable to that found for verbs. Moreover, although it may be possible to isolate appropriate aspects of the meaning of Father so that John in John's father comes from a deep structure case on the head, it is by no means obvious that the case involved is one that even occurs on verbs.

Let us re-examine the putative Locatives of (30) and (31) in the light of these observations. First of all consider verbs like load or arrive which select a Locative case. In both there is some specific aspect of the meaning of the verb which requires a location. Loading cannot be carried out without some place onto (into) which things are loaded; in arriving it is necessary that one reach a place--which may or may not be mentioned. Directly related to this, there is probably an optional Locative on the nominal arrival, as on arrive:

- (36) (a) John arrived at the airport.
- (b) John's arrival at the airport

The question is whether in the woods in (30.a) is a Locative case at all. If, instead, it is a locative adverb, this alone would explain why it failed to prepose, and we could make Locatives on

NP's generally preposable. (30.a) was one of the paradigm examples of complements within an NP leading to Chomsky's formulation of the \bar{x} convention. We are concerned with the phrase house in the woods as it occurs in

(37) John's house in the woods

Chomsky argues that this cannot be derived from the ungrammatical (in most dialects)

(38) *John's house that is in the woods

He argues that there are, in effect, two sources for (30.a), the house in the woods, one a relative the house that is in the woods, the other a phrase structure expansion of NP that includes complements. Only the latter derivation can yield (37). If we paraphrase the central meaning of house by "something to live in" then the two meanings of (30.a) seem to be, vaguely:

- (39) (a) something to live in that is in the woods (Relative)
 (b) something to live in the woods in (NP complement)

The question is whether the Locative, in the woods, is a case on the noun house when it is a complement on it. There is an alternative. Certain adverbs clearly occur in noun phrases, as in (40).

- (40) (a) John's arrival yesterday
 (b) *John's arrival which was yesterday

It is quite possible that the Locative of (30.a) occurs outside the "proposition" (i.e. Nominal) of NP, as an adverb. The possibility that Locatives occur in more than one place in the phrase structure has often been remarked on--for example by Chomsky (1965) and Fillmore (1967a). Whether this represents an example of a Locative occurring outside the proposition (or Nominal) like, perhaps, the second Locative in "He keeps his money in the bank in Chicago," or is selected as a case by the head of the construction, depends on how it relates to the central meaning of house. It seems best to leave this as an open question, and although, for visibility and intensity it is at least as likely as for house, that the Locatives are adverbial we shall not propose formal criteria at this point for distinguishing this class. Consequently we still require nouns to be specially marked for Locative preposing just as verbs are.

However, it was not our prime purpose in this section to provide a solution to the Locative problem. We wanted to introduce in a general way the question of what it means for a deep structure complement to be a case.

d. (i) Possessives are not Derived from a Special Dative

When we turn to the problem of genitives appearing on "pure" nouns (i.e. nouns relatively unrelated to verbs) it becomes more difficult to see how far deep cases underlie them--they are, of course, roughly identifiable with the "possessives" tentatively set out in example (10). There we referred to forms like:

- (41) (a) John's hat
 (b) the man's arm
 (c) the farmer's daughter
 (d) that hotel's entrance

Although it is not necessary that all these come from a single source in deep structure, that was almost certainly assumed by transformational grammarians at one time, when a relative clause containing have seemed to provide a reasonable source for virtually all "possessives." Smith (1964), for example, displays no awareness of any need to distinguish different kinds of possessive. Although, as we have argued above, it is impossible to derive all such genitives from relative clauses, there is still the possibility that they all derive from a single case, occurring on each of the head nouns of (41). We shall very soon reject this possibility, but it is instructive to see how far it will take us.

If we take into account only such possessives as (41.a-d) it seems reasonable, at first, to postulate a single source, the most likely case being the Dative. We might try to construct an argument for deriving all possessives from that case, in something like the following way. First of all, whatever semantic relation holds between genitive and head in (41.a-d) appears to hold between surface subject and predicate NP in the parallel forms of (42). Any strangeness in the simple forms of (42.b) and (42.d) would be attributable to the fact that in these we are directly asserting what is in general assumed to be the case. The presence of a single main verb, have, in all these sentences would seem to argue for deriving all the genitives of (41) (subjects in 42) from one case.

- (42) (a) John has a hat.
 (b) ?The man has an arm. (The man has a sore arm.)
 (c) The farmer has a daughter.
 (d) ?The hotel has an entrance. (The hotel has a fine entrance.)

We might then notice how (42.a) is able to appear in (43.b) a paraphrase, admittedly rather clumsy, of a sentence with give as the main verb.

- (43) (a) Bill gave John a hat.
 (b) ?Bill brought it about that John had a hat.

John in (43.a) must be a Dative, and the same basic semantic relationships seem to hold between John, Bill, hat and whatever verbal elements are present, in both sentences. This constitutes a prima facie argument for analyzing John in (42.a) as a deep structure Dative. Further support for this analysis, and a possible way of extending it to the other genitives of (41), is provided by the following, in which appropriate NP's are more or less successfully associated with the characteristically Dative preposition to in sentences that seem to preserve the same essential semantic relations as were found in (41) and (42).

- (44) (a) The hat belongs to John.
 (b) ?The arm belongs to the man.
 (c) ??The daughter belongs to the farmer.
 (c') That little girl belongs to the lady sitting over there in a red dress.
 (c'') She was always a good daughter to her old father.
 (d) ??The entrance belongs to that hotel.
 (d') This entrance belongs to the hotel next door.
 (d'') This is the entrance to the hotel.

However, even on the basis of the limited data given in (41)-(44) it turns out to be quite impossible to argue effectively for a single deep structure case. In the first place, it is certainly wrong to attribute too much significance to the appearance of have in all the sentences of (42). Have is associated at least as strongly with Locatives as with Datives, as in the following, from Fillmore (1967).

- (45) (a) There are many toys in the box. [85]
 (b) The box has many toys in it. [86]

Cf. also:

- (46) (a) That bicycle has a bell.
 (b) There's a bell on that bicycle.
- (47) (a) That door has a key.
 (b) There's a key to that door.
- (48) (a) That door has a lock.
 (b) There's a lock on that door.

Fillmore and Bach (1967b) have argued that have in such forms represents a late insertion, and though their arguments for a completely empty V in deep structure are not fully convincing, their data seems to provide abundant evidence that the surface subject of have does not necessarily come from a Dative—or any other single case selected by a verb.

Moreover, one of the main criteria for a Dative case in this grammar is that the dominated NP be animate. (See LEX and Fillmore (1967a).) In the verbs this seems to be quite satisfactory, and it would certainly be hard to justify allowing an inanimate NP like that hotel in (41.d) to fall under the Dative just in case it occurred under a noun head, or in the underlying structure that made it surface subject of have. Thus, in order to derive just the possessives of (41) from a single case it seems that we should have to posit some case other than Dative.

We have noticed already that the surface subject of have (with which possessives clearly have much in common even if they are not derived from it) seems sometimes to be a Dative, sometimes a Locative, likewise, the preposition to, which occurs in (44.a-d"), is found with both cases. Lyons (1967) has argued that Dative and Locative must be identified at a deeper level, distinguished largely by whether the dominated NP is animate or not. Thus, this particular distinction may disappear on closer investigation of the issues involved. Thus far, then, there seems to be no clear evidence against obtaining all possessives from some sort of Dative/Locative case.

However, when we look at the head nouns more closely, we discover a number of distinct semantic classes each of which determines in a different way the possible semantic relations holding between head and genitive. As we observed in the last section, the relation between the head of a construction and an NP under a dependent case appears to be highly relevant to determining what

case is involved. We must examine the semantic classes into which possessives can be divided before deciding whether to assign all of them a single deep structure case as source.

d. (ii) Two Semantically Distinct Classes: Kinship and Part-Whole Possessives

If possessives (as so far separated from other genitives) bear different semantic relations to the heads of their constructions, it is highly possible that they have different sources-- not all of which need be cases. This much seems clear from the discussion of case-relations in subsection 3 above. The following classes, which we make no attempt to justify in detail here, suggest some of the possibilities. It should not be assumed that the classification is exhaustive or that the genitives of each class have a single source though on the whole that does seem to be so.

(49) Kinship terms

- (a) the man's father
- (b) John's sister
- (c) the colt's dam
- (d) his child
- (e) someone's parents

(50) Part-whole relations

(i) Animate genitive (Body-parts)

- (a) the man's leg
- (b) John's heart
- (c) this centipede's toenails
- (d) its paw
- (e) someone's eyebrows

(ii) Inanimate genitive

- (f) ?the saucepan's handle (the handle of the saucepan)
- (g) ?the book's pages (the pages of the book)
- (h) ??something's wheel (the wheel of something)
- (i) ?the chair's leg (the leg of the chair)
- (j) that hotel's entrance (the entrance to/of that hotel)

A minor point of clarification is necessary. Examples (50.f-j) range from near-acceptability to ungrammaticality with considerable

variation from speaker to speaker. There is a close relationship between genitives and NP of NP (no genitive marker), and a condition, already mentioned, tends to exclude genitives that dominate inanimate NP's. For the present discussion we shall assume that genitives are generated for (50.f-j). We certainly find sentences containing definite pronouns that must have come from such forms: "The book had lost nearly all its pages;" "I want that saucepan because its handle is a little longer." We shall return to this question in E.2, E.3, but for the moment assume that (50.f-j) are generated as genitives and are rejected by an independent constraint.

In all the examples of (49) and (50) it will be observed that the semantic relationship between genitive and head is very closely determined and that it is the meaning of the head noun which governs that relation. Although the nature of the relation differs in many respects from the relationship between a verb and cases dependent on it, nevertheless this dependence of the relation on central aspects of the meaning of the head is reminiscent of the typical case relations exhibited between give and its dependent NP's. Thus, in (49.a), the man's father, the referents of the man and father are associated specifically in that the relation "father" connects them appropriately: that the second is father of the first. Moreover, it is only by virtue of some such relationship holding that it becomes appropriate to use the term father. Fathers possess, in fact, no defining properties aside from this relationship to their progeny; and only references to the latter may occur in a genitive on (appropriate uses of) the term father.

The relationship holding between body part nouns (50.a-e) and their genitives is not dependent in quite the same way. Nevertheless there is one reading of all these for which that relationship is fully determined by the meaning of the head. Recall the ambiguity of (12.a) repeated below along with (12.b,c) representing the two intended readings.

- (12) (a) John's arm
 (b) the arm that is part of John's body
 (c) the arm that John happens to have

For the moment we are concerned only with the reading of (12.a) corresponding to (12.b). The only relevant relationship in this case is that of "being an arm." John and the arm in question are

related simply in that the latter is an appendage to his body, of such a sort that it can be called an arm. This is directly comparable to the relation between the man and father in (49.a) except that arms have defining (or other?) characteristics which enable one to isolate them somewhat independently of bodies. This difference, irrelevant to the present discussion, is characteristic also of the inanimate part-whole genitives (50.f-j) which in all relevant respects are like the body-part genitives. Thus, the relationship between the book and pages is simply that the latter are the pages that make up the former. Once again, as for arms, (and unlike fathers) pages are independently definable and recognisable. It turns out in fact that there is a class of purely relational head nouns, taking inanimate genitives, which can be defined only by the relation they bear to the genitive. For example:

- (51) (a) the mountain's top (the top of the mountain)
 (b) the plank's (smoothest) edge (the (smoothest) edge of the plank)
 (c) the journey's end (the end of the journey)
 (d) ?a cube's surface (the surface of a cube)
 (e) ?that room's corners (the corners of that room)

Thus the kinship terms and the terms for parts (body-parts, and parts of inanimates, including these purely relational terms) are alike in that the genitive relation is dependent in specific ways on the meaning of the head. Before considering briefly what cases may underlie such genitives it is necessary to show more clearly what is involved, by contrasting them with the genitives of alienable possession.

d. (iii) The Genitive of Alienable Possession--Not Semantically a Case

(52) Alienable Possession

- (a) John's hat
 (b) Peter's team
 (c) his horse
 (d) the dog's kennel
 (e) someone's book

In the examples given immediately above, the relationship between genitive and head is not (as it was for all the case-derived genitives so far discussed) dependent on the meaning of the head, and may often vary considerably, or be subject to considerable indeterminacy. In so far as that is true it becomes, according to the discussion of the nature of case relations in subsection (3) above, relatively unlikely that these genitives come from cases.

Three examples, from (52.a-e), will help to show how far it is true that the relationship between genitive and head is relatively free for these constructions.

Peter's team, (52.b), may be a team owned by Peter, it may equally well be one that he regularly plays for, is presently playing for, supports, has just favored in an argument, or has bet ten cents on. His horse, (52.c), may refer to a horse that he owns, one he has borrowed or hired, has been trying to catch for some time, or intends to buy or hire. It may be one he often rides, is riding or wants to ride. He may have drawn the horse in a sweepstake. There are still places where it could be the horse which he, as a farm laborer, uses in the fields. The relation between someone and book in (52.e) is, to at least the same extent, underdetermined by the meaning of book. At most, the meaning of book (and what we know about books from various sources) sets vague limits to the association. The person in question may own or have borrowed the book. He may simply have it in his hand, or he may have been assigned the task of reporting on, summarising or attacking the book. (Under the present analysis, if he wrote the book then the genitive comes from a case. There is more discussion of that source below.) In none of these three examples does the genitive NP fill a "place" in some aspect of the meaning of the head. Instead, in all, there is some sort of vaguely associative relation holding between genitive and head, so that the referent of the latter "belongs" (in the very vaguest sense of that word) to the referent of the genitive. Since this depends so little on the meaning of the head, there is no prima facie semantic motivation for setting up a deep structure case relation between them, but rather the semantic evidence runs against this.

d. (iv) Syntactic Arguments against a Possessive Case

a. From "Picture" Nouns

In addition to the fact that alienable possessives like (52.a-e) fail to behave semantically like forms derived from cases, there are syntactic arguments against a "Possessive" case--whether this is identified with the Dative or set up as a special case occurring only on nouns. The first set of arguments is quite general but depends on "picture" nouns like picture, book, statue--and unfortunately the analysis is still unclear in important ways. The second argument (in subsection 7.b) is specifically against regarding postposed genitives as in "a book of John's" as a case. Since there is no other candidate for the surface form of any "Possessive" case this second argument is derivatively quite general.

In the first place, the rule preposing the putative case to form a genitive would have to be obligatory. This rule would, of course, be one of the Subject Placement rules (or related to them), but for nouns those rules are otherwise optional. In various environments the preposition proper to a case has to be changed to of, if it is not preposed, but there is always at least that option of leaving the case out to the right of the head. Compare:

(53) Alienable possessives

- (a) *the book $\left\{ \begin{array}{l} \text{of} \\ \text{to} \end{array} \right\}$ John ($\xrightarrow{\text{oblig.}}$ John's book)
 (b) *the car $\left\{ \begin{array}{l} \text{of} \\ \text{to} \end{array} \right\}$ my friend ($\xrightarrow{\text{oblig.}}$ my friend's car)

(54) Cases

- (a) the book by Chomsky ($\xrightarrow{\text{opt}}$ Chomsky's book)
 (b) the arrival $\left\{ \begin{array}{l} \text{of} \\ * \text{to} \\ * \text{by} \end{array} \right\}$ the cop ($\xrightarrow{\text{opt}}$ the cop's arrival)

If, as we have been assuming, the "picture" nouns like book, portrait, statue take cases (for example an Agent in (54.a)) which can prepose to form genitives, then, since these nouns can occur with Agent and "Possessive" cases present (for they can represent at once both concrete and abstract entities), it is necessary at least to modify the subject placement rule so that this "Possessive" case moves into genitive (i.e. subject) position in preference to Agent, to yield:

- (55) (a) John's book by Mailer
 NOT (b) *Mailer's book $\left\{ \begin{array}{l} \text{of} \\ \text{to} \end{array} \right\}$ John

In fact, even this ordering would not be enough to obtain the right output. There would have to be a separate rule distinct from both Active Subject Placement and Passive Subject Placement, which obligatorily preposed the "Possessive" case. In particular, this rule could not be a sub-rule of the Passive one, since the latter operates on objectivalized NP's only, and we must allow my father in the following, after undergoing objectivalization, to move by Passive Subject Placement into the genitive (56.b).

- (56) (a) the portrait of my father
 (b) my father's portrait

However, if John is the possessor of this picture, only (57.a) is possible, not (57.b).

- (57) (a) John's portrait of my father
 (b) *my father's portrait $\left. \begin{array}{l} \text{of} \\ \text{to} \end{array} \right\} \text{John}$

Finally, in a structure like (58), and in fact for all alienable possessives, it seems that there is a major I.C. break between the genitive, the metropolitan museum's, and the rest of the construction. This is not so for (59), and case-derived genitives in general, as far as we can determine.

- (58) the metropolitan museum's portrait of a duchess
 by Rembrandt.

- (59) Rembrandt's portrait of a duchess

This last piece of evidence is based on superficial data and is not altogether reliable. However, the earlier evidence makes it seem most unlikely that a deep structure case underlies alienable possessives and we must assume therefore that they are derived from some other source.

b. From Postposed Genitives

The arguments given in subsection (7.b) makes it unlikely that there will be any "possessive" case. However, most of the examples relevant to that argument depend on analysing the "picture" nouns as selecting ordinary cases. We shall see that there is at least some doubt about the correctness of that assumption. For all other nouns the main syntactic objection to postulating a case origin for possessives is the lack of an overt source, and thus the need to introduce obligatory preposing. It might seem possible to overcome both objections by regarding the "postposed genitive of NP's as immediately derived from the underlying case form without preposing. Then both (60.a) and (60.b) would have failed to undergo preposing, while (61.c) would ambiguously result from the operation of a Subject Placement rule on such forms as (60.a,b).

- | | | |
|----------|--------------------|----------------|
| (60) (a) | A book by Mailer | [Agent] |
| (b) | a book of Mailer's | ["Possessive"] |
| | ↓ | |
| (c) | Mailer's book | [Ambiguous] |

There are serious objections to this proposal. In the first place, it would require two quite different accounts of postposed genitives involving two unrelated sets of conditions accounting for the same distribution of surface forms. Secondly, the "Possessive" case would, as a result of these conditions behave quite unlike other cases in at least two important respects. Notice also that the general semantic objection to deriving alienable possessives from a case put forward in C.l.d(iii) above, would apply, of course, to this particular representation of the "possessive case." The semantic argument is not further reviewed here, but both of the syntactic ones are.

The first requires a somewhat complex argument, dependent in part on the analysis of postposed genitives made in Section E.1. We take it as well established that within this grammar certain genitives come from cases; for example the enemy's in "The enemy's destruction of the city." The genitive is formed by preposing a case into the Determiner. (See C.l-b above and CASE PLACE)) But some of these genitives formed by preposing a case can then appear as postposed genitives, to the right of the head:

- (61) (a) a proposal of the president's to end the war in Vietnam.
 (b) all the most recent stories of his that I have read
 (c) those eyes of Lucinda's!

There are two plausible ways of obtaining such postposed genitives: by deleting elements in a partitive construction (so that (61.a) would come from, roughly, a proposal of the president's proposals...), or by postposing a preposed genitive from its position in something like a [the president's] proposal. In Section E.1, we argue for the second of these derivations. For the moment it is irrelevant, however, which is correct, since the important point is that when the genitive is formed from a case, it is initially made into a preposed genitive first. On this, rules must operate to form the postposed genitives of (61.a-c).

Now, all postposed genitives, whether they represent alienable possession or obviously come from cases are subject to at least one constraint in common: they cannot occur with the definite article unless there is also a relative clause present. Thus, although

(61.a-c) are grammatical, none of the following are, where (62.d-f) are understood as ordinary alienable possessives.

- (62) (a) *The proposal of the president's
 (b) *the stories of his
 (c) *the eyes of Lucinda's

 (d) *the books of mine
 (e) *the house of Peter's
 (f) *the chair of my father's

It is a fairly straightforward matter to prevent (62.a-c) from being derived from preposed genitives. Several possibilities are discussed in Section E. A single set of rather natural constraints on the appropriate rules will achieve the right effect. But if (62.e-f) are themselves cases it is impossible (as far as we can see) to block these in anything like the same way.

In fact (62.e-f) can only be blocked by either (1) preventing the possessive case from appearing in a definite NP with no restrictive relative, or (2) forcing the possessive case to go through the preposing (subject placement) rule just in case it was contained in a Definite NP having no relative. Thus (62.d-f) would be avoided in the base, or turned into my books, Peter's house, my father's chair, respectively by making the preposing (subject placement) rule obligatory. The first alternative is not worth further discussion. We have no evidence whatever for any similar restriction on the generation of cases on deep structure nouns. The second way of avoiding the objectionable forms is only just a little less objectionable. Like the first, it would separate the "Possessive" from all other cases since forms like the following are perfectly acceptable yet break the condition that would have to be imposed on "Possessives":

- (63) (a) the arm of the man
 (b) the distruction of the city
 (c) the attack by the cavalry
 (d) the books by Iris Murdoch

Although this would separate the "Possessive" from all other cases it is conceivable that motivation could be found for turning an optional rule into an obligatory one--though it is important to remember that the facts could be easily accounted for in a completely general fashion if the postposed genitives of alienable possession came from preposed genitives like all others do.

The second constraint that would have to be imposed on the "Possessive" case is needed to avoid forms like

(64) *Mailer's novels of John's

and instead obtain, for example

- (65) (a) John's novels by Mailer
(b) the novels of his by Mailer that Bill was talking about

though not

(c) *the novels of John's by Mailer

It was pointed out above (p. 31), that if there was a "Possessive" case it would have to prepose rather than the Agentive case if both were present on a noun, thus necessarily getting (65.a) rather than any other output. At that stage we were not considering any overt "case" form for the "Possessive." Now that we are, however, the conditions on preposing the "Possessive" case become highly unsatisfactory. For example, if any case preposed it would have to be the "Possessive." That would prevent (64). But notice that this condition would have to be over-ridden by the one discussed just above: if the top NP was definite yet contained no restrictive relative, the "Possessive" could not prepose. That would prevent (65.c). The price, however, seems unreasonable.

Notice that Jackendoff (1967) has a number of arguments directed against essentially the same position as that which we are in the process of rejecting. They do not carry over immediately to this discussion because of important differences in the rest of the grammars.

e. Alienable and Inalienable Possessives

In Section C.2 above we showed that certain genitives come from the deep structure cases generated on nouns by this grammar. In the sections after that we have argued that, in the light of the semantics of "case-hood"--discussed in C.3--and for independent syntactic reasons, there are some genitives which cannot be naturally derived from cases. We have thus made a fundamental distinction within the class of nouns which have no case structure immediately

relatable to cases on verbs. Some, like father, entrance seem to select cases in the way that verbs do--though we have not yet determined what cases are involved. Others, like hat and kennel for example, do not. The genitives which occur on them come, presumably either from adverbs (a possibility which we shall not consider in detail here) or relative clauses, which we discuss in the next section. As was implied above, there are some nouns, like arm, which form genitives in both these classes. Thus (12.a), John's arm, is ambiguous. Arm may take cases, or enter into the (alienable) possessive construction. Fillmore (1967a) and Chomsky (1967) both attributed this ambiguity to a syntactic distinction between alienable and inalienable possession. It therefore becomes relevant to ask how far the distinctions which they have made (the making of which in fact occupies a large proportion of the current literature on genitives) represent a genuine syntactic distinction in English. We noted earlier that the notion of case developed by Fillmore was particularly concerned with NP's dependent on verbs. We did not mention there that Fillmore himself extended the notion of case to include just those nouns which represented inalienable possession so that he argued for a Dative case on the noun arm. On this, the characteristic "inalienable" behavior could be made to depend. Chomsky, in turn, tried to extend the notion arguing that in some way the enemy and destruction in the enemy's destruction of the city was "inalienable," just like John and arm in the sense of John's arm where the arm is a body part; and, further, that this intuitive "inalienability" could naturally be represented in the syntax by generating the respective genitives in the determiner of the head rather than later moving them in. Neither of these arguments is highly persuasive. Chomsky's rather fanciful and otherwise unmotivated assumptions about the grammatical representation of inalienability allow him to account for the fact that a picture of John's can never be a paraphrase of a picture of John (where the picture shows John). But this is achieved by a trick of ordering which in turn depends on obtaining of John's by a postposing rule and moreover fails to account in any way for the fact that one of John's pictures lacks the sense in which John's picture is a picture showing John.

In fact, there is no reason whatever for associating the "inalienability" of any relation with a syntactic structure of this sort. There is no more reason for supposing that inalienability is associated with cases generated on the head in the base, rather than with NP's introduced into a Determiner from a relative clause. The examples used by Fillmore suggest that what

may be important in setting off nouns like father from others is that they have an obligatory complement in the base. There is something strange about a sentence like (66) while (67) may have undergone deletion of some sort.

(66) *A father was walking down the street.

(67) The father walked ahead, a little apart from the rest of his family.

It may very well be that those nouns which require some complement in the base all obligatorily select cases as a result of their semantic make-up, though there is no a-priori reason for assuming this, rather than that they are obligatorily modified by a restrictive relative, for example. Fillmore cites "louse" in Arapaho as an inalienable--it is at least as likely that this word has an obligatory restrictive relative as that it is semantically so different in that language that it is capable of selecting a specific case.

Notice that although friend and secretary take cases, there is nothing inalienable in the relationship between John and his friend or secretary in John's friend, John's secretary; the important characteristic of these genitives is simply that the relationship in question in each is fully determined by the head. Furthermore, as the following examples show, secretary along with a number of other nouns selecting cases (all those below come from (49) and (50)) do not obligatorily select them.

- (68) (a) As I reached the office a secretary emerged carrying a pile of papers.
 (b) Those legs can be carved from various kinds of wood depending on the design.
 (c) I don't know where that handle came from.
 (d) All I could see in the back of the police truck was a lot of arms and legs.

Probably the extent to which cases are obligatory on nouns is related to the possibility of recognizing the objects named, independently of the defining relationship which is represented by a case, but we are not concerned with that here.

The point is that the phenomena described by Chomsky and Fillmore under the designation of "inalienability" do not correlate with any independently definable criteria so that their observations do not achieve any explanatory adequacy. The distinct syntactic behavior on the part of inalienables, observed by both Chomsky and Fillmore may seem to demand a separate syntactic class of inalienable possessives. However, the ambiguity of (12.a), John's arm, can be represented by deriving it from both (1) a case and (2) whatever source yields the "alienable" possessives. Moreover, the apparent differences in syntactic behavior of these two senses, observed by Chomsky and Fillmore, turn out to be unrelated both to case and to semantically defined "inalienability."

Take the ambiguity of the following sentence, first discussed by Ross (1967).

(69) John broke his arm and so did Mary. [Chomsky: 33]

The interpretation which is hard to account for is that in which Mary broke her own arm, rather than assisting in some way in the breaking of John's. The problem is that material deleted to make way for so must apparently include her arm, but then her is not formally identical with anything remaining in (69). Chomsky claims that this interpretation is only possible if the arms that John and Mary break are parts of their own bodies and that in such structures inalienable genitives might be generated with dummy NP's in the determiner, features later being copied in. Then the source of (69) would be something like (70).

(70) John broke Δ's arm and Mary broke Δ's arm.

Assuming that the rule replacing the second verb phrase by so preceded the copying rule, deletion could be accomplished on the basis of formal identity.

Aside from the fact that there is no other motivation for this proposal, the data scarcely warrants it. Even if for some people the interesting reading of (69) may be excluded if the arms in question are just gruesome possessions of John and Mary, in (71.a,b) the normal interpretation has Mary lose her book and John play with his toys--yet these are alienable possessions.

(71) (a) Peter lost his math book and so did Mary.
 (b) Sue played quietly with her toys and so did John.

There is evidence in the other direction, though not as clear. Consider the following sentence:

- (72) Algernon went to visit his young aunt who lives in Georgia and so did Maisie.

Without special stress, it is highly questionable whether this can be interpreted to mean that Algernon and Maisie visited separate young aunts living in Georgia. Yet aunt presumably takes an "inalienable possessive." In all these sentences there seem to be a number of factors at work excluding or favoring one interpretation or another. It is not clear that a class of inalienables is significant.

There are two more, related sets of facts which Fillmore noticed and regarded as favoring a syntactic distinction between alienable and inalienable possession. Sentence (73.a) is ambiguous.

- (73) (a) I burned my fingers. [134]
 (b) I burned your fingers. [135]
 (c) I burned my draft card. [136]

Only the first is ambiguous in the intended sense. Under both relevant readings of (73.a) an inalienable relationship between my (I) and fingers is intended. The two senses correspond, roughly, to (74) and (75).

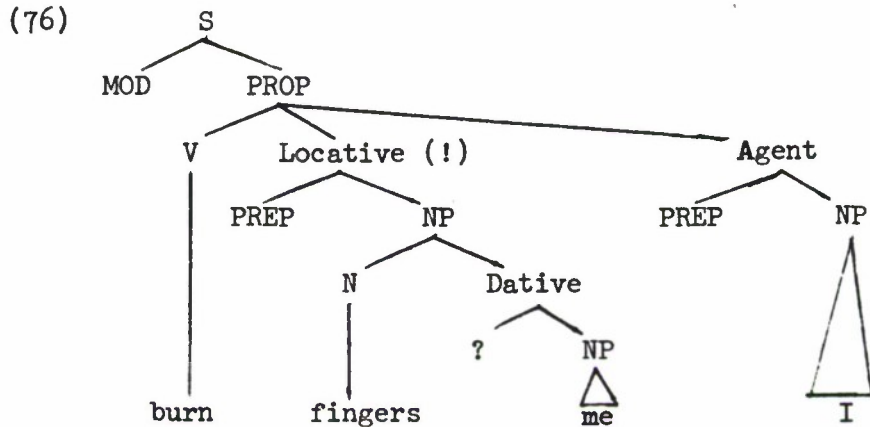
(74) I burned something (on purpose)--my fingers.

(75) (a) I burned myself (accidentally).

or

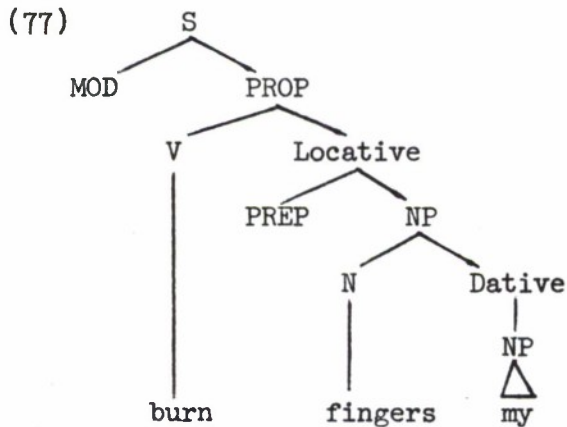
(b) My fingers (got) burned.

The reading of (73) corresponding to (75) would come from something like (76).



This would be converted to (73.a) by the general rule moving Agents into subject position; the same rule derives (73.b,c) from a similar structure.

The other reading of (73.a), however, Fillmore proposes to derive from a tree of the form:



Under this analysis a special rule preceding the ordinary subject placement rules (which would give (48.b) could optionally copy the Dative NP into subject position to give (73.a) at the surface. Presumably (78), if it is ambiguous, like (73.a), would be obtained by then applying the rule that Fillmore postulates elsewhere in order to derive (79.a) instead of (79.b). (See below for discussion of some of the implications of that rule.)

(78) I burned myself on the fingers.

- (79) (a) Mary pinched John on the nose. [152]
 (b) Mary pinched John's nose. [147]

This seems right on the whole, though the rules must be highly complex. However, as far as we can determine, it is not relevant to the claim that there is a distinction between (semantically) alienable and inalienable possession. Notice first that the reading of (73.a) resulting from the special raising rule cannot be obtained for (80).

- (80) (a) *John burned his beard.
 (b) *John burned his tooth.
 (c) *John burned his heart.
 (d) *John had unknowingly burned his lungs by inhaling those fumes.

In fact the raising rule appears in these examples to be limited to those parts of the body capable of feeling the effect of an accidental burning. Especially compare (80.a-d) with (80.e).

- (80) (e) John burned his tongue because the chocolate you gave him was still boiling.

In considering these examples it is important to recognize that the intended sense correlated with the possibility of applying the raising rule is independent of whether the burning was accidental. At least, the burning could be accidental, as in (80.d), without involving the intended meaning, for we can get sentences like (81):

(81) I burned my new coat.

which are ambiguous, the two meanings related to the possibility of continuing the sentence by (81.a) or (81.b), depending on whether the burning was accidental or not.

- (81) (a) ..., which was awfully careless.
 (b) ..., to spite my husband.

However, the meaning of (81) related to (81.a), "I" is a case in the top sentence, presumably in the Dative. For the relevant meaning of (73.a) and for (80.e), however, the body-part noun is itself the Locative or Dative case on burn. The claim is that a structure like (77) cannot yield (81). Note that for example (80.d)

is perfectly acceptable with a reading parallel to a sentence like (81), i.e. John had unknowingly burned his coat by leaving it on the boiler. There is an additional sense of (73.a) parallel to this, too. In both (73.a) and (82), however, this "accidental" sense has the subject, "I," a Dative on the verb, not on fingers or coat.

With different main verbs the conditions under which structures like (77) can yield surface forms like (73.a) varies in interesting ways. For example (82) is ambiguous in exactly the intended sense, even though (80.b) was not.

(82) John hit his tooth on a stone.

In this case, an accidental blow to the tooth is conceivable and moreover it would be perceived as a sensation in the tooth.

While these are no doubt horrifying difficulties facing any attempt to write such relationships into a grammar, it seems clear that the alienable-inalienable distinction is relevant only in that all those genitives that can possibly be subject to the rule represent inalienable relations. But additional restrictions must obviously be placed on the rule. Apparently these are dependent on fine (yet none the less quite clear) semantic distinctions unrelated to the alienable/inalienable separation proposed by Chomsky and Fillmore so that the latter distinction is redundant to the point where it becomes altogether irrelevant. It is just as odd to interpret (83) in the sense of (75) as to interpret (73.c) in that way. Yet the relevant relation in (83) is inalienable.

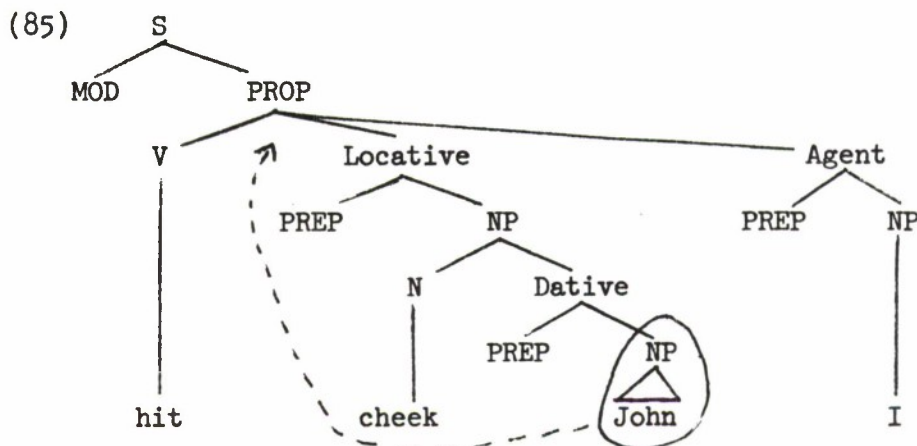
(83) I burnt my father.

The inalienability of a possessive seems not merely insufficient to determine whether it can enter this putative subject-raising rule, but quite irrelevant to it.

A related argument for the relevance to the grammar of a distinction between alienable and inalienable possession correlated with deep structure cases turns out to fall under similar objections. Example (84) is relevant.

- (84) (a) I hit John on $\left\{ \begin{array}{l} \text{the} \\ \text{his} \end{array} \right\}$ cheek.
 (a') *I hit John's cheek.
 (b) *I hit John on $\left\{ \begin{array}{l} \text{the} \\ \text{his} \end{array} \right\}$ chair with a ruler.
 (b') I hit John's chair with a ruler.

Fillmore, as we have remarked above, would obtain (84.a) by moving John from a Dative case on the noun cheek, optionally leaving behind a copy which ultimately would pronominalize to his. (84.a') would result if Fillmore's raising rule (which must be optional) had not applied. The deep structure postulated for (84.a,a') would therefore look something like (85), the optional movement of John being shown by the dotted line.



Since chair in (84.b') cannot take an appropriate case to underlie the possessive (which must therefore be derived from a sentence, or whatever), there is no way of getting (84.b) if, say, the movement rule operates before such non-case derived genitives have been formed. So far so good for the attempt to explain the possibility of raising certain genitives by deriving them from cases while others come from relatives. But the rule raising the dative of (85) into object position in the sentence (giving (84.a) instead of (84.a')) would apply only to a limited subset of the inalienables. Thus, for example, it would have to be prevented from applying to John in I hit John's father, for it must never yield *I hit John on the father from it. Furthermore, unlike the rule discussed previously (for raising NP's like my in (76)), it would apparently have to apply to certain nouns which cannot be regarded as entering into an independently defined inalienable relationship with the head--though they may represent cases on that head. For example, many speakers will accept both the sentences of (86).

- (86) (a) I touched John's sleeve lightly.
 (b) I touched John lightly on the sleeve.

But unless "inalienable" means simply "behaves thus and thus with respect to rules X, Y, Z," sleeve presumably does not take inalienable possessives.

It seems, in any case, that the circumstances limiting the domain of this rule are highly complex, varying considerably from speaker to speaker; it may well be that the rule is governed not merely by the verb but by some sort of relation holding between verb and the head of the relevant NP, as the following suggest. A number of examples are given because in several cases it seems likely that there is no transformational relation holding between the set, a fact which may lead eventually to abandoning the raising rule, but will not substantially affect the selectional problems involved.

- (87) (a) (i) *I hit Mary on the braids with a ruler.
 (ii) I hit Mary's braids with a ruler.
- (b) (i) *I touched Peter on the shoelace.
 (ii) I touched Peter's shoelaces.
 (iii) I touched Peter on the sleeve as I passed.
 (iv) I touched Peter's sleeve as I passed.
- (c) (i) *I hurt Sue on the toenail with a baseball bat.
 (ii) I hurt Sue's toenail with a baseball bat.
 (iii) I hurt Sue in the eye with a piece of wire.
 (iv) I hurt Sue's eye with a piece of wire.
- (d) (i) ?I wounded John in the right leg with a carving knife.
 (ii) I wounded John's right leg with a carving knife.
 (iii) I wounded John in the eye.
 (iv) ??I wounded John's eye.
 (v) I wounded John in the spleen.
 (vi) *I wounded John's spleen.
- (e) (i) I hit Reagan's fender with my old M.G.
 (ii) I hit Reagan on the fender with my old M.G.

To generate all and only those of this group that form the sentences with the overt surface "Locative" as cases on nouns in the deep structure would do violence to the notion of case-dependency, would depend on no independent criteria, and would mean that apparently similar constructions like the source of the man's right leg in (d.ii) and of John's spleen in (d.vi), would have to be regarded as quite dissimilar. Thus, a raising rule cannot depend solely on whether the genitive comes from a case. The examples of (87) make it even less likely that an independent alienable/inalienable distinction is relevant.

Notice that the question is not whether additional factors are involved or not. Fillmore recognized quite correctly that not all inalienables go through the rules. The question is simply whether there is an independently defined alienable-inalienable distinction which is in any way relevant. All the evidence suggests that there is not. There are a number of constructions about which we understand very little, which operate when a number of different, though related, classes of head nouns are involved.

Summary

In this whole section, III.C.1, we have tried to show that there are arguments for deriving some genitives from deep structure cases on nominal heads. Some of these, like arm, are not related to verbs at all. In addition there are clear semantic and syntactic arguments for deriving other genitives from some other source, perhaps relative clauses. We have shown, too, that the arguments for deriving some genitives from cases are independent of the putative alienable/inalienable distinction--which seems to have little substance, in fact. Before dealing in detail with those genitives not derived from cases, which we shall now call POSSESSIVES (dropping the pointless "alienable"), it is necessary to examine some problems with the distinction which we have been building up in this section.

2. Problems with the Proposal

We must turn to some considerations which tend to break down somewhat the distinction between case-derived genitives and those originating in, perhaps, some sort of relative clause. Most of the problems turn out to be serious only if particular relative clauses provide the source for possessives, and thus are in some sense more relevant to the argument developed in the next subsection, where different relative clauses are considered as possible sources for alienable possessives. However these problems are at the same time highly relevant to the notion of case extended, as in the preceding pages, to apply to nouns, and it is convenient to deal with some of the issues which can be resolved in the next section (III.D) at the same time as those which are apparently less tractable.

It is, of course, important to the thesis that some genitives are derived from cases on the noun, and others from relative clauses, that there be independent criteria enabling us to distinguish these

two classes. We have suggested in CASE PLACE that the subject placement rules are optional for nouns. Thus cases never obligatorily form genitives. In all the clear instances, the other genitives, i.e. possessives, never turn into a Prep-phrase following the noun: *the book of the man, *the jewels of my mother, etc. (For further discussion see E.3.) In all the problems that follow we shall find a certain tension between this single (and admittedly not highly motivated) syntactic distinction, semantic criteria, and the need to avoid generating unambiguous genitives from more than one source.

a. Have and Case-derived genitives

Assume, first, with Smith (1964), Chomsky (1967) and most other transformational grammarians, that the relative clause underlying possessives is roughly of the form of (88.a), the sentence underlying the relative being, of course, something like (88.c):

(88) (a) the book that John has

- ↓
 (b) John's book
 (c) John has a book

The first problem is that the ambiguity noticed in John's arm of (12.a), which we ascribed to the origin of the genitive in either a case or a relative clause, can appear in sentences like (88.c) in form. For example:

- (89) (a) He has two hairy arms.
 (b) The baby has eleven fingers.
 (c) You have a dirty face.

Thus (89.a) may be continued by either (90.a) or (90.b) depending on the reading.

- (90) (a). ...so he can't be Jacob.
 (b) ...which he took off a model gorilla.

Therefore (given a source of the kind assumed) a genitive of the form John's dirty face will have a double derivation for the meaning related primarily to a derivation from cases, and three routes from deep to surface structure altogether. This introduces a very general problem. The word have is close in meaning to genitives (both case-derived and possessives), at so many points providing

a full paraphrase for genitives. Yet often, as we point out in section D, it is inadequate as a source for possessives. Thus, have gives us both too many and too few paraphrases.

The noun clothes provides an instance in which the addition of on to have enables the latter to paraphrase what appears to be correctly regarded as a genitive derived from a case. Example (91.a) seems to be ambiguous in a way related to that noticed for (12.a), disambiguated by the normal readings of (91.b) and (91.c) which are in turn paraphrased by (92) or (93) respectively.

- (91) (a) John's clothes
- (b) John's clothes are scruffy today
- (c) Though he's not wearing any of them, John bought most of his clothes in New York

(92) The clothes that John has on are scruffy today.

(93) Although he's not wearing any of them John bought most of the clothes that he has in New York.

That there is a derivation of (91.a) from a case is suggested not only by the meaning of the head but also by the existence of such forms as (94) with of NP after the head. (See III.E.3 for further discussion of of NP. Also see CASE PLACE.)

(94) The clothes of the old tramp were torn and dirty.

Other evidence is provided indirectly by (87), where particular items of clothing probably act as if they selected cases. It might seem possible to derive genitives from have while excluding have on; but the general principles are far from clear. For example, if Mrs. Smith, a schoolteacher, has a number of children with her, it is probably acceptable to say that her children are misbehaving. (If they are!) It seems that the genitive would have to be paraphrased as "the children Mrs. Smith has with her," and not by the same form omitting with her. Even if have relatives do not yield genitives, or, if they do, if the unwanted forms can be excluded from such a derivation, it is disturbing to have such close parallels to the case derived genitives contain a semantically rather empty verb, without giving any account of the semantic relations between the near paraphrases.

The last example involving have is itself rather unclear because the grammaticality of crucial forms is uncertain to many speakers. However it bears an interesting resemblance to several of the next batch of problems. If it is possible to get forms like

- (95) ?The most recent interest of his uncle turned out to be painting grasshoppers.

then we could safely regard interest and similar words as selecting cases which turned into genitives. To avoid the double generation of, for example John's interests we should then need to avoid (or constrain) the generation of genitives from relatives containing have, since we could otherwise get that phrase either from a deep structure consisting of interest and John in an appropriate case, or from

- (96) the interests that John has

On the other hand, it is not absolutely clear that (95) or any other form containing a Prep phrase on interest is fully grammatical and a large number of examples are obviously bad:

- (97) (a) *that interest of my friend
 (b) *some interests of the chairman
 (c) *an interest of that explorer

If we wish to maintain that this criterion separates case-derived genitives from those originating as relatives, it is not clear that the genitive of John's interests and so on can come from a case. Then we should need to allow forms like (96) to reduce to genitives. Thus a decision either way, in this highly inconclusive instance, might provide significant, almost crucial evidence for or against deriving some genitives from a relative containing have. In fact this example takes us rather deeper into the problem of relating have to genitives, for despite the failure of the prepositional phrase test—which would make preposing of the case on interest obligatory and disturb the one slender syntactic criteria for case-derived genitives known to us--the meaning of that noun does indeed seem to incorporate the same semantic relations as the adjective and verb in (98) below. Moreover the relation between John and interest is constant and completely determined by the meaning of the head in all of the following.

- (98) (a) John is interested in mathematics.
 (b) Mathematics interests John.
 (c) John's interest in mathematics

Thus far, the semantic evidence tends strongly to support a derivation of John's in (98.c) from a case. However, there is a conflict at this level too. In addition to (98.a-c) the following must be taken into account.

- (98) (d) John has an interest in mathematics.

If have is a real verb in (98.d) John appears to be a case on it, in such a way that the total meaning of (98.d) is essentially the same as that of (98.a). Recall, however, that the origin and significance of have is far from clear (cf. Bach (1967b) and Fillmore (1967a)). Once again we have reached something of an impasse, where the interpretation of the evidence is not at all clear.

Moreover, notice that the relation between John and interest in (98.d) is determined by the meaning of interest. (See p. 28.) In a sentence like (99):

- (99) John has a fine home.

the relation between John and home is rather vague, reminiscent of the indeterminacy of the meaning of his horse (52.c). Add to these observations the fact that a sentence like (89.a), He has two hairy arms is ambiguous in that the relation between he and arms may be either that of possession or that which is determined by the meaning of arms. It then becomes clear that there must be some very close tie between have and genitives in general--not just possessives. When the meaning of have is left undetermined or vague, the meaning of the corresponding genitive tends to be so. When the meaning of have depends on the meaning of its surface object, genitives having that surface object as head are likewise constrained. And where there is ambiguity in the have construction, there tends to be the same ambiguity in the genitive. These observations do not in any way suggest that have-relatives underlie all genitives. The meaning and deep syntax of have is little understood and the relation may well go in the other direction. We leave this as a major unresolved problem.

b. Semantic Evidence for Extra Cases

(i) House

There is another major problem which we can exemplify first using the noun house. This noun may well call for some case or other from which to derive certain genitives but for which the syntactic criteria do not point unambiguously in that direction.

(100) We're going to play at Billy's house today.

Here, assuming Billy is a child, the only possible relation between Billy and house is that Billy lives in the house. It seems to be the only relevant relationship in such a sentence. It is not relevant whether Billy by chance owns the house or not. If the meaning of house is basically something like a thing built for someone to live in, it may be possible to argue that Billy fills some sort of "slot" in the meaning in that it is he who lives in this house. (But see discussion of (30.a).) Continuing for the moment to assume that relative clauses with have provide the source for (alienable) possessives we find it impossible to obtain such a source for Billy's house in (100), despite the flexibility in meaning observed for have. Thus (101) cannot mean that Billy lives in the house--what it can mean is not so clear.

(101) Billy has a house.

As with so many of the forms derived from cases (cf. his dirty face) we can get the right meaning from a have sentence if the noun is further modified, in which case it is the modification that is asserted. In (102) Billy may just live in the house.

(102) Billy has a nice house. (Billy's nice house.)

On the other hand, if we derive the genitive on house from a case, where it has this meaning, there is apparently no form like *the house of my mother or *a house of this child. So we should have to postulate obligatory preposing of the case. Moreover, the semantic argument is not compelling, and the significance of the evidence provided by (101), (102) is little understood; in particular it is still an open question whether relative clauses with have underlie any genitives. If not, or if there is an alternative source for the genitive of (100) there is no compelling argument at present for deriving that genitive from a case.

(ii) Table

The noun table will illustrate another problem of the same sort. The following seem to be possible paraphrases:

- (103) (a) John's table has turned out better than mine.
 (b) The table that John made has turned out better than the one I made.

It is not possible to paraphrase this meaning of John's table by a relative clause in which has is substituted for made. Does this mean that some genitives come from relatives containing make (create, produce...?), or is it the case that table--and all artifacts--will inherently allow an Agent? In general we do not get:

- (104) (a) *The table by John (has turned out well).
 (b) *a table {of} that carpenter
 {by}
 (c) *this bookshelf {of} my father
 {by}
 (d) ?that house by a Brazilian architect

though when the maker is famous in the right field such forms seem quite acceptable.

- (105) (a) a house by Frank Lloyd Wright
 (b) the bowl by Leach
 (c) some chairs by Hepplewhite

It is worth noticing that there are resemblances between the form of (105) and Agents found with picture, book, etc. There is as yet no compelling semantic argument for deriving the genitive of (103.a) from a case, and whereas it might prove feasible to motivate a distinction between case-derived and relative-derived genitives ((105) as against (104)) it would be strange indeed to find a condition on a preposing rule that made it obligatory or optional according to the status of the person referred to by the moved NP. If, as seems to be the case, (103.a) can be derived from an alternative source, so much the better. In considering relative clauses we shall consequently have to consider nouns like table again.

c. Cases "Missing" from Certain Abstract Nominals

The last problem in this section concerns words like announcement. This exhibits some features in common with table, some with interest. The problem is quite possibly crucial for a deeper understanding of the relationship between case and meaning. First, notice that there are (at least) two different functions of the nominal in question. It may be what Lees (1960a) called an "action nominal" (106.a); it may on the other hand name an abstract or semi-concrete entity akin to book (106.b). Any adequate account must be able to show how the abstract entity, together with a semantically weak verb ("make") paraphrases the related verb announce (108) in such a way that the semantic relations and cases of the two sentences are essentially the same just as for the noun interest used with have, and sentences built around the related verbs or adjective. (See examples (98.a-d) and discussion, above.)

- (106) (a) The announcement by the judge to the jurors of an adjournment to the following week caught them all by surprise.
 (b) We heard that announcement some time ago.
- (107) The judge made an announcement to the jurors.
- (108) The judge announced something to the jurors.

As with interest, we cannot be sure that none of these sentences are derived from other structures; in particular, that (107) is not derived from (108). Assume that they are independent. Our main task is to explain why the action nominal seems, predictably, to occur both as in (106.a) with a by NP, and in the genitive form,

- (106) (a') The judge's announcement to the jurors of an adjournment to the following week caught them all by surprise.

while the "abstract entity" form of the nominal occurs only as in (109) with the Agent converted to a genitive and not as in (110); though there is a relative clause paraphrase of (109), i.e. (111).

- (109) We listened to the judge's announcement to the jurors.
- (110) *We listened to the announcement by the judge to the jurors.
- (111) We listened to the announcement made by the judge to the jurors.

Leaving aside other apparent discrepancies in the case framework of these various forms, recall that the noun interest, too, occurs in the predicate of a semantically rather weak verb (have), thus forming a paraphrase of the related verbs (98.d) and (98.a), and there is some doubt about the acceptability of prep-phrase forms after that noun: (97.a-c). It seems, particularly with announcement, that the abstract entity nominal (of the pair) may itself lack the Agent (Dative, if this applies to interest) which the related verbs, in sentences and "action nominals" are capable of appearing with. In other words in (107) the "dummy" verb make adds this case to those of the nominal to make up the meaning of the sentence as a whole, so that to get an Agent associated with the nominal it is necessary to use a relative clause containing this verb as in (111), which will optionally reduce to the genitive of (109). Such an account is so far adequate, dealing effectively with the ungrammaticality of (110) or any other prepositional phrase paraphrase: announcement takes no agent.

However, (112) is virtually a paraphrase of (107), while (113) is of dubious grammaticality and certainly of different sense. Assume some sort of equi-NP deletion to yield (107) (perhaps with the instead of an) from (112).

(112) The judge made [his announcement to the jurors] yesterday.

(113)??The judge made the announcement that he made to the jurors yesterday.

Then it would be necessary to postulate that nominals of this kind had obligatory preposing of the Agentive case to form a genitive. But otherwise cases do not obligatorily prepose to form genitives. Since we understand so little about the difference in internal and external behavior of different kinds of nominals, having no specific motivation, for example, either for deriving the one announcement from the other or for relating them in the dictionary, and since it is not possible to distinguish the two uses clearly, it is meaningless to pursue the question further at this point. In the long run it may be that the relative merits of the approach to nominals adopted in this grammar as compared with that which has become known as "generative semantics," as recently developed by Ross, Lakoff and McCawley, will be decided partly by the facility with which they are able to handle relationships between constructions of the sort under discussion here. It would, for example, be particularly interesting to examine in detail the relationship between those deep structure nodes which ultimately collapse under a lexical item inserted late in a derivation

according to recent proposals made by McCawley, and the cases which in this grammar that "same" lexical item takes. None of these have been undertaken and the problem of announcement must remain essentially unsolved. For the purposes of this grammar we choose, quite arbitrarily, to ignore the instances of obligatory pre-posing (e.g. (110)) and to regard announcement as always selecting an Agentive case, just as the related verb does.

3. The Cases Underlying Kinship and Part-Whole Genitives

There remains only one problem to be dealt with in this section: to determine if possible what cases are selected by the head nouns to yield (1) Kinship, (2) Part-Whole and (3) Weather genitives. It was convenient to postpone discussion of these until it had been at least tentatively established that they were the only constructions quite unrelated to verbs in which the genitive came from a deep case. In other words, that they might represent the entire stock of cases selected by "real" nouns. They, together with the (alienable) possessives (which are to be derived from some other source) made up virtually all the "possessives" as these were originally set up, and we have argued that (alienable) possessives do not come from cases. Consequently it appears that all the nouns that take cases yet are unrelated to verbs fall into one of these three categories.

Fillmore (1967a, p. 66) regarded both kinship and body-part genitives as coming from a dative on the noun itself; citing as evidence for this particular case only the fact that the NP under it is animate, and noting in passing the occasional appearance of the typically dative preposition to, which we commented on above. Although he does not deal in detail with the non-animate part-whole genitives, he suggests later in the same paper that expressions like (114) as well as behind the house, ahead of the cat, and next to the tamer may come from locatives on the head "nouns" (i.e. prepositions in the above instances).

(114) corner of the table, edge of the cliff,
top of the box [183]

The examples of (114) are, of course, what we have referred to above as purely relational part-whole genitives, distinct in various ways from the other inanimate part-whole constructions like key of/to the door, windows of the house and so on, with which Fillmore does not deal. It seems likely however that he would have analyzed those, too, as Locatives, while the relationship between weather genitives and sentences like the studio is hot (Fillmore

(1967a), example (81) which Fillmore analyzed as having a Locative subject, suggests that the animate case-derived genitives come from Datives, and inanimates from Locatives, which is what, rather arbitrarily, we assume in the lexicon of this grammar. (See LEX.) Notice that Langacker (1967), dealing with French, analyzes forms parallel to the ordinary inanimate part-whole constructions (e.g. the door of the cathedral), as coming from a Dative rather than a Locative (in a relative clause, as it happens, but that is irrelevant here); but he does not offer any specific arguments for using that case with the inanimates, beyond the possibility of making them quite parallel to animates and in fact there do not seem to be any.

On the other hand there are no strong arguments for any other particular case or cases. Recognizing this, and given our present understanding (or, rather, lack of understanding) of the relationship between meaning and case framework, we generate only Dative or Locative on these kinship, part-whole and weather nouns, relying on factors other than case to account for the great differences in the relationship between genitive and head in the three groups. In fact, it is not even clear what kind of question it is to ask whether the differences in the relationship between his and father and his and arm in his father and his arm are of a sort that should be represented by a difference of case. Nor is it clear whether we are asking an empirical question if we query the appropriateness of calling the cases Dative and Locative, thus associating them with verb-related cases.

More important at the present time is the problematical fact that the solution tentatively adopted in this grammar represents a claim that differences in conditions on preposing (and other rules) exhibited by the following (a) and (b) pairs are not directly attributable to case differences. Needless to say there are other, similar examples.

- (115)(a) *the weather of Chicago
- (b) the top of the mountain

- (116)(a) ??Everest's top (?the mountain's top)
- (b) Chicago's weather

- (117)(a) the weather $\left. \begin{array}{l} *to \\ in \\ of \end{array} \right\}$ that city
- (b) (i) the top $\left. \begin{array}{l} to \\ *in \\ of \end{array} \right\}$ that box
- (ii) the windows $\left. \begin{array}{l} *to \\ *in \\ of \end{array} \right\}$ that house

(118) (a) the house $\left. \begin{array}{l} *to \\ *of \\ in \end{array} \right\}$ the woods

(b) *the woods' house

(The appearance of of-NP in the above is taken as evidence that preposing is not obligatory. See E.3.) An example like (118) was discussed earlier. (See (38), etc.) The Locative may not represent a case within NOM--but again it may. This question is open. Noun compounds like table-top need to be taken into account, and these we have not analyzed. (See Section F.) Some of these problems are discussed further in CASE PLACE, and in section C and E, especially the problems of accounting for the appearance of of NP forms.

Summary

Summarizing section C in brief, we have shown above that there are some nouns which, like destruction, take roughly the same cases as the related verbs do; there are others, like arm which can apparently take cases, though what cases are involved it is hard to say; and, finally, there are nouns like kenne! which take no cases. Nouns from all three classes can appear with genitives. For the first two classes of noun mentioned, the genitive probably can come from a case while for the last there must be some other source. We have tried (though not with complete success) to suggest criteria that will distinguish the three classes of genitive and have discussed some of the problems that our analysis gives rise to.

In general it seems fair to claim that, so far, an \bar{x} -case grammar, such as this one is able to handle the problem of the source of genitives at least as well as any other, and that it raises some interesting and important questions about the semantics of the genitive. For the rest, it is impossible to judge the analysis as a whole without considering the source of possessives, to which we now turn.

D. What Relative Clauses Yield Genitives?

In this section we can assume that kinship, part-whole and weather genitives come from cases and, consequently, that the ideal relative clause source for possessives will not yield these genitives except to produce the desired ambiguity of such forms as Jane's eyes. Thus, given the arguments in section C, for using cases for certain genitives, it is absolutely necessary to avoid generating John's father from a reduced relative clause, and if interest selects a case which turns into his interest in mathematics we must avoid generating this from a relative clause too. Since there is at least some doubt about the case-frame of interest (see examples (96)-(98)) it will be as well to avoid having to choose between alternative sources for the possessive on the basis of their ability either to generate or to exclude the genitive on interest. Obviously, then, the special role played by cases on nouns in this grammar places quite specific constraints on the relative clause source for possessives.

Were it not for the fact that we are deriving a considerable number of genitives from other sources than the relative, we should have to impose very different, weaker constraints on that source. It would, for example, have to yield the relevant examples of (17) through (20), which, we have said, seems to be impossible to do in any general fashion. (See also Jackendoff (1967).)

- (17) (a) Chicago's weather
 (b) the weather in Chicago
 (c) (i) *the weather that Chicago has
 (ii) *the weather that is in Chicago
 (d) (i) *Chicago has some weather
 (ii) *some weather is in Chicago
- (18) (a) the lake's edge
 (b) *the edge that the lake has
 (c) ?the lake has an edge
 (d) *the edge is to/of the lake
- (19) (a) the man's head
 (b) *the head that the man has
 (c) ?the man has a head
 (d) *the head is to/of the man

- (20) (a) Mary's mother
 (b) *the mother that Mary has
 (c) Mary has a mother
 (d) *the mother is to/of Mary

We do not propose to deal further with the problem of deriving such a wider class of genitives from relatives, but rather, assuming a derivation from cases, to find a suitably constrained relative clause source for possessives and to show the problems that this involves, since those problems may well be crucial in considering the theoretical claims of this grammar. This course of action demands that we distinguish as separate, potential sources of possessives, two forms that Smith (1964) assumed, without much discussion, to be transformationally related stages in the derivation of possessives. Underlying (119) were, successively, (120) and (121). We cite these as Smith did, ignoring irrelevant differences in her framework, and in particular the matrix sentences of (120) and (121).

- | | | |
|-------|-------------------------|------|
| (119) | ...John's hat... | [37] |
| | ↑ | |
| (120) | ...the hat is John's... | [31] |
| | ↑ | |
| (121) | ...John has a hat... | [38] |

(120) and (121) are not synonymous; nor do they occur in the same environments, as we shall show in the course of the rest of this section.

Notice that Smith's argument for deriving (119) from a sentence containing (121) as a relative clause via one containing (120) depends in a large part on considerations of simplicity which turn out to be quite irrelevant. Between (120) and (119) come the stage (119').

- (119') (*)...the hat of John's... [36]

The genitive was then preposed. Superficially, the resulting series of transformational steps resembles that through which adjectives are taken: the book that is green ⇒ *the book green ⇒ the green book. Just as for possessives the middle form, after reduction of the relative is sometimes obligatorily reduced (as in the above examples) and at other times may not be: *the missing 10 pages book, *a John's hat vs. the book missing 10 pages, a hat of John's. However, clearly the conditions for preposing adjectives

and possessives are quite unrelated. Moreover, as example (122) shows, the genitive is moved into a very different position. Thus there must be two quite separate pre-posing rules:

- (122) (a) John's three green books
 (b) *green three John's books

In (122), three is generated in Det to begin with; it is clear that the adjective has to be placed to its right, the possessive to its left. Thus the similarity between the derivation of genitives and that of adjectives turns out to reside only in the fact that both make use of the rule of relative reduction. Even that is suspect, however. Observe that in general copular sentences containing predicate nominals seem not to reduce.

- (123) (a) The man that is a carpenter came later.
 (b) *The man a carpenter came later.

If (123.b) is to be excluded, rather than becoming (See Bach (1967b)) The carpenter came later, then it is not obvious that Smith's proposals would introduce greater generality into the grammar even in this respect. Anyway, it is necessary to constrain the relative reduction rule in various other ways that are little understood but which make it hard to support any analysis on the grounds that that analysis would increase the generality of the reduction rule. For example, it is apparently necessary to prevent the reduction of (123'.a) since there is no acceptable output:

- (123') (a) The man that is ill wants to leave.
 (b) *The man ill wants to leave.
 (c) *The ill man wants to leave.

Moreover, Smith's proposal requires that the postposed genitive (hat of John's) represent a stage in the derivation of the preposed one, for those genitives which come from relative clauses. For those coming from cases however, genitive marking takes place in the preposed form. There is apparently no non-arbitrary way of accounting for the fact that the conditions for post-posing/pre-posing would be essentially the converse of each other for these two sets if we therefore consider the stages in Smith's derivation as alternatives, weighing each against the criteria which must be met by the source of possessives in this grammar. This must not be taken to mean that we assume entirely independent sources for (120) and (121)

since both may come from a single deep structure which is subject to different derivational constraints below this level. For the present purpose, however, we can ignore that possibility and assume that the two structures differ in the base.

1. Relative Clauses with Have

Sentences with have, like (121), are available to provide the source of most possessives. The meaning seems to vary appropriately, yielding very nearly the right semantic range. Nevertheless, as the following examples show, there are semantic problems with such a derivation.

- (124) (a) Our dog has a kennel.
 (b) The kennel that our dog has is too small.
 (c) Our dog's kennel is too small.
- (125) (a) Billy has a house.
 (b) The house that Billy has is beautiful.
 (c) Billy's house is beautiful.
- (126) (a) I have a cold.
 (b) The cold that I have is growing worse.
 (c) My cold is growing worse.
- (127) (a) John has a horse.
 (b) The horse that John has belongs to the riding school.
 (c) John's horse belongs to the riding school.
 (b') The horse that John has is likely to win him some money.
 (c') John's horse is likely to win him some money.
- (128) (a) Mary has an interest in mathematics.
 (b) The interest that Mary has in mathematics is surprising to her parents.
 (c) Mary's interest in mathematics is surprising to her parents.
- (129) (a) Mr. Smith has an idea.
 (b) The idea that Mr. Smith has is probably right.
 (c) Mr. Smith's idea is probably right.

A number of these examples certainly seem to provide evidence that have is very closely related to possessives. For example (124.a) does not imply that the dog owns the kennel, while in (125.a) ownership can be the relation between Billy and the house. In (127), correctly, the favored reading of both the (b) and (c) sentences is that John is simply borrowing, or riding the horse, while in (b') and (c') there is about the same degree of vagueness, for John may own or have bet on or drawn the horse in question. The (a) sentence includes all the right possibilities. It is unclear how some of these are filtered out for (b) and (c), but notice that the underlying relatives of (b) and (b') give just the right meanings for (c) and (c') respectively.

It has already been pointed out that in general there are no have relatives for kinship, part-whole and weather genitives (provided they have no modifiers--see below).

- (130) (a) *the mother that John has
- (b) *the face that Mary has
- (c) *the temperature that the room has

This is another point in its favor if these genitives come from cases.

On the other hand, there are a number of serious problems with this derivation. First, have relatives unless arbitrarily prevented from doing so, will yield a second derivation for any case-derived genitive that has a modifier present in the NP:

- (131) (a) the rich uncle that John has
- (b) the lovely eyes that her son has
- (c) the awful weather that Chicago has

Moreover, for some kinship terms there appear to be viable relative clauses containing have, though they are dubious paraphrases of the corresponding genitives.

- (132) (a) The sisters that John has help him to understand women.
- (b) John's sisters help him to understand women.

Another problem concerns examples (128) and (129). If interest and idea do not allow cases, then the fact that there are have relatives paraphrasing the genitives is indeed an advantage of deriving possessives from that source. However, semantically it seems most likely that nouns like these will take cases, and in the discussion of the last section that obligatory preposing might have to be postulated anyway for certain constructions if forms like announcement are also taken into consideration.

If so, (128) and (129) must be regarded as counterexamples to the proposal to derive possessives from have.

(125) raises a different problem with have as the source for possessives. We argued, in connection with examples (100) and (101) that Billy has a house cannot simply mean that he lives in one, and that the house that Billy has can't refer to one that he lives in (as a child, without renting or owning it), but that Billy's house as in, "We're going to play at Billy's house today" can mean just exactly that: a house in which Billy lives.

A further objection to this proposal is that it fails to provide a suitable source with the right range of meaning for the following possessives, among others:

(133) Peter's team

(134) That is Maria's chair so don't sit there.

(135) John has Billy's ruler.

The first of these can be used to refer to a team that Peter is associated with in that it is the team that he:

- (136) (a) coaches
- (b) captains
- (c) owns
- (d) has placed a bet on
- (e) plays for; is playing for at present
- (f) works for
- (g) belongs to (though he doesn't play)
- (h) supports--in general
- (i) has just favored, in an argument

but at most the team that John has can refer to (a)-(d). Both (e) and (f) could conceivably come from cases but we can see no source for the others.

The meanings of (134) which concern us here vary roughly between (137) and (138). (139) does not paraphrase either.

(137) That is the chair that Maria will sit in.

(138) That is the chair that Maria likes to sit in.

(139) That is the chair that Maria $\left\{ \begin{array}{l} \text{has} \\ \text{will have} \\ \text{had} \end{array} \right\}$.

The last example of the group, (135), is similar. It is not paraphrased by (140), but rather by (141).

(140) (?) John has the ruler that Billy has.

(141) John has the ruler that belongs to Billy.

(140) is a perfectly grammatical sentence. It just happens to be a contradiction as it stands. Consider also a sentence like (142) where the genitive represents a relation of (legal) ownership, which is contrasted with (physical) possession.

(142) John doesn't actually have any of his money himself.

The next (and last) two problems do not directly concern the derivation from have, but represent difficulties which arise in other areas if possessives are derived from have-relatives. In the first place, it will be necessary to generate some genitives from relative clauses containing a verb like make. We noted in the last section that on the whole there seemed to be no good arguments for deriving genitives like my table where this means

(143) the table that I made

from, say, an Agentive case on table, but that they seemed rather to fit into a peculiar sub-class of possessive. If so (and the question is not really settled) it is presumably necessary to derive my table, in this sense, from something like (143). Certainly have-relatives don't merely give awkward paraphrases, or present neat derivations; in this instance they are altogether unsuitable.

Finally, if have (or, indeed, any construction other than the predicate genitive) provides the source of possessives, it is necessary to account in some way for predicate genitives like That book is John's. These could, of course, be quite unrelated to other genitives, but on both formal and semantic grounds (the latter described in detail below) this seems unlikely. Alternatively, they could be derived from other genitives. The most plausible method then involves deleting nouns in the predicate of a copular sentence:

(144) (a) That book is John's book.



(b) That book is John's.

It is then irrelevant what case the genitive comes from. If the case was Neutral it is possible to do this kind of deletion following the general ONES-DELETION rule mentioned in the last paragraph, to give:

- (150) Mary's (recent) portrait (by Augustus John) isn't as good as Arthur's.

However, it is quite impossible to get a Neutral reading (where the portrait in question represents Mary) for the predicate genitive:

- (150') *That portrait is Mary's
 \updownarrow
 [Mary] Neutral

though it is possible, perhaps, to get this interpretation for that portrait is one of Mary's recent ones. This observation suggests a relationship between postposed genitives (see E.1) and predicate genitives, but we are unable to pursue that possibility here.

Finally, apart from the difficulties noticed above in defining the domain of the deletion rule, notice that predicate genitives should, by this derivation, imply that there is only one object of the given kind in mind. So this chair is John's should be equivalent to This chair is John's chair. However this does not appear to be the case.

- (151) (a) This chair is John's. (So are five others in the room.)
 (b) { This one is John's chair. } (?So are five others
 { ?This chair is John's one. } in the room.)
 { ?This chair is John's chair. }

cf.

- (152) This chair is green. (So are five others in the room.)

2. Relative Clauses Containing Predicate Genitives.

Let us now consider the advantages over the have derivation of deriving the predicate genitive in the base as the source of alienable possessives. In the first place, not only do the plain case-derived genitives then lack a relative clause source, but the modified ones like kind old mother do too. They would not do so if

have provided the source.

- (153) (a) *the kind, old mother that is John's
 (b) *That kind, old mother is John's.

Yet those nouns like arm which have ambiguous genitives can appear in such constructions. The meaning in that case is, in general, limited to that of the possessive, which is as it should be.

- (154) (a) (?)the eye that is John's
 (b) That eye is John's.

(154.a), it is true, is somewhat infelicitous, but simple adjectives, too, seem to require preposing; so (?)Bring me the book that is green seems no less unsatisfactory than (154.a). In general, relatives containing the predicate genitive, like those containing preposable adjectives, are clumsy and bordering on the unacceptable. If, however, adjectives are derived by preposing, this similarity is, if anything, in favor of our derivation.

Consider next the ability of the predicate genitive to provide appropriate deep structures for (125.c) and (127.c,c'):

- (125) (a) Billy has a house.
 ((b) The house that Billy has is beautiful.
 (c) Billy's house is beautiful.
- (127) (a) John has a horse.
 (b) The horse that John has belongs to the riding school.
 (c) John's horse belongs to the riding school.
 (b') The horse that John has is likely to win him some money.
 (c') John's horse is likely to win him some money.

The following seem satisfactory, having the same range of meaning as preposed genitives; (125') and (127') could certainly be used to assert ownership, but, equally, to assert that the transitory relationship implied by (127.c') holds, or to refer to the fact that Billy lives in a particular house (125.c'). (For the moment we ignore (127.c), as opposed to (127.c').)

(125') That house is Billy's.

(127') That horse is John's.

(125') appears to be a more appropriate deep structure than the comparable have sentence, though the restrictive relative based on a predicate genitive is particularly bad: ?the house that is Billy's....

This proposal does not fare as well for (124) as have did.

(124') ?That kennel is our dog's.

Predicate genitives are in general not very satisfactory with non-human predicates: ?This bell is that cow's, ?the ball is my kitten's With these non-human predicates, the postulated deep structures are semantically quite appropriate. They could all be paraphrased (grammatically) by ...belongs to... sentences like

(124'') That kennel belongs to our dog.

Nevertheless the proposed deep structures seem syntactically dubious and represent a very weak point in the proposal.

For reasons that have already been explained, it is impossible to use interest as crucial evidence for or against the proposal. Assuming that it selects cases, (128) has absolutely no paraphrase that uses a predicate genitive:

(128') *The interest (in mathematics) is Mary's.

Since this could provide highly significant evidence in favor of this proposal and against using have, the choice between have and the present source may depend on answering a question that remains open.

The evidence from idea is difficult to interpret. On the one hand, there are sentences like (155):

(155) Those ideas are mine.

On the other hand sentences with an unreduced relative on idea, containing a predicate genitive, seem altogether barbaric. For example, as a paraphrase of (129.c) the following seems to be semantically wrong and not simply awkward, as many similar sentences are.

(129') (c) *The idea that is your father's is probably right.

This could well be taken as evidence for generating a case on idea, but there seems no other motivation for that and (129.c) would therefore constitute a rather serious counter-example to using the predicate genitive as the source of possessives--if idea took possessives. But, again, there is at present no clear answer to that more fundamental question.

The noun cold, as in (126), unless it occurs with cases, also provides counter-evidence:

(126') *That cold is mine.

We leave this, too, as a counter-example, but it doesn't seem serious at this stage, since we know very little about the behavior of cold in this sense.

The evidence from (133) - (135) is unambiguously in favor of the predicate genitive. (133'), (134') and (135') have precisely the right range of interpretation:

(133') That team is Peter's.

(134') That is the chair that is Maria's, so don't sit there.

(135') John has the ruler that is Billy's.

Moreover, if this is the source of possessives in general, it is unnecessary to provide a derivation from a make relative for genitives like my table, where the speaker made the table in question. (cf. (147)) The predicate genitive allows this interpretation, as in (156).

(156) That table is mine but I prefer the one John made.

Yet there is no comparable interpretation for (147.b), nor, correctly, for other sentences like That book is Chomsky's, although it may be marginally possible to use a sentence like That picture is Picasso's to identify the painter rather than the owner.

In addition to the problems that arise in regard to (124') and (129'), there are two general problems with the proposed derivation from predicate genitives. In the first place it fails to give any account of the close semantic relationship between have and genitives. Within the framework of this grammar that is not necessarily very serious. In the first place, we do not generally expect to find that all paraphrases have the same deep structures. Secondly, though the parallels are far-reaching, they are not

universal. Moreover, there are at least two ways in which have can be related to the predicate genitive. First, if have itself is a lexical item with extremely little semantic content taking a Dative and Neutral, this might well yield meanings largely parallel to those of a copular sentence containing Neutral and Dative cases. The latter is a reasonable deep structure for Predicate Genitives. On the other hand it is possible (and, in fact, in line with Smith's original proposal) to have predicate genitives result from the preposing of the Neutral rather than the Dative on have itself. We have remarked elsewhere on other instances where a difference in the application of Subject Placement rules can result in a change of meaning. (See CASE PLACE, with reference to load, for example.) A special subject placement rule for obtaining predicate genitives from the same base as have could be made to prepose Neutral instead of Dative, deleting have and thus triggering BE-INSERTION (see CASE PLACE). However, in order to derive only the right predicate genitives, it would be necessary to impose some peculiar constraints on this particular application of the subject placement rule. For example, to avoid generating:

(157) *The book is a professor's.

but, instead:

(158) A professor has the book.

it would be necessary for the Dative to prepose obligatorily if indefinite. Although there are, as we show in the next section, constraints of this sort on preposing cases on nouns (but in reverse--for indefinites often do not prepose), there appear to be no other examples for verbs.

Despite the problems involved in the predicate genitive, it seems to be overall the most appropriately constrained source for possessives (via relative clauses) considered so far. Before we leave it there are two further points to be noted which tend to argue against it, however. First if predicate genitives are base forms, the morphological resemblance between these genitives and those derived from cases has to be regarded as purely accidental. All things considered that is highly unsatisfactory. Second, the peculiar and highly constrained nature of this construction, on which we have remarked from time to time, is not obviously any easier to account for in the base than by constraining deletion, etc.--we have simply shown that there does not appear to be a rational way of dealing with it either by deletion or by constraining the subject placement rule.

3. Other Possible Sources

Two other possible sources for possessives deserve brief mention. The verbal form belongs to acts in almost all constructions in a very similar manner to the predicate genitive, which, in most instances, it paraphrases. Notice, however, that there are viable base sentences and relative clauses in most cases. In a few cases, (e.g. the kennel that belongs to our dog—cf. (124")) the improvement in comparison to the predicate genitive is quite striking. In others, however (e.g. the team/house/horse that belongs to John), the resulting construction is considerably narrower in meaning, which is undesirable. This source would avoid the morphological problem referred to just above, but would re-establish the need for a different relative source for my table (my = Agent). If there is in fact a single source for all possessives it is unlikely to be belongs.

It may well turn out that within this grammar, and in all others deriving certain genitives from cases on nouns, the most appropriate source of possessives is within the Determiner in deep structure, as an alternative expansion of Art. Now this was the source proposed by Chomsky (1967) for inalienable possessives (a subset of the genitives that we derive from cases). We questioned the appropriateness both of Chomsky's classification and of his syntactic representation of "inalienable" relations. There seems to be greater prima facie justification for proposing such a derivation for those genitives which lack all but a vaguely "possessive" relationship with the head. We have not examined this proposal in any detail to see whether it is generally viable (though notice that the correct predicate genitives might be obtained by a rule of deletion--or whatever--operating prior to the introduction of other genitives into the determiner).

To summarize the observations of section D: given the constraints imposed by the rest of the grammar, there is no completely satisfactory source for possessives. The predicate genitive probably represents the most suitable sentential source but creates a number of problems. It is possible that possessives should be generated as Articles, but this possibility has not been explored.

This is a convenient point for a brief review of the relationship between sections C and D in which the sources of the genitives have been discussed. There are indisputably close relationships

between many genitives and cases in deep structure. We have been able to provide evidence for extending the sphere of such relation-to forms like John's arm, while rejecting the relevance of a notion of alienability. As a result we have been able to suggest a number of fresh approaches to the question of the source of possessives. Although we have rejected all currently proposed sources this in no way constitutes evidence against deriving some genitives from cases, since there is apparently no more satisfactory way of deriving all genitives in a general fashion.

In fact, by establishing a clearer distinction than before between the two classes of genitive, we have been able to pose a relatively small number of crucial questions--though we have not been able to answer them in this grammar. To the extent that these questions prove relevant to the problem of deriving genitives, they will provide support for the particular distinctions suggested here. Some of those questions, such as those raised with respect to the cases on idea, interest, house, etc., may well show that the notion of case is in fact not adequate to answer the questions that it has allowed us to raise in this area.

E. The Derivation of Genitives

We turn now to the operations that derive surface genitives and related forms from the deep structures proposed above. First we discuss and develop Jackendoff's (1967) proposal to obtain postposed genitives (like a book of John's) by a process of deletion, from partitive constructions such as one (book) of John's books. Although in some respects that proposal is attractive, it appears to have less motivation than Jackendoff claimed for it. For reasons given below, we reject his solution and offer an alternative analysis involving a postposing rule. In the light of this we deal next with a number of constraints on the subject placement rules that form genitives and on the rule which derives possessive genitives from relative clauses. These constraints may not need to be separate conditions explicitly stated in the rules, but may result from rule ordering and so on. But in this section we have not aimed to do more than describe the facts. The third question dealt with in this section is the origin of "postposed nominatives" such as the man in "the arm of the man." Some people have tried to relate these directly to postposed genitives but we provide an alternative account. Most of the discussion is included in CASE PLACE and we merely summarize the argument here. This section ends with a brief discussion of how predicate genitives might be derived if they were not generated (as here) in the base, and some remarks on the rule for deleting the articles when there is a preposed genitive.

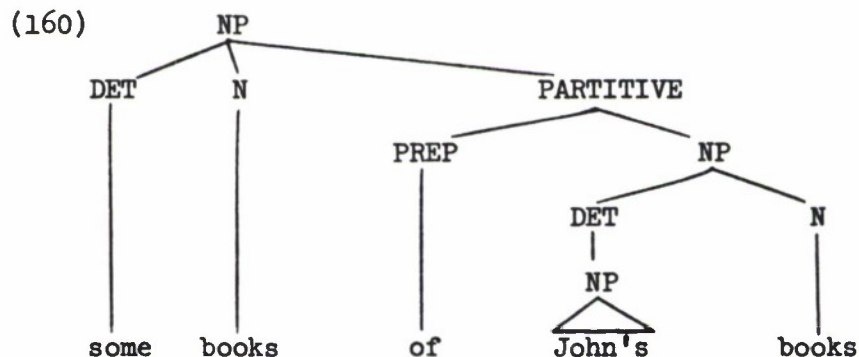
1. The Derivation of the Postposed Genitive

We have not yet accounted for forms like (159), in which the genitive, instead of preceding the head, follows it.

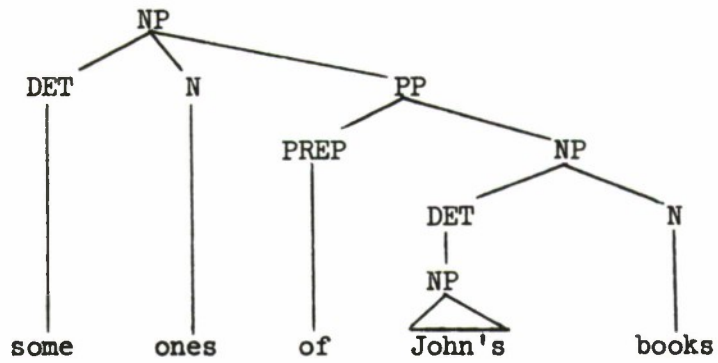
- (159) (a) The books of John's that you need are on the table.
- (b) We talked for a long time about some proposals of his to lease three new properties.
- (c) A new novel of Iris Murdoch's came out last month.

Smith (1964) regarded such postposed genitives as a stage in the derivation of preposed genitives. We have already argued (see (119) et. seq.) that there is little motivation for this, and that it complicates the statement of preposing and postposing rules since such forms as a proposal of mine, which are derived from cases, must be produced by postposing, whether possessives like a book of mine are or not. Yet the same constraints apply to both constructions, and postposed genitives that are possessives appear to act in every way like those that are derived from cases.

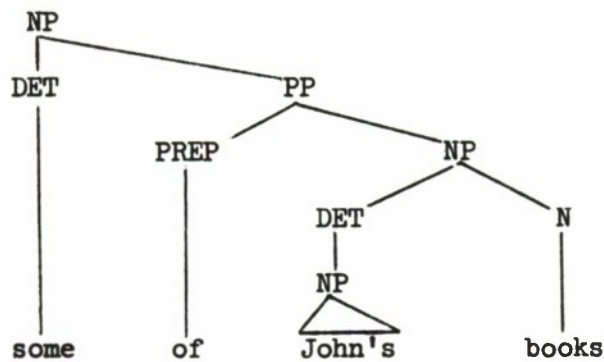
Jackendoff (1967) proposed a very different derivation for postposed genitives, giving them roughly the same underlying structure as surface partitives like some of John's books, something like (160). Rules required to account for partitive constructions in general will yield (161.b): the first occurrence of books is reduced to ones and then deleted. Compare: Some men of the men -- Some ones of the men -- Some of the men. For (162) on the other hand it would be necessary to reduce instead the second occurrence of books to ones. This could be done by making the partitive rule optional for genitives as it must be if sentences like ?Few men of those that had been left behind were willing to help are grammatical.



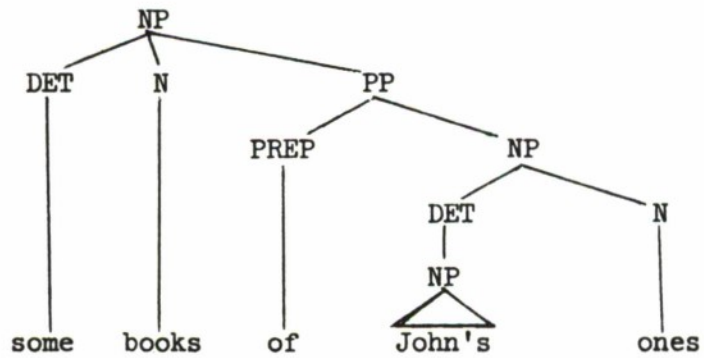
(161) (a)



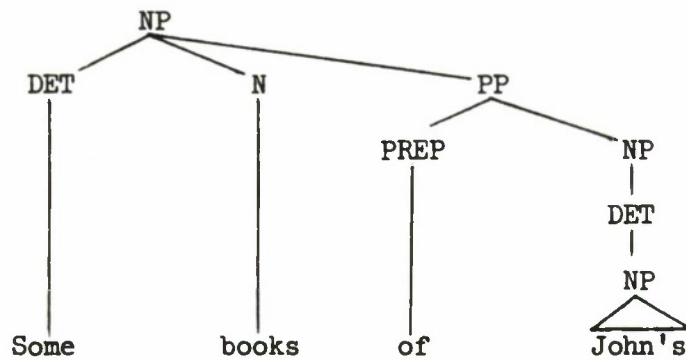
(b)



(162) (a)



(b)

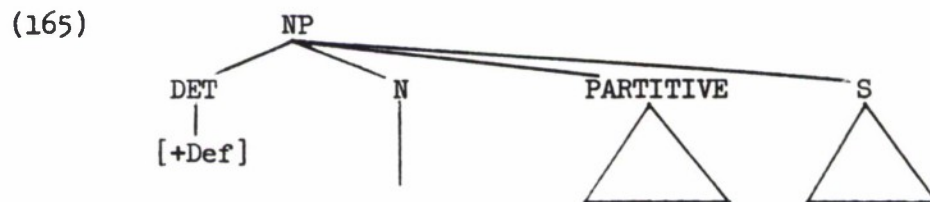
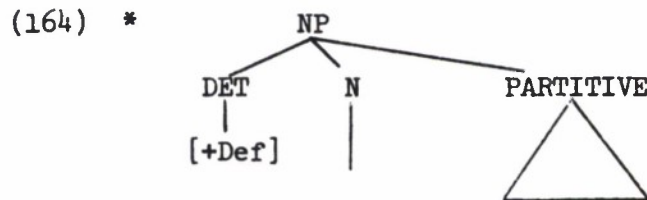


All, or virtually all, the postposed genitives would be produced in the same way. For a number of reasons, this is an attractive proposal and one which would fit well into our account of both pronominalization and partitives—in so far as we have an account of the latter. (See DET and PRO.) Jackendoff provides several arguments for it, though he is less definite about the origin of one than we have perhaps implied here. However, these do not seem to be adequate to motivate it, in the face of a number of serious difficulties.

Jackendoff observes that there appears to be a restriction on the top NP of a partitive construction. He cites the following to show that if that NP is indefinite a partitive is possible, but that if it is definite it must contain a relative clause, too. (For further discussion of these problems see DET.)

- | | | | |
|-------|-----|--|-------|
| (163) | (a) | two of the men | [45a] |
| | (b) | *the two of the men | [45b] |
| | (c) | the two of the men that objected strenuously | [45c] |

In general, it is clearly necessary to prevent structures like (164) from appearing, while allowing forms like (165), in which there is an unreduced relative present:



If postposed genitives were derived from partitives, as Jackendoff proposed, a single set of constraints (however formulated) would

prevent the derivation of (163.b) and the starred forms of (166) by blocking (164).

- (166) (a) *the brighter ideas of his
- (b) *the ideas of his
- (c) *the two sons of Mary's
- (d) his brighter ideas
- (e) his ideas
- (f) Mary's two sons

The acceptable forms of (167) and (168) would all come from partitives in which a genitive occurred in the lower (i.e. partitive) NP, not subject to the constraint of (164).

- (167) (a) a book of John's
- (b) what book of John's
- (c) some books of John's that I have

- (168) (a) the shoe of Mary's that I lost
- (b) *Mary's shoe that I lost

On the other hand, the acceptable forms of (166) would come from a genitive dominated by a single, non-partitive NP, for in these the genitive is preposed: his (brighter) ideas (166.d,e), Mary's two sons (166.f). As in the U.E.S.P. grammar, these genitives, his and Mary's, are formed by Jackendoff by pre-posing elements originally to the right of ideas and sons. Provided the adjective preposing rule precedes the rule forming genitives, it is a simple matter to allow his and Mary's to be obtained in (166.d-f), while blocking (168.b), *Mary's shoes that I lost. The preposing rule must require that there be no relative in the top NP, but ignores preposed adjectives (and numerals).

We now propose an alternative analysis of postposed genitives which, as far as we know, has not previously appeared in print. Once this alternative has been described it will be possible to compare it with Jackendoff's partitive analysis.

It will be recalled that Smith (1964) regarded the postposed genitive as directly obtained from her relative clause source. In certain environments the (postposed) genitive was then necessarily pre-posed. It is possible that, as Smith assumed, the postposed genitive comes from a structure essentially the same as that which yields preposed genitives, but that instead of the preposed form being derived from the postposed, there are rules which obligatorily

postpose the genitive, moving it from the Determiner and placing it to the right of the head N under certain conditions. These conditions will, of course, have to yield the same distribution accounted for by the partitive analysis, and a choice between the analyses will depend on a comparison of the degree of naturalness and motivation of the conditions compared with the extent to which the partitive analysis can account naturally for the facts.

The conditions for postposing will depend largely on the contents of the Determiners of the top NP, and on whether that NP contains a restrictive relative clause which has not been turned into a preposed adjective. Assume that when a genitive is formed (from a case or a relative clause), it becomes right sister of ART. If ART is indefinite the genitive has to be postposed:

- (166') (a) a _{NP}[John's] (blue) book \Rightarrow a (blue) book of John's
 (b) what _{NP}[John's] book \Rightarrow what book of John's
 (c) some _{NP}[John's] books that I have \Rightarrow some books of John's that I have

None of the forms given as output above can ever be paraphrased by a plain, preposed genitive like John's book. Therefore, when the Article is indefinite postposing is obligatory.

On the other hand, if that Article is definite but there is no relative clause present, postposing may not take place. Instead, there is no surface realisation of the Article. (For further discussion of the deletion or loss of the Article see E.4.b of this paper.) For example:

- *(167') (a) The _{NP}[his] brighter ideas \Rightarrow *the brighter ideas of his
 \Rightarrow his bright ideas (by loss of ART)
 (b) the _{NP}[his] ideas \Rightarrow *the ideas of his
 \Rightarrow his ideas
 (c) the _{NP}[Mary's] two sons \Rightarrow *the two sons of Mary's
 \Rightarrow Mary's two sons (by loss of ART)

If, however, the top NP contains an unreduced restrictive relative, postposition of the genitive must take place, whether the Article of that NP is indefinite or definite. (This fact has

been used by Chomsky (1965), Jackendoff (1967) and others, to argue that restrictive relatives originate in the Determiner, but that is not relevant here.) (168'.a) shows that postposing may take place; (168'.b) demonstrates that it must do so.

- (168') (a) the _{NP}[Mary's] shoe that I lost \Rightarrow the shoe
of Mary's that I lost.
(b) the _{NP}[Mary's] shoe that I lost \Rightarrow *Mary's
shoe that I lost (by loss of ART)

(N.B. There are some dialects that apparently do allow (168'.b). In the same way, if there are demonstrative elements in the top Determiner, postposing has to take place. That this is so follows from the fact that the output of (169) can never be paraphrased by simple preposed genitives like Lucinda's dresses.)

- (169) (a) those _{NP}[Lucinda's] dresses \Rightarrow those dresses of
Lucinda's
(b) which _{NP}[my] proposals \Rightarrow which proposals of mine

To sum up, postposing has to take place unless the top NP is definite and contains neither an unreduced relative nor a demonstrative.

We can now compare the partitive analysis with this one just proposed. Jackendoff contrasts his own final version with two others that he considers and rejects. One of these is essentially that of Smith (1964) which we have already rejected. The other proposal involves a rule which optionally creates postposed genitives in situ out of the input to the preposing rule if that preposing rule has failed to apply to certain of these. This is an unintuitive, ad hoc solution which is rightly rejected by Jackendoff, and which we shall not deal with in detail. What is important from our point of view is that the advantages of the partitive analysis over either of these, carry over, with few exceptions, to the analysis proposed here. In addition, our analysis has several advantages over the one using partitives.

We shall deal first with the advantages claimed by Jackendoff for his system. The most important of these, if correct, is important. He claims that the condition on postposing a genitive

from within a definite NP can be reduced to the constraint (whatever it is) that blocks partitives on definite NP's unless they contain restrictive relatives. If so, there is much to be said for an analysis that allows this to be done, since the relationship holding between postposed genitives and elements of the top NP, as exemplified in (166)-(168) certainly requires explanation. Notice that Jackendoff's suggestion that the peculiar distribution of postposed genitives is related to the restriction on partitives appears to be supported by another, related similarity between the two constructions. In general the relative clause on the head noun of the partitive (or postposed genitive) may not reduce and prepose. (In (170.a), those ← the ones: See DET.)

- (170) (a) those of his books that are blue
 (b) *the blue (ones) of his books

- (171) (a) the books of his that are blue
 (b) *the blue books of his

The advantages of reducing both problems to a single constraint on partitives are somewhat reduced by the fact that that constraint itself remains altogether unexplained. Moreover, when we examine other constraints on the two constructions there seem to be a number of significant differences between them. First, although in general the relative clause allowing postposing on partitives may not be reduced ((170) and (171)), when there is a preposed superlative adjective (and perhaps in other cases) partitives are allowed but not postposed genitives--unless there is a restrictive relative clause in the NP.

- (172) (a) the youngest of the men
 (b) the newest of John's cars

- (173) *the newest car(s) of John's

- (174) the newest car of his that I've driven

Similarly, there are a number of quantifiers that fail to uphold the parallel in any simple fashion. For example, if a phrase like (175) comes from a partitive like (176) as we have argued in DET,

- (175) all (of) John's books (cf. all (of) the men)

- (176) (*)all books of John's books (cf. all men of the men)

it is necessary to account for the unacceptability, in most instances, of such forms as (177) which would be optionally derived from (176) by the proposed rules.

(177) *all books of John's

Similarly:

(178) relatively few of John's books

(179) *relatively few books of John's

The last of such counter-examples to any claim that the restrictions on postposed genitives that have to do with the top determiner can be explained by reference to partitives comes from demonstratives. When there is a deictic in the top determiner, the genitive must always postpose, but there are not always acceptable partitive parallels.

(180) (a) I like ^íthese pictures of Rembrandt's but not ^óthose.
 (b) *I like these (ones) of Rembrandt's pictures, but not those.

(181) (a) I only want to meet ^óthose friends of yours.
 (b) *I only want to meet those (ones) of your friends.

It must be granted that all these examples involve relatively controversial elements; they cannot of themselves provide strong evidence against Jackendoff's proposal. Moreover, all could be handled by specially restricting the derivation of surface partitives or postposed genitives. However, they would all be accounted for by the following rather simple explanation of the distribution of postposed genitives.

After the genitive is formed by moving an NP into the Determiner, the genitive can remain there only if the Article dominates [+Def] and nothing more. This is a rather natural condition ensuring that preposed genitives are unambiguous, but it requires that relative clauses be represented in some way that will associate them closely with the Article--unless they have been formed into preposed adjectives. Following Chomsky (1967), Smith (1964) and others, Jackendoff himself wishes to derive relative clauses in the Determiner, and although we have not tried to work out details here, we may arbitrarily assume that in some way the article acquires a feature [+Rel] if there is a restrictive relative, but that the preposing of an adjective deletes that feature. (Note

that the ART S analysis of restrictive relatives is discussed in REL.) The following would have to postpose:

- (182) (a) the [John's] book that is over there
 [+Def]
 [+Rel]
 (the book of John's that is over there)
- (b) those [your] friends
 [+Def]
 [+Dem]
 (those friends of yours)

On the other hand, since preposed adjectives do not trigger postposition, the following would be generated instead of the ungrammatical forms (171.b) and (173):

(171.b') his blue books

(173') John's newest cars

The ungrammatical examples involving quantifiers, (177) and (179), although superficially like (173), result from a constraint on preposing, leaving such forms as (177') and (179') as surface structures and entirely excluding genitives from such NP's.

(177') ?all books that are John's ⇒ *John's all books

(179') ?relatively few books that ?are John's ⇒

*John's relatively few books

(Note that the starred derivation from (179') is grammatical but only as a non-restrictive, which is irrelevant.)

Although this constraint is otherwise unmotivated it is not counter-intuitive. Moreover, to avoid deriving the fully reduced form of (175), all John's books, from two sources this constraint would probably have to be incorporated in any partitive analysis of postposed genitives. (If, as may be the case, the relative clause sources for (177'), (179') are ungrammatical, this removes the need for the constraint, of course.)

So far, in response to Jackendoff's main claim, we have tried to show that there are a number of significant differences between

the constraints on partitives and those on postposed genitives; and that there is a very natural way of accounting for these differences, as well as for the constraints that the partitive analysis handles. We regard the apparent similarities with the partitive, as a chance result and Jackendoff's proposed generalization as a false one.

The second advantage claimed for the partitive analysis is that, unlike Smith's (or the straw man that Jackendoff sets up), it makes all genitives dominated by the Determiner at the surface. All that is important, however, is that genitive formation should take place by a single rule, in one environment. But our rules derive all genitives by preposing, too. (Gerunds and predicate genitives excepted.) There seems no particular advantage, on this score, to either analysis, as compared to the other.

Thirdly, it was claimed by Jackendoff that the partitive analysis will "eliminate the problem of bringing in nominalizations and measure expressions where they are not wanted," citing the following as examples. (To make them relevant they should, of course, include relative clauses since they have a definite determiner, or they should be indefinite. They are, in fact, just as bad in either case.)

- | | |
|--|-------|
| (183) (a) *the assassination of Bill's | [41a] |
| (b) *the height of mine | [41b] |

These are supposed to be automatically excluded by the fact that neither assassination nor height can appear in a partitive construction:

- | | |
|--|-------|
| (184) (a) *one of the assassinations of Bill | [42a] |
| (b) *one of my heights | [42b] |

However, there seem to be a number of more basic constraints on these head nouns. Between them these go a long way towards explaining both the lack of partitives (otherwise unexplained by Jackendoff) and the ungrammaticality of forms like (183). It is impossible to do justice to this claim since there are a great number of irregularities in this area, and we merely indicate where, in general, the solution seems to lie, knowing that there are counter-examples to the generalizations proposed here.

First, observe that few nouns in these classes can appear with an indefinite article if they have cases on them--even if no genitive has been formed. In fact Jackendoff cites some relevant examples:

(185) *a repudiation of a heretic [18a]

(186) *a width of a finger [18d]

It is not immediately relevant that we can get a sentence like (187) unless we could also get (188)--which has a Dative case (animate object) on execution, like (183.a), and is, like the latter, ungrammatical.

(187) I should not like to witness an execution.

(188) *I should not like to witness an execution of a criminal.

This effectively excludes one environment that must avoid postposing since these nominals must not be indefinite when they bear cases. When the head noun appears with a definite article only, as in the assassination of a president, this can only lead to the president's assassination, and prevents postposing anyway; so the remaining question is whether it is possible to obtain forms like (189)-(192). If so, any genitive formed from them would be expected to undergo postposing.

(189) *The assassination of the president that I witnessed.

(190) *The height of a building that was measured by this architect.

(191) *The execution of a notorious criminal that took place yesterday.

(192) *That destruction of a village that John saw on television.

These vary in acceptability but for many speakers all are excluded. Some find forms like (191), with an indefinite object, rather better. But these are irrelevant anyway since they are presumably automatically prevented from forming genitives by whatever constraint is needed to exclude (193.a) in favor of (193.b). (We discuss this again in section E.)

(193) (a) *We were surprised by a new saint's canonization.

(b) We were surprised by the canonization of a new saint.

Thus, there appear to be independently motivated ways of preventing postposed genitives from forming on these nouns: the necessary

environments simply do not occur. Coupled with restrictions on pluralization which also apply (cf. the heights of the buildings, *the canonizations of the saints), these constraints will derivatively prevent the formation of partitives, but we are not specially concerned with that here.)

There seems to be a small class of examples which cannot be explained in this way. In (194) Washington can be the object of portrait. This is an impossible interpretation for (195), both (a) and (b):

(194) Some of Washington's portraits show him as a young man.

(195) (a) *Some portraits of Washington's show him as a young man.

(b) *The portraits of Washington's that I like best...

We have no explanation of (195,b) since portrait can be indefinite and can take a relative clause even when it has cases. However, (194) occurs, and the partitive analysis is no better able to explain (195.a).

The fourth and last claim regarding the partitive analysis is that it accounts for the fact that indefinite NP's cannot appear in postposed genitives such as (196). This it does by relating them to (197), the equivalent partitive, which is also ungrammatical. It was proposed by Jackendoff that genitives within a partitive be limited to those with definite articles.

(196) *a daughter of a farmer's [44a]

(197) ?one of a farmer's daughters [48a]

However, as he notes, (197) is much better than (196) and in fact there are numerous examples in which the correlation quite breaks down. The following should be equally acceptable according to the partitive analysis, but they are not, and in general partitives seem much better able to accommodate the indefinite article in the genitive NP than are postposed genitives.

(198) * $\left\{ \begin{array}{l} \text{those} \\ \text{the} \end{array} \right\}$ books of a certain old man's that he had kept since his youth.

- (199) those of a certain old man's books that he had kept since his youth

While we do not know how these facts are to be accounted for, we do not find that they provide any support for the partitive analysis. It is in general very much more difficult to find acceptable genitives having an indefinite article, and this is not limited to postposed ones.

We may summarize the preceding discussion thus: Jackendoff's claims turn out to have far less motivation than he argued for. Moreover, the most significant of the observations that were supposed to support his position (the first one dealt with above) tends in fact to throw doubt on the partitive analysis since it is possible to account for the constraints on postposed genitives more naturally by means of an alternative explanation. We shall now consider further evidence against the partitive analysis, which increases the likelihood that the alternative derivation of postposed genitives discussed above is (in essence) correct.

Before introducing this evidence, however, we have to admit that there is a rather strong argument for relating partitives and postposed genitives which Jackendoff did not even consider. When two morphologically and syntactically similar forms are close paraphrases of each other, this constitutes good *prima facie* evidence for deriving them from the same source. Consequently, in so far as (200.a) and (200.b) mean the same, it's likely that they have a common source.

- (200) (a) Some of our antiques were damaged in the truck.
 (b) Some antiques of ours were damaged in the truck.

These two sentences are indeed very close in meaning and we must continue to regard this fact as rather serious counter-evidence to our proposal. Yet there are aspects of the relation between these sentences which should be interpreted in favor of deriving (200.a) and (200.b) from different sources. There is a very important difference between them. The first, a partitive, presupposes that it is common knowledge that we have antiques. The second does not. In general we do not assume that transformations never change meaning. (See CASE PLACE.) Therefore, a difference in meaning as slight as this, may seem to be little justification for arguing that (200.a) and (200.b) differ in deep structure. Nevertheless, the difference observed here is exactly what would be predicted if the former had a definite article on antiques somewhere in the deep structure, while the second was essentially indefinite. Our analysis provides precisely this distinction, while the partitive analysis does not.

This same difference appears in even more striking ways in the following:

- (201) (a) Some of Mr. Smith's teeth fell into the bath.
 (b) ?Some teeth of Mr. Smith's fell into the bath.

Although (201.a) is always acceptable, (201.b) cannot be used with the sense of the genitive derived from a case. Consider (202) and (203) in the light of this. Great grandparents seems unable, like teeth, to occur as an indefinite with a postposed genitive, although friends can.

- (202) (a) *two great-grandparents of his
 (b) two friends of his

Cf.

- (203) (a) two of his great grandparents
 (b) two of his friends.

We can see no clear syntactic explanation of these facts. However, in each of the unacceptable sentences the whole set of relevant objects (teeth and great-grandparents respectively) is quite clearly limited in extent. It is at least plausible to argue that this requires the use of a partitive. The strangeness of (201.b) and (202.a) would then be regarded as of the same order as the strangeness of using the sentence ?One book on the table is damaged, where the complete set of books in question is a matter of common reference. The normal sentence (for the intended meaning) would be One of the books on the table is damaged. This, like (201.a) and (202.b), uses a partitive.

Notice that whereas (203.b) implies that "he" has more than two friends, (202.b) does not. This, again, is what one would expect if we were dealing with a partitive and an indefinite NP respectively, since the partitive requires a set larger than that to which immediate reference is being made.

Our last example of this type of meaning difference is (204).

- (204) (a) During the meeting we considered some proposals of John's about widening various roads.
 (b) During the meeting we considered some of John's proposals about widening various roads.

There are in fact a great number of subtle differences between these sentences, depending in part on whether the about clause is

read non-restrictively or not, and on which occurrence of proposals in the partitive that clause is supposed to go with. (See DET for some related problems.) Our main claim here, however, is that (204.a) requires no assumption about whether John made other proposals but that (204.b) implies either that John made other proposals about widening roads or that he made others that were not about widening roads, depending on whether the about clause is on the lower or higher NP (respectively) or the partitive. It would take too long to show why, but this is exactly what is predicted by deriving (204.a) from one indefinite NP containing proposal, (204.b) from a partitive.

We turn now to the second kind of evidence against the partitive analysis. There are good grounds for supposing that we need a rule to postpose genitives in any case, and if that turns out to be true it is better to generalize this rule than to add to the grammar the extra mechanism required to obtain the other postposed genitives from partitives. At one point, Jackendoff mentions the phrase:

(205) that nose of his [21]

and points out that "we clearly don't want preposing to take place" in such a phrase. This is presumably to avoid that his nose, or something of the sort. The discussion of (205) precedes the proposal to derive postposed genitives from partitives and in fact no effort is made in the paper to incorporate demonstratives into the general account. Ordinary deictics could well be incorporated, as we have shown. (E.g. (182).) However (205) does not contain an ordinary demonstrative, and there is no partitive with a meaning anywhere near that of (205). Consider two similar examples:

- (206) (a) Those eyes of Lucinda's often lead her into trouble!
 (b) I dislike that ill temper of his.

Just what those and that are in these forms we do not know, but it is clear that (1) there is no related partitive like *those eyes of Lucinda's eyes from which to derive (206.a), and (2) whatever those is, postposing of the genitive could be made to follow from the generalization proposed above (p. 79), that genitives may remain preposed only if the article contains no more than [+Def], provided those and that violated that condition. There is at least no evidence against those and that being dominated by the Article. They seem like articles yet they are not just definite. Though this argument depends on few forms, and though the latter are relatively little understood,

the conclusions seem quite indisputable: we need a rule postposing genitives. Once this is admitted it is necessary to justify very thoroughly any proposal to apply constraints that prevent the rule from applying to similar constructions. The arguments for the partitive analysis must as a result be that much stronger in order to be accepted--and we have called them in question on a number of counts.

2. Constraints on the Formation of Genitives

Three rules produce genitives: the Active and Passive Subject Placement rules and the Possessive Formation rule. The first two are described in detail in CASE PLACE; however there are a number of conditions which must be placed on these rules when they apply in NP's, and those conditions were not dealt with there in any detail. The Possessive Formation rule is not to be taken too seriously, as it stands, as we explained earlier, but whatever form the rule takes, conditions of the sort discussed here must be imposed. If it turns out that possessives should be generated directly in the Determiner some may have to be stated as output conditions; otherwise it is likely that the account that follows would apply to any rule for obtaining possessives. Some of the conditions discussed in this section may well result automatically from such factors in the grammar as rule ordering, but we simply impose them arbitrarily on the rules themselves.

It is worth pointing out that in so far as the constraints discussed here apply specifically where nouns and not verbs are at the head of the relevant construction, they represent one of the ways in which surface dissimilarities between S and NP arise. In this grammar there are, of course, no deep structure subjects; by imposing conditions, like those dealt with here, on the transformational section of the grammar, we are able to represent S and NP as highly similar in structure in the base. It is therefore an interesting question (to which we have no answer) whether constraints like those proposed here can be more adequately motivated than constraints on desentential derivations of NP's and on base rules for S and NP.

Finally, notice that when any string fails to meet a positive condition it is anticipated that the original (case or relative clause) form will turn up at the surface. For example, if, contrary to fact, the top Determiner had to be [+Definite] then the rule would fail to apply to a case structure like an arm of the man, but we should nevertheless expect this string to appear at the surface. In other words, the conditions discussed here

are simply conditions on the formation of (preposed) genitives. (They do not apply to the formation of gerunds.) Because the conditions inhibit the formation of preposed genitives, they affect the distribution of postposed genitives, too.

(a) Conditions on Determiners

(i) The Determiner of the top NP

If we had accepted the partitive analysis of postposed genitives we should need to impose on all three rules for forming genitives a condition allowing them to apply only if the "top" Determiner contained a [+Def] Article and neither demonstrative nor relative clause appeared in that NP. An arm of the man and a book that is John's would never form genitives. Something like John's book would be a simple genitive, allowed by this partitive condition, while a book of John's would introduce the genitive by means of the lower (partitive) NP which would itself be John's book.

We have given our reasons for rejecting the partitive solution and therefore need not consider this condition in detail. However, notice that if we had needed to impose it, this would have introduced a new argument against using the predicate genitive as the source for possessives. We suggested that ?The book that is John's is odd for the same reason that ?The book that is green is unsatisfactory: there is a shorter, preposed form. But whereas ?a book that is green becomes a green book, ?a book that is John's would have to remain un-preposed if the top Determiner had to be [+Def], and our "explanation" of the oddness of the un-preposed forms would fall away. However, since we pre-pose all genitives and later postpose the genitives from a John's book this particular objection falls away.

(ii) The Lower Determiner

At least in true action nominals there seems to be a requirement that the lower determiner be definite:

- (207) (a) *The girls were disturbed by a man's sudden appearance on the balcony.
 (b) The girls were disturbed by the sudden appearance of a man on the balcony.

- (208) (a) *A young vandal's destruction of the fence annoyed Mr. Jones.
 (b) The destruction of the fence by a young vandal annoyed Mr. Jones.
- (209) (a) *A little child's canonization surprised us.
 (b) The canonization of a little child surprised us.

As (209) shows, this condition applies to the Passive rule, as well as the Active one.

It does not apply to the same extent to other nouns, neither the Subject Placement rules nor Possessive Formation being inhibited in this way for them, as the following show. It is interesting that in some cases a generic rather than indefinite reading tends to be given to the genitive.

- (210) (a) A student's mother came to see me.
 (b) A little girl's arm had just been hurt.
 (c) An old man's portrait of his daughter was accepted for the exhibition.
 (d) A dark-skinned chinaman's portrait hung near the door.
 (e) One boy's interest in astronomy took him as far afield as Mt. Wilson.
 (f) A little girl's candy had spilt on the floor.

As far as this condition goes, it is necessary only to extend whatever condition tends to prevent indefinite NP's from forming the subject of a sentence, so that it applies also to true action nominals--which of all the constructions falling under this discussion are most like sentences. We do not in fact incorporate that condition in CASE PLACE and consequently generate (207.a), (208.a) and (209.a).

(b) Conditions imposed by Definite Pronouns

Just as with sentences, NP's do not easily tolerate a definite pronoun in the by NP Agentive phrase:

- (211) (a) ?the execution of the criminals by him
 (b) ?the criminals were executed by him
- (212) (a) ?the portrait of swans by him
 (b) ?the portrait was painted by him

This, like the constraint discussed in connection with (207) and (208), may well be connected with the conditions under which topicalization is allowed, but we have not tried to account for such conditions in this grammar and therefore do not deal with this one in the rules.

There is another constraint which, if it applies to genitive-forming rules, must apply only to the Active Subject Placement rule, and only when it operates within NP. Consider the following:

- (213) (a) *The arrival of him pleased the others.
 (b) His arrival pleased the others.

- (214) (a) *The arm of him was broken.
 (b) His arm was broken.

- (215) (a) *The denunciation of him by Cicero.
 (b) His denunciation by Cicero.
 (c) Cicero's denunciation of him.

- (216) (a)?? The portrait of him (by Rembrandt)
 A
 (b) His portrait (by Rembrandt)
 (c) Rembrandt's portrait of him

Judging only by (213) and (214) it would seem that a Dative must necessarily prepose if it is a definite pronoun and the only case on the noun. However (215) suggests that the condition is more complicated. In (215.a) an animate object has been formed, presumably from the Dative case again. The first preposing rule that could apply to this string is the Passive. If it applies, (215.b) is produced. But the Passive is optional. If it does not apply, (215.a) is left. Usually in NP's the Active rule is also optional, but in this instance it must obligatorily apply, to yield (215.c). Thus there seems, in fact, to be a condition on the Active rule, which makes it obligatorily apply to whatever NP it would normally move, just in case there is a Definite pronoun under a case (perhaps necessarily Dative case).

It is not clear how far this constraint extends. (216.a) does not seem too bad, for example. In the other direction, it would be easy to have the rule cover examples (211.a) and (212.a). However, at least in this grammar, it is necessary that there be a suitable condition on the rules of pronominalization, since obviously those rules follow the genitive forming rules. Consequently the latter would have no way of recognizing derived pronouns at the stage when genitive formation takes place. To

achieve the right effect it might seem possible to block pronominalization of the NP immediately after the head of a nominal construction (probably excluding (216)). Since, however, we generate definite pronouns in the base, we cannot simply have a condition on the Pronominalization rule, but would have to formulate an output condition. This may well be an artifact of this particular grammar and we do not take the trouble to propose a precise formulation of any condition that would account for (213) - (216).

(c) Conditions Depending on Animous

It has often been observed that animate NP's form genitives far more easily than inanimates do. In some way it is necessary to block:

- (217) (a) *our house's picture
 (b) *the picture's destruction by a maniac
 (c) *the table's leg

Instead, we get the un-preposed case forms:

- (218) (a) the picture of our house
 (b) the destruction of the picture by a maniac
 (c) the leg of the table

This constraint is not absolute and seems to vary from speaker to speaker. For example, speakers seem to vary considerably in their judgments of the grammaticality of (219):

- (219) (a) the water's edge
 (b) ?the building's height
 (c) ?the food's distribution

Whatever form the conditions may take in order to account adequately for this data, they must be such that the previous condition, which requires preposing of an NP if it is a definite pronoun, can take precedence over the present condition:

- (220) (a) I estimate its height at about 200 feet.
 (b) Although you have the book back, many of its pages are now torn.
 (c) It's destruction by a maniac surprised us all.

Not:

- (221) (a) ?I estimate the height of it at about 200 feet.
 (b) *Although you have the book back, many of the pages of it are now torn.
 (c) *The destruction of it by a maniac surprised us all.

On the other hand, there is no genitive relative pronoun for inanimates, and we find (222) rather than (223).

(222) The book, the cover of which had been torn, was found outside.

(223)??The book, whose cover had been torn, was found outside.

Inanimates never form possessives. (That much seems semantically clear, at least.) And we have argued in CASE PLACE that for nouns the Passive rule applies only to Datives (= Animate Objects).

(d) A Condition on Plural Subjects

We noticed, in connection with (b) above, that indefinite NP's do not easily form genitives. When the genitive NP is plural but the head is singular, the result is very considerably worse:

- (224) (a) *some men's racehorse
 (b) *those books of some expatriate English authors'

It is not, however, impossible to find a plural indefinite genitive on a plural head, or to find plural definite genitives, as in the following examples (respectively).

- (225) (a) some men's racehorses
 (b) the children's go-kart

We do not know anything more about this singularly odd constraint.

(e) Length Constraints

There is some kind of constraint imposed by the length of the potential genitive:

- (226) *The man who lives on the corner's books

It is not clear how this could be stated but it is presumably stylistic in origin. Notice that the constraint applies equally to predicate genitives:

(226') *That book is the man who lives on the corner's.

The fact that in general all constraints apply equally to predicate genitives and other genitives—including those derived from cases—makes it seem likely that if the predicate genitive is the source of possessives the constraints on genitives are all output conditions, sensitive only to the genitive and its dominating NP if relevant.

3. The Origin of of NP

That there is a relationship between genitives and of NP following the head noun has often been noticed. It has not generally been very clear what sort of relationship was involved, since for many common genitives the corresponding of NP form is ungrammatical.

(227) *a book of the boy

We have proposed, in CASE PLACE, a number of ways of deriving of NP but only two concern us here. On the one hand, this form may represent an "object" of the N, coming from a deep structure Neutral or Dative case by a rule inserting of after objectivalization has deleted the original preposition. On the other hand, it may result from the rule which changes the preposition of any single case left to the right of the head N to of. In both instances, of NP originates in a case and has never been a genitive—though the deep structure from which it has been derived may be eligible to form genitives which will paraphrase it.

This represents a claim that any of NP (of the classes we have been dealing with) comes from a case rather than an embedded relative clause (i.e. passive). In the clear instances this seems to be correct.

There are at least three other possible sources for of NP. We do not discuss these in detail here, but there appear to be good arguments against the following:

1. Certain genitives postpose to form of NP losing the genitive marker as they move.
2. The genitive marker deletes from certain postposed genitives.
3. The form of NP is a partitive of some sort (e.g., in the arm of the man) from which genitives can form.

Jackendoff's account of of NP does not follow any of (1)-(3) above, but runs into difficulties which appear to be quite typical of any account that fails to distinguish between possessives and other genitives. In order to exclude (227) he has to make genitive formation obligatory.

For further discussion of the origin of of NP see CASE PLACE.

4. Miscellaneous Problems

a. The Predicate Genitive

If the predicate genitive is basic, it is necessary, as we mentioned above in section D, to constrain it in complex ways. If it is not basic, suitable conditions must be placed on deletion and/or subject placement rules in order to secure the right output. The fact that many predicate genitives (e.g. Those books are John's) appear not to be definite but in some way generic (cf. He is a carpenter) is not easy to imagine handling under any deletion analysis.

b. Article Deletion

It might seem that given our analysis of genitives we require a rule to delete the article just in case the genitive remains preposed, for then we have a definite article which, on the preliminary breakdown given in example (167') precedes the genitive, thus:

(228) the (John's) book



John's book

fact that hers dominates two occurrences of the feature [+PRO], acquired by the two processes of ONE-DELETION. Nowhere else have we made use of such a device and we are unwilling to do so here. We do not, however, have an alternative to propose.

F. Problems not Discussed

1. The relation between genitives and true compounds like:

(229) table-top, chair-leg, river-bank, door-handle

2. The relation between the genitives discussed in the paper and such compound genitives as:

(230) (a) (new) [gentlemen's clothing]
 (b) a big [boy's bicycle]
 (c) some [butcher's aprons]
 (d) a ladies' man

3. The following genitives:

(231) (a) a summer's day
 (b) the journey's end
 (c) yesterday's paper

It is probable that (c) at least has an adverbial origin. It is interesting that there are sentences having such adverbs as yesterday in surface subject position, such as Yesterday saw the beginning of a new quarter at school. These facts may be related.

IV. TRANSFORMATIONAL RULES

All the rules of CASE PLACE are relevant. They are assumed, and not repeated here. In addition, the following are required:

1. Possessive Formation (Optional)

S.I. NP¹ [NP² [X ART X N X]_S [NP BE NP³]]
 [+Dative]

1 2 3 4 5 6 7 8 9

S.C. (1) Attach 9 to 3
 (2) Erase 7, 8, 9
 (3) Add [+Genitive] to 3

Conditions

(1) 3 does not dominate NP
 (2) 7 dominates [+THAT]

Note:

- (1) The genitive output of this rule is quite parallel to that of the Subject Placement rules (q.v.).
- (2) Must precede Rule 2, genitive postposing.
- (3) The five conditions of E.2 are relevant but they appear to be output conditions rather than rule specific.

2. Genitive Postposing (Obligatory)

S.I. ART [NP] X N X
 [+Genitive]

 1 2 3 4 5

- S.C. (1) Attach 2 as right sister of 4
 (2) Delete 2

Conditions

- (1) 1 ≠ [+Def] (Note: This is understood strictly: if 1 dominates anything in addition to [+Def] the rule does not apply.)
- (2) 3 does not directly dominate NP

Note

- (1) of will be inserted between the resulting N and NP by the very general of-insertion rule (see CASE PLACE). Thus it is assumed that ?the book by Mailer of John's that I am reading is generated, if at all, by a later scrambling rule (which we do not give). The output of GEN-POSTPOSE would be the book of John's by Mailer that I am reading.

Examples

A. Grammatical

- (232) (a) a book of his
 (b) the proposal of his that you are thinking of
 (c) that nose of his

B. Ungrammatical - excluded

- (233) (a) *the bicycles of hers
 (b) ?that [announcement to the creditors] of the chairman's

CLEFT AND PSEUDO-CLEFT

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CLEFT AND PSEUDO-CLEFT

I. BIBLIOGRAPHY

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II. INTRODUCTION

This presentation has four primary objectives: (1) to provide an elucidation of the syntactic restrictions of the cleft and pseudo-cleft constructions, (2) to demonstrate the many similarities of the two constructions, (3) to survey critically the generative analyses thus far proposed, and (4) to suggest a new approach to the analysis of cleft and pseudo-cleft constructions in light of (1)-(3) above.

As one can infer from the bibliography, very little has been written on clefting and pseudo-clefting from a generative-transformational point of view. For this reason and because there are some questions about when constructions should be considered cleft and pseudo-cleft, a section on the question of what constitutes an occurrence of each of these constructions has been included (III.A.1-4 and IV.A.1-4).

The two phenomena are first presented in separate, parallel sections to allow their independent study while simultaneously

facilitating their comparison. Comments peculiar to one or the other construction follows the parallel comments in each section. Following the introductory orientation, annotation and critique of previous generative proposals are given. Our suggested approach, along with what we consider to be evidence for that approach, concludes the presentation.

III. CLEFT SENTENCES

A. Data-Oriented Observations

The following remarks and examples are intended to give an awareness of the various structures which undergo clefting and those which must be restricted and excluded.

1. Constituents Which Can Be Clefted

Non-constituents can not be clefted. The following examples illustrate the constituents which can be clefted.

(a) NP's can be clefted.

- (1) (a) Rachel cried. \Rightarrow It was Rachel who cried.
- (b) Mark saw Rachel. \Rightarrow It was Rachel who Mark saw.
- (c) Mark saw Rachel. \Rightarrow It was Mark who saw Rachel.

(b) The structures which the clefted NP dominates are practically unlimited, i.e., they have little effect on the clefting operation.

- (2) (a) NRRel: It was Bill, who seems anemic, that I was worried about.
- (b) RRel: It was the man with the red coat who stopped me.
- (c) ADJ: It was that big oaf who stepped on my foot.
- (d) POSS: It was Sam's book that got torn up.
- (e) POSS-ING: It was John's coming home early that caused problems.
- (f) FOR-TO: ?It is to come home late and not find dinner ready that bugs me.
- (g) THAT-S: ?It was that Bill was prejudiced that I ignored.

[Cf. Section III.A.3 on dubious clefts for those examples with question marks.]

(c) The head of a postposed genitive phrase may generally be clefted.

- (3) (a) It was a handkerchief that Mary wanted of Sue's.
(b) It was a hammer that John took of mine.

This suggests that the head of a genitive phrase is in some way a separate NP.

(d) When a prep accompanies the NP, there are restrictions on clefting (cf. see III.A.1 (i)) but many NP's can be pulled out of prep phrases.

- (4) (a) It was Bill that John relied on.
(b) It was the exam that Sue cried about.
(c) It was Bill that John gave the money to.
(d) It was Sam that Evelyn came with.
(e) It was a hammer that Ruth broke the window with.

(e) Whole prep phrases may be clefted. Their functions may be quite diverse.

- (5) (a) It was about Esther that Marcia gossiped.
(b) It was with a stick that Bill killed the rat.
(c) It was to the store that Peter went.
(d) It was for fun that Bonnie and Clyde held up the bank.
(e) It was for 3 years that Bill lived on that island.
(f) It was at 3 o'clock that school let out.
(g) It was in school that Harry learned to succeed.
(h) It was with anticipation that Martha waited.

Some clausal constructions (which might be analyzed as prep-phrases) undergo clefting while others don't. Perhaps a difference in PS configuration or a semantic restriction is responsible.

- (6) (a) It was only while his boss watched that John worked fast.
(b) It was only after prolonged prodding that the calf moved into the chute.
(c) It was because John begged that I approved his petition.
(d) It was in spite of John's begging that I rejected his request.

- (7) (a) *It was although John begged that I rejected his petition.
 (b) *It is if he comes that I'll scream.
- (f) Some adverbials having neither NP nor prep phrase structures may be clefted in some dialects.

- (8) (a) It was suddenly that the ghost appeared.
 (b) It is eagerly that I await your arrival.
 (c) It was yesterday that he decided to quit.

In short, NP's, prep phrases, and a few single word adverbials may undergo clefting.

2. Restrictions On Cleftable Constituents

There are numerous restrictions which must be placed on the constituents which can undergo clefting. Some of the following are mentioned in Lees (1963).

- (a) One of a series of conjuncts can not be clefted.

- (9) (a) *It was John that I saw and Bill.
 (b) *It was Elizabeth that and Norma went home.

Likewise, NP's and prep phrases within a conjunct can not be clefted. (cf. Ross's (1967c) Coordinate Structure Constraint)

- (10) (a) *It was Sam that slept and Bill ate.
 (b) *It was Ruth that Mary slept and ate.
 (c) *It was with his wife that Bill danced and Mark wrote a letter.

- (b) A preposed genitive may not be clefted.

- (11) (a) *It was Sue's that Mary wanted the handkerchief.
 (b) *It was the airplane's that the landing gear stuck.

(c) In case grammar terms, the cases following N can not be split off when the head is clefted (in contrast to contiguous locative modifiers of the VP which can not be juxtaposed to a clefted NP).

- (12) (a) He read the preface to the book.
 (b) It's the preface to the book that he read.
 (c) *It's the preface that he read to the book.
 (d) *It's to the book that he read the preface.

- (13) (a) He read the preface to his wife.
 (b) *It's the preface to his wife that he read.
 (c) It's the preface that he read to his wife.
 (d) It's to his wife that he read the preface.

(d) Indefinite pro-forms are not usually clefted. It seems likely that this may be a semantic disqualification since one of the functions of clefting is emphasis of an item.

- (14) (a) *It was something that John wanted. (as clefts)
 (b) *It wasn't anything that Mike saw.

Definite pro-forms (i.e. pro-forms which are overtly indefinite but in some way definitized semantically) are quite all right as clefted items.

- (15) (a) It was you who said that.
 (b) It was something new that Sue wanted.

(e) Sentences containing even, scarcely, only, etc. can not be clefted.

- (16) (a) *It is even John who likes old cars.
 (b) *It is John who even likes old cars.
 (c) *It was even old cars that John sold.

It seems to be the case that the discourse function of these adverbs is mutually exclusive with the function of clefting.

(f) The subject within a THAT-S construction may not be clefted, but if the that is absent, clefting is permissible.

- (17) (a) John believes that Bill likes tea.
 (b) *It is Bill that John believes that likes tea.
 (c) It is Bill that John believes likes tea.

The object in a THAT-S construction is not so restricted however.

- (18) It is tea that John believes that Bill likes.

This fact could be accounted for in the rules by placing a restriction on the cleft transformation that the variable preceding AUX in an embedded complement S not contain X + that (cf. NOM IV. and REL VI.A. for a fuller discussion of this type of restriction.)

(g) Sentence adverbs can not be clefted.

- (19) (a) *It was obviously that the theorem was true.
 (b) *It is probably that Mary went ice skating.

(h) Intensifying adverbials can not be clefted.

- (20) (a) *It was very that John was tired.
 (b) *It was very that Ramon noticed the groundhog quickly.

(i) When the NP to be clefted has a prep accompanying it, there are three positions in which the prep is found when the NP is clefted.

First, the prep may accompany the clefted NP.

- (21) (a) It was about marriage that Sue was discouraged.
 (b) It was on the davenport that Sue slept.

Second, the prep may remain while only the NP is clefted.

- (22) (a) It was marriage that Sue was discouraged about.
 (b) It was the davenport that Sue slept on.

Third, the prep may be fronted in the S from which the NP is clefted and then it precedes the WH-linker.

- (23) (a) It was marriage about which Sue was discouraged.
 (b) It was the davenport on which Sue slept.

[Note that the latter two possibilities are also present with RRel clauses.]

Various adverbial uses of prepositional phrases place restrictions on which of the above positions are possible. The examples given above allow all three positions. Many prep phrases disallow the second and third prep positions, i.e., they require the prep to remain with the NP when clefted.

- (24) (a) *It was the morning that I got up in.
 (b) *It was the morning in which I got up.
- (25) (a)?*It was 3 years that Bill lived on the island for.
 (b) *It was 3 years for which Bill lived on the island.
- (26) (a) *It is Chicago that they hold the meetings in.
 (b) *It is Chicago in which they hold the meetings.

- (27) (a) *It was hand that I climbed the rope by.
(b) *It was hand by which I climbed the rope.

- (28) (a) *It was fun that Bill held up the bank for.
(b) *It was fun for which Bill held up the bank.

(j) Prep phrases which can optionally delete their prepositions (i.e. Datives and Benefactives which undergo objectivalization) require the preposition when clefted. The preposition need not, however, move in all cases.

- (29) (a) *It was John that Bill gave the pencil.
(b) It was to John that Bill gave the pencil.
(c) It was John that Bill gave the pencil to.
(d) It was John to whom Bill gave the pencil.

(30) *It was Mary that Sue bought the book.

(31) It was John who was given the pencil (by Bill).

(32) ?It was John who was bought the book (by Bill).

(k) Clefting out of the predicate of a copular sentence has idiosyncratic restrictions.

Predicate nominals can not be clefted.

- (33) (a) *It is a conductor that John is.
(b) *It is Mary who the salesgirl is.

Some NP's in a predicate prepositional phrase can be clefted if the preposition is not clefted too.

- (34) (a) It was the train that John was on.
(b) *It was on the train that John was.

Some prep phrases can not be clefted at all.

- (35) (a) *It was on time that Bill was.
(b) *It was time that Bill was on.

3. Dubious Restrictions On Clefting

(a) We have seen that a preposed genitive can not be clefted. It appears that some postposed genitives can be clefted while others can not. While there is a special linker whose operating for animate

NP's, there is none for inanimates. This may be the source of greater queasiness about the second pair of sentences.

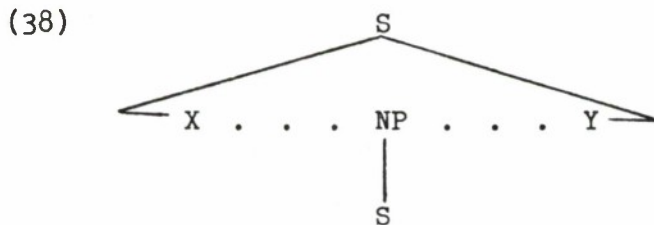
- (36) (a) It is the big man with the laundry bag whose shoes are dirty.
 (b) It was Hannibal whose men rode in high style.

- (36')(a) ?It was the car with blue pinstriping whose hubcaps Bill liked.
 (b) ?It was the tennis racket whose handle broke.

(b) It may be questioned whether NP's may be clefted without a RRel which accompanies them. If grammaticality does not disallow it in the following example, unclarity of interpretation does make it somewhat unacceptable.

- (37) (a) The kid who has long sideburns passed out.
 (b) ?It was the kid that passed out who has long sideburns.

(c) It is rather uncertain whether FOR-TO and THAT nominalizations can be clefted. Some sentences seem definitely ungrammatical while others are better. One might explain this phenomenon by invoking Ross's (1967c) "Completely Enclosed S" output condition (p. 57, 3.27) in which he states that grammatical sentences containing an NP (1) which is both preceded and followed by non-null parts of that sentence and (2) which exhaustively dominates S, are unacceptable. Thus, a structure of the form (38) is unacceptable, though grammatical.



where X and Y are non-null

In dialects which find all of 39-41 unacceptable, such a solution would account for all but (39.c-d) where the embedded S is presumably pruned before surface structure because it does not branch. However there is considerable disagreement about the data and we have no explanation for those dialects which accept anything but (39.c) and (39.d). The relevant $\text{NP}_{\text{NP}}[\text{S}]$ structures are underlined in the examples.

- (39) (a) FOR TO: *It is for you to come early that everyone prefers.
 (b) *It is for John to represent us that I intended.
 (c) ?*It was to pay the bill that Sam wanted.
 (d) ??It is to come home early and find myself locked out that irritates me.
 (e) ?It is for you to find me this way that embarrasses me.
- (40) (a) THAT: *It was that John should represent us that I decided.
 (b) *It was that Bill liked tea that John believed.
 (c) ?It was that you came early that surprised me.
 (d) ?It was that you would go that they doubted.
- (41) (a) *It was the boy that that Bill is 65 amazed.
 (b) *It was that she was guilty that that she left proved.

4. Constituents Which Can Not Be Clefted

There are some constituents which are very clearly restricted from undergoing clefting. Among them are the following.

(a) Elements which occur in the AUX.

- (42) (a) Preverbs: *It is almost that the theorem is true.
 (b) *It is scarcely that Bill has a chance.
- (43) (a) Modals: *It is must that Bill try harder.
 (b) *It is may that Bill finish early.
- (44) NEG: *It is not that Sue baked a cake. (as a cleft)
- (45) (a) Have, Be: *It was was that John running all day.
 (b) *It was has that John run all day.

(b) Particles

- (46) (a) *It was back that he sent the letter.
 (b) *It was down that the man hosed the deck.
 (c) *It was up that the woman ran the bill.

(c) Conjunctions, Articles, Postarticles, Adjectives, ...

(d) Nouns

(47) *It was pencil that I gave Bill a.

(e) Standard American English does not allow V's or PROP's to be clefted.

- (48) (a) *It was hit that John did (to) Bill.
(b) *It was know that John ? the answer.
(c) *It was sleep that John did through supper.
(d) *It was be that John tired.

- (49) (a) *It was hit that Harry did.
(b) *It was know the answer that John did.
(c) *It was sleep through supper that John did.
(d) *It was be tired that John ?.

5. Phrase Structure Implications

We turn now to a consideration of the mutual implications of clefting and the PS rules.

(a) The structure underlying clefting must in some way provide for the possibility of two Modals, one in the THAT-S and one with the COP.

- (50) (a) It may have been Dick who couldn't make up his mind.
(b) It might be the tent that we should leave behind.

(b) The relationship of clefting to negation is a complex one. We only draw the outlines here.

First, clefting seems to be a way in which NP's can be unambiguously negated in English (functioning somewhat like contrastive stress). Viz.,

- (51) (a) Bill didn't steal the light bulb.
(b) It wasn't Bill who stole the light bulb.

Second, when the clefted item is negated, there is always either (A) an implied affirmative S following or (B) an implied affirmative S preceding the negative cleft. Let us look at case (A) and then (B).

The implied S may be (a) a declarative sentence, (b) another cleft sentence, or (c) but followed by a structure parallel to the constituent clefted in the first sentence. Viz.,

(52) It wasn't John who spilled the milk.

- (53) (a) Mary did it.
 (b) It was Mary (who spilled it).
 (c) but Mary.

When the affirmative S precedes the negative cleft, it may be of either type (a) or (b) above.

- (54) (a) Mary spilled the milk. [It wasn't John (who spilled it).]
 (b) It was someone else who spilled the milk. [It wasn't John .../]

Note that the constituent of the declarative S's paralleling the clefted constituent has special stress.

Third, there may be a series of negated S's tied to a series of affirmative S's (either preceding or following). The reader can reduce the following examples:

- (55) (a) It wasn't Mary who spilled the juice and it wasn't John who broke the glass. It was Sue who did them both.
 (b) It was Sue who typed my papers. It wasn't Sally and it wasn't Jane.
 (c) It wasn't the man's tie that bothered Bill. It was his shoes and it was his coat.
 (d) It was at Luigi's that the spy met the blond (and it was at Celso's that he met the brunette). It wasn't at the bridge and it wasn't at the museum.

[Note that a mixture in ordering of affirmative and negative S's suggests a pair of cleft constructions or an afterthought.]

In order to make this implicational relationship explicit, one might postulate deep structure sentences of the type specified above for each cleft sentence. The underlying structure would thus consist of a pair of sentences, one affirmative and one negative and the transformation could choose one, erasing the other in the clefting operation. In a sentence-grammar, such a solution would be unacceptable, as the contrasted deleted item could not be

recovered. What we are dealing with, apparently, is a case of implication of the type which can only realistically be handled by a grammar adequate to handle presupposition and contextual and intentional reference, as well as implication and other facts of true discourse. For the purposes of such a grammar, it appears that the implicational relationships here discussed would have to be taken into account.

(c) The clefting operation must not be allowed in imperatives. (Note our treatment of Imp as SJC. Cf. IMP) That is, SJC in the top S excludes the possibility of clefting.

- (56) (a) Keep the change.
 (b) *It was the change that keep.

Clefting may occur lower in the tree, however.

- (57) (a) Promise that it will be the scissors that
 you'll return.
 (b) Notice that it is clefting that is operating.

(d) There must be TNS agreement between the copula and the verbal of the WHAT-S.

- (58) (a) It was John that you saw.
 (b) It is John that you see.
 (c) It will be John that you'll see.

- (59) (a) *It was John that you see.
 (b) *It was John that you'll see.
 (c) *It is John that you saw.
 (d) *It will be John that you saw.

- (60) (a) It is John that you'll see.
 (b) It will be John that you see.

Note that (60.a,b) are found in most dialects. Though both "present" and "future" implications appear in their surface sentences, [-PAST] underlies both of these.

6. Ordering Of Clefting With Respect To A Few Other Transformations (assuming that cleft is not on a higher cycle)

(a) Clefting may be after conjunction reduction since conjoined NP's may be clefted. Alternatively, conjunction reduction might operate on pairs of clefts.

- (61) (a) It was Harry and Sam that tipped over the outhouse.
 (b) It was on Monday and Tuesday that I had salami sandwiches.

(b) Clefting is after reflexivization since reflexive (and perhaps reciprocal) NP's may be clefted, thus placing the reflexive NP to the left of its antecedent.

- (62) (a) It was himself that John was concerned about.
 (b) ?It was each other that Bill and John respected.

(c) Clefting is before questioning since clefted S's may undergo both yes/no and WH questions.

- (63) (a) Is it a toothbrush that you need?
 (b) Who was it that said such a terrible thing?

(d) Clefting and pseudo-clefting are mutually exclusive on the same cycle.

- (64) *It was John that what Bill did was hit.

7. Distinction Of Cleft-Like Constructions

To avoid confusion, it is important that we sort out the superficially similar structures which appear much like cleft sentences.

(a) The anaphoric it may appear in a string having exactly the same morphemes and order as the cleft it, viz.,

- (65) It is money that I need.

The two different constructions which merge in (65) are easily distinguished, however. Lees has noted (1963, p. 382) that in the sentence with the anaphoric it (66.a) the primary stress is on need while in the cleft usage (66.b) the primary stress is on money. Note that this result is obtained from the Nuclear Stress Rule (Chomsky and Halle, 1968) since in (66.a) money that I need is a single constituent and primary stress is applied to the rightmost constituent, whereas in (66.b) money and that I need are separated by a constituent break. The difference between the two structures is clarified by context, as in (66) below:

- (66) (a) What money is that? It's money that I need.
 (b) What do you need? It's money that I need.

Moore (1967, p. 137) has added the fact that only the anaphoric it can be replaced by the deictic pronouns this and that.

- (67) (a) What money is that? That is money that I need.
 (b) What do you need? *That is money that I need.

Furthermore, only the anaphoric it sentence can have non-agreement in the TNS, viz.,

- (68) (a) What money was that? It was money that I need.
 (b) What did you need? *It was money that I need.
 *It is money that I needed.

(b) Under all of the following analyses except Klima's, there is a second it which may also be distinguished from the cleft it. This is variously called the "expletive it" (Langendoen), the "impersonal it" (Lees), the "Pronoun it" (Rosenbaum), the "anticipatory it" (Curme), and the "introductory it" (Kruisinga). This it replaces an extraposed NP. For further details see NOM. Notice that the impersonal it construction does not undergo the WH transformation.

- (69) (a) It worried [+WH,-DEF] ONE that John left.
 (Impersonal it)
 (b) *Who worried it that John left?
 (c) *Who was it worried that John left?

while the cleft it construction does.

- (70) (a) It was [+WH,-DEF] ONE that John left. (Cleft)
 (b) Who was it that John left.

B. Review of Analyses

1. Simplex Analysis

The simplest type of analysis of the cleft sentence would be one involving only a simplex sentence. Both Lees (1963) and Moore (1967) suggest and reject simplex analyses. Lees suggests the following operations such an analysis might involve.

- (a) Select a nominal or adverbial constituent Z and attach WH to it.
- (b) Front the WH-Z combination.
- (c) Introduce the sentence by a main clause consisting of IT-BE-Z.
- (d) Allow morphophonemic rules to change WH-Z to who, which, where, etc. [Lees, 1963, p. 375]

A sample derivation follows:

- (71) (a) You want WH- the book.
- (b) WH- the book you want.
- (c) It is the book WH- the book you want.
- (d) It is the book which/that you want.

And from a sentence like:

- (72) Sam read the review in the train. [Moore, 1967, p. 123]

one could derive:

- (73) (a) It was Sam that read the review in the train.
- (b) It was the review that Sam read in the train.
- (c) It was in the train that Sam read the review.

There are several problems that such an analysis raises.

First, there is evidence that the AUX's and preverb modifiers of the two verbals of cleft S's are independent (except for TNS). This demands a dual sentence source.

- (74) (a) It wasn't John who didn't turn in his reg packet.
- (b) It is not the wife who never decides.

- (75) It must have been the wife who could always decide.

Second, the semantic component would be required to give the same reading to all three sentences of (73) since they have a common deep structure source unless this were regarded as another case of attachment transformations determining meaning, or unless the structure underlying (73.a-c) were claimed to be three structures identical to the deep structure of (72) except for some kind of emphasis, focus, or topic marker.

Third, the it which is inserted by the transformation must be dominated by NP to allow the tag question transformation to operate after the clefting. This would build structure in a way that we would not like to permit.

(76) It was John that read the book, wasn't it?

Furthermore, the entire result of clefting must be an S to allow its operation in embedding.

(77) (a) It surprised me that Bill read the review.
 (b) It surprised me that it was Bill that read the review.

The remaining four analyses propose two sentences underlying each cleft sentence. The first two assume that IT is introduced in the PS rules; the last two that IT appears as the pro-form of an N.

2. Predicate Relative Clause Analysis (Polutzky)

According to Lees recapitulation, H. J. Polutzky (1960) suggested that the two sentences underlying the cleft sentence (78.a) are (78.b) and (78.c).

(78) (a) It is the wife who decides.
 (b) It is the wife.
 (c) The wife decides.

(78.c) is embedded in (78.b) by the relative clause transformation.

Against this analysis Lees has raised three types of objections.

(a) The underlying sentences are not always available as sources. Thus, the matrix sentence of:

(79) It was of him that I asked it.

would have to be:

(80) *It was of him.

There are also sentences in which the constituent S can not undergo the relative transformations as it stands. Thus,

- (81) (a) It was in the drawer.
 (b) I put it in the drawer.

do not combine by the relative transformations to give: (82.a)
 but (82.b):

- (82) (a) It was in the drawer that I put it.
 (b) It was in the drawer that I put it in.

(b) There are strong ties between the two sentences involved in clefting which suggest a more than casual relationship. Lees' first tie--number agreement--is spurious since that would also be required in the relative source. The second tie is tense agreement. Thus,

- (83) (a) It is the boys who are naughty.
 (b) It was the boys who were naughty.

but not:

- (84) (a) *It is the boys who were naughty.
 (b) *It was the boys who are naughty.

Obviously this is not an argument applicable only to the predicate relative analysis. Lees' own analysis (below) requires a special condition to capture the fact of tense agreement. The third tie is the correlation between preceding reflexives and following nouns.

- (85) (a) It was for himself that he did it.
 (b) *It was for himself that they did it.

Assuming that the relative clause could be extended to handle prep phrases, this third tie would also be handled by reflexivization in the embedded S. In sum, the objection (b) is practically weightless.

(c) It is difficult to consider that a relative pronoun since in many clefts, there is no obvious antecedent of the type found in relative clauses.

- (86) It was only by dint of great effort that he proved it.

3. Cleft Complement Analysis (Lees)

The analysis which Lees proposed (1963) involves an ad hoc phrase structure rule acting as a trigger for the cleft transformation.

Converting his two-sentence framework into the present formalization, two sample derivations follow.

- (87) (a) It AUX BE _S [the wife decides]
 (b) Cleft \Rightarrow It AUX BE _S [the wife WH-the wife decides]
 (c) Equi-NP Del + morphophonemics \Rightarrow It is the wife who decides.
- (88) (a) It AUX BE _S [I saw him there]
 (b) Cleft \Rightarrow It AUX BE _S [there WH-there I saw him]
 (c) Equi-NP Del + morphophonemics \Rightarrow It was there that I saw him.

Thus, a special phrase structure configuration is generated, upon which only the cleft transformation will operate. The cleft transformation follows WH-attraction and fronting and operates to duplicate the attracted constituent and change WH-X into a proper pro-form.

Most of the difficulties Lees had noted in the Predicate Relative Clause analysis (above) are avoided in the Cleft Complement Analysis; however, new difficulties arise.

Moore (1967) suggested that an it derived in the base failed to capture the intuition that it is a replacement for an NP.

More seriously, the addition of a unique PS rule to trigger an obviously language-specific transformation has little to commend it.

Third, the idiosyncratic nature of the solution disallows the possibility of relating cleft and pseudo-cleft.

4. Impersonal Inversion Analysis (Klima)

According to Lees (1963), Klima proposed extending Lees' "It-inversion" transformations to account for cleft sentences. The It-inversion transformation (Lees (1960a), p. 94) corresponds to Rosenbaum's extraposition transformation and provides for sentences like: "That John left bothers me" \Rightarrow "It bothers me that John left". Thus, underlying the cleft sentence of (89) is a sentence like (90) employing a factive nominal as subject.

(89) It is the wife who decides.

(90) Who decides is the wife.

This proposal has the drawback of requiring ungrammatical source sentences. The sentences in (91.a-c) must come from the corresponding forms in (92).

(91) (a) It was for kicks that she rode the roller coaster.
 (b) It was to him that I gave the book.
 (c) It is very frequently that she shows up late.

(92) (a) *Why she rode the roller coaster was for kicks.
 (b) *Where I gave the book was to him.
 (c) *How often/when she shows up late is very frequently.

Second, in cases where the initial interrogative-like clauses are possible, they seem to be reduced relative clauses and not factive nominals. Compare (93) with (94).

(93) (a) *?Where I found the knife was near him. ⇒
 (b) It was near him that I found the knife. (cleft)

(94) (a) Where I found the knife was obvious. ⇒
 (b) It was obvious where I found the knife. (extrapos)

(93) suggests (95) as its source while (94) does not.

(95) The place in which I found the knife was near him.

Third, it is not obvious that (90) and (92) can even be considered factive nominals.

5. Subject Relative Clause Analysis (Moore)

Taking Lees' observation about reduced relatives as a starting point, Moore (1967) suggests that all cleft sentences have as a source a copulative sentence with an NP, including a restrictive relative, as subject and a nominal as predicate. The restrictive relative has a pro-form as head. The relative transformation operates on the subject, which is then extraposed and replaced by the pro-form it. A special cleft transformation then inserts that be as left daughter of the transposed subject. Assuming that the TNS's are identical one may then optionally delete that BE D + Pro. Some sample derivations follow. [Moore, 1967, p. 120].

- (96) (a) NP[the #one read the review# one][_{COP}was][_{NP}Sam]
 (b) rel \Rightarrow _{NP}[the one who/that read the review]
 [_{COP}was][_{NP}Sam]
 (c) extra \Rightarrow [_{COP}was][_{NP}Sam [_{NP}the one who/that read
 the review]]
 (d) IT repl \Rightarrow [_{NP}It][_{COP}was][_{NP}Sam [_{NP}the one who/that
 read the review]]
 (e) THAT BE \Rightarrow [_{NP}It][_{COP}was][_{NP}Sam [_{NP}that was the
 one who/that read the review]]
 (f) THAT BE N DEL \Rightarrow [_{NP}It][_{COP}was][_{NP}Sam [_{NP}who/that
 read the review]] (optional)
- (97) (a) NP[the #Sam read the review in the place# place]
 [_{COP}was][_{NP}the train]
 (b) rel \Rightarrow _{NP}[the place (in) which Sam read the review
 (in)][_{COP}was][_{NP}the train]
 (c) extra \Rightarrow [_{COP}was][_{NP}the train [_{NP}the place (in)
 which Sam read the review (in)]]
 (d) IT repl \Rightarrow [_{NP}It][_{COP}was][_{NP}the train [_{NP}the place
 (in) which Sam read the review (in)]]
 (e) THAT BE \Rightarrow [_{NP}It][_{COP}was][_{NP}the train [_{NP}that was
 the place (in) which Sam...]]
 (f) THAT BE N DEL \Rightarrow [_{NP}It][_{COP}was][_{NP}the train [_{NP}(in)
 which Sam read the review (in)]]

Moore contends that this analysis avoids the previous problems since (1) it replaces an NP (and therefore allows interrogation without node building), (2) the whole sentence continues as an S (allowing embedding without node building), and (3) two separate AUX's are provided (allowing double negatives and modals). Further, the claim is made that it is the regular replacement of an extraposed [NP]_S when the NP dominates an S. That is, the same process is at work in factive nominals and cleft.

It is difficult to see how the first contention stands since the whole NP (including the node NP) is extraposed. It easily replaces the NP but how does it get dominated by NP?

Note also that the insertion of THAT BE is immediately followed by its deletion. Its insertion seems motivated simply by the desire to provide a source for a paraphrase.

One attractive feature of the proposal is its incorporation of the pseudo-cleft construction. The pseudo-cleft is simply one early stage in the derivation of the cleft. Thus, (99) may be reduced immediately to the pseudo-cleft of (100) or may by the steps above become the cleft of (101).

(99) The thing #Sam read something# was the review

(100) What Sam read was the review.

(101) It was Sam that read the review.

We shall note when considering the pseudo-cleft analyses that this derivation of the pseudo-cleft raises its own problems. However, Moore's solution makes the first (and only) step toward combining two constructions having many similarities.

IV. PSEUDO-CLEFT SENTENCES

A. Data-Oriented Observations

A major difficulty in working with the pseudo-cleft is the delimitation of its domain. Some writers have restricted the constituent which can be pseudo-clefted to NP. Others have opened the sluice gate wider, apparently not aware of the deluge which follows. The first five analyses we will consider have dealt solely with NP's. We shall wade tentatively into the deeper waters as we note representative data.

1. Delimiting the Pseudo-Cleft Construction

This section will present three constructions which seem on the surface to be pseudo-clefts.

(a) Pseudo-clefted NP's

This first construction, featuring WHAT plus an S out of which an NP has been moved to predicate nominal position, is accepted by all writers as pseudo-clefting. Let us note several characteristics of the construction.

(1) The constituents under an NP seem to have little bearing on its ability to undergo pseudo-clefting.

- (102) (a) NRRel: What Bob saw was the book, which had a tear in it.
 (b) R Rel: What Bob saw was the book with the red cover.
 (c) ADJ: What Liz admired was the huge Gutenberg Bible.
 (d) POSS: What hit John was his stupidity.
 (e) What the lecturer resented was a criticism of Bill's.
 (f) POSS-ING: What frustrates Sam is his failing the language exam.
 (g) What proved that she was guilty was her leaving.
 (h) FOR-TO: ?What frustrates Sam is for him to come home and not find a check in the mail.
 (i) ?What would prove that she was guilty would be for her to leave.
 (j) THAT-: ?What Bill hated was that John left.
 (k) ?What proved that she was guilty was that she left.

[Cf. the section IV.A.3 on Dubious Pseudo-Clefts for those questioned above.]

(2) The element functioning as head of a genitive phrase with a postposed genitive may be clefted.

- (103) What John took of mine was a hammer.

This would suggest that the whole genitive construction is an NP. Note that the preposed genitive can not be pseudo-clefted.

- (104)*What John took my was a hammer.

(3) Just as in the cleft construction, there is TNS agreement between the copula and the verbal of the S. This fact is most obvious with the nominalizations.

- (105) (a) *What Bill hated is that John leave.
 (b) *What Bill hated is for John to leave.
 (c) *What Bill hates was John's leaving.
- (106) (a) What he saw was a book.
 (b) What he sees is a book.
 (c) What he will see will be a book.

Some apparent counterexamples follow in (107), where (a), (e), and (i) are included for comparison.

- (107) (a) What he saw was a book (three days ago).
 (b) What he saw is a book (new).
 (c) What he saw will be a book (three days from now).
 (d) What he sees was a book (three days ago).
 (e) What he sees is a book (now).
 (f) What he sees will be a book (three days from now).
 (g) What he will see was a book (three days ago).
 (h) What he will see is a book (now).
 (i) What he will see will be a book (three days from now).

Note that the cleft counterparts to (106) are fine but the counterparts to (107) (except (a), (e), and (i)) are ungrammatical (as clefts).

The sentences in (107) are only apparent counter-examples for this reason: pseudo-cleft sentences have an identificational function. In (107) a predication is being made about the state or condition of the item referred to in the subject. That is, the sentences have much the same force as:

- (108) What I touched quivered. [= The thing that I touched quivered.]

In other words they contain subjects on which there are relative clauses, and are not the result of pseudo-clefting at all.

(4) When the pseudo-clefted NP is negated there is an implied affirmative sentence. If the affirmative sentence precedes, it may be a simple declarative (a), a cleft sentence (b), or a pseudo-cleft sentence (c).

- (109) (a) The bat hit Sam. What hit Sam wasn't the ball.
 (b) It was the bat that hit John. What hit John wasn't the ball.
 (c) What hit John was the bat. What hit John wasn't the ball.

If the affirmative sentence follows, all of the above three may appear and in addition but followed by an NP parallel to the pseudo-clefted NP may occur. As in the cleft, here we are pointing out facts, not making the obviously false claim that in a sentence grammar these implied sentences are in the deep structure. (Cf. Sec. III.A.5 for further discussion).

(110) What hit John wasn't the ball.

- (111) (a) The bat hit him.
 (b) What hit John was the bat.
 (c) It was the bat that hit John.
 (d) but the bat.

(5) When nominalizations are pseudo-clefted, their surface forms may differ in grammaticality from corresponding unclefted forms.

- (112) (a) What I want is that he leave.
 (b) *I want that he leave.

- (113) (a) What I want is for him to leave.
 (b) *I want for him to leave.

We have not accounted for this phenomenon.

(b) Pseudo-clefted Cases (prep phrases)

A second construction, which is of dubious grammaticality, is similar to the first but has various WH forms and a wider range of predicates (including prep phrases). TNS agreement is maintained. Their negation also implies a juxtaposed affirmative sentence. Some examples follow.

- (114) (a) Where John slept was downtown/in a haystack.
 (b) ?When I saw him last was at 3 o'clock.
 (c) ?How he escaped was with a hacksaw.
 (d) ?Why Sam read the review was because he was interested in it.
 (e) ?Who she wants to be seen with is the right people.
 (f) ?Whose house is on fire is theirs.
 (g) Whether John left was the issue.

Note that whether will require a reduction from something like the question whether.

These sentences seem to be structurally parallel to the NP pseudo-cleft constructions. We note only their dubious grammaticality and the fact that their cleft counterparts are perfectly grammatical.

(c) Pseudo-clefted PROP's

A third set of sentences which are normally not considered a part of pseudo-clefting but which seem to undergo a very similar operation involve what appears to be the pro-ing of the PROP. There is no restriction on the number of NP's in the PROP, i.e., "transitives" and intransitives work equally well.

- (115) (a) What John did was throw the paper through the window.
- (b) What Carol did was sleep.

It is possible to leave a copy of parts of the PROP unextracted, viz.,

- (116) (a) What the mouse did was eat the cheese with its paws.
- (b) What the mouse did with the cheese was eat it with its paws.
- (c) ?What the mouse did with the cheese with its paws was eat it.

Note that some constituents must obligatorily be copied into the pseudo-clefted PROP while others are only optionally copied there. Pronominalization can then take place too.

- (116') (a) What the mouse did with the cheese was eat it.
- (b) *What the mouse did with the cheese was eat.
- (c) ?What the mouse did with the cheese with its paws was eat it (with them).

The specification of the preposition of cases which are left in the unclefted PROP requires special consideration, as is suggested by (117).

- (117) (a) What the mouse did with the cheese was eat it.
- (b) What the mouse did to the cheese was eat it.

There are restrictions on the PROP's which can be pseudo-clefted. PROP's which have passive subjects, stative verbs, and verbs not having an "effectum" relationship (cf. Fillmore, 1967a) to their object may not be pseudo-clefted. Presumably this is because no suitable pro-form of the verb is available.

- (118) (a) *What the paper was done was thrown through the window by John.
 (b) *What Dick did was know the answer.
 (c) *What John did to the table was build it.

A PROP which has a passive subject can not be pseudo-clefted, apparently because the pro-form DO may not be passivized.

- (119) (a) The back of the chair was fixed by Bill.
 (b) *What the back of the chair was done was fixed by Bill.

Likewise, a pseudo-clefted NP can undergo the Inversion transformation while a pseudo-clefted PROP probably can not. Compare:

- (120) (a) What was bothering Susie was the spider.
 (b) The spider was what was bothering Susie.
 (c) What Sam did was put another notch in his gun.
 (d) ?Put another notch in his gun was what Sam did.

This seems to be nothing more than a simple restriction on the Inversion transformation.

We must also account for the ungrammaticality of (121.f).

- (121) (a) What the mouse did was eat the cheese. ⇒
 (b) What the mouse did with the cheese was eat it.
 (c) What the mouse did to the cheese was eat it.
 (d) What Bill did was give the book to John. ⇒
 (e) What Bill did with the book was give it to John.
 (f) *What Bill did to the book was give it to John.

2. Restrictions On Pseudo-Cleftable Constituents

- (a) An NP which is a conjunct can not be pseudo-clefted.

- (122) (a) *What I noticed and doves was parakeets.
 (b) *What I noticed parakeets and was doves.

This obeys Ross's (1967a) conjunct movement constraint. Similarly, a constituent of a conjunct can not be pseudo-clefted, but it isn't clear that Ross's constraint will apply here, since it is not obvious that anything is moved out of the first conjunct.

- (122') (a) *What John bought was a watermelon and Bill bought a canteloupe.
 (b) *What went flat was a tire and the radiator leaked.

(b) A preposed genitive may not be pseudo-clefted.

- (123) (a) *What the landing gear was stuck was airplane's.
or (b) *What landing gear was stuck was the airplane's.

(c) The cases on a head noun may not be left behind when the noun is pseudo-clefted.

- (124) (a) *What he read to the book was the preface.
(b) ??What he read by James was a book. (as pseudo-cleft)

This suggests that nothing lower than NOM may be pseudo-clefted.

(d) The pseudo-cleft operation does not apply to some sentences containing even, scarcely, only, etc.

- (125) (a) *What Bill collects is even U.S. stamps.
(b) *What Bill only collects is U.S. stamps.

Note the following however, in which the relevant word is in the what clause.

- (125') (a) What even Bill collects is trading stamps.
(b) What John scarcely passed was the French exam.

(e) Within THAT-S constructions, the subjects can not normally be pseudo-clefted while objects can.

- (126) (a) *What John believes that causes waste is machines.
(b) What John believes (that?) machines cause is waste.

- (127) (a) *What John believes that is caused by machines is waste.
(b) What John believes (that?) waste is caused by is machines.

Note the same phenomenon with subject and locative.

- (128) (a) *What John believes that grows on trees is tea.
(b) What John believes that tea grows on is trees.

As in the cleft, when that is deleted, any of the NP's may be pseudo-clefted.

- (129) (a) What John believes causes waste is machines.
 (b) What John believes is caused by machines is waste.
 (c) What John believes grows on trees is tea.

[Cf. Sec. III.A.2.(f) for discussion of parallel examples in clefting, as well as an account (of sorts) for the phenomenon.]

(f) Animate NP's can not be pseudo-clefted with the pro-form who.

- (130) (a) *Who Bill saw was John.
 (b) *Who Nancy stole for was her mother.
 (c) *Who was seen by the police was the criminal.

All of these sentences must be prefaced by the one to make them grammatical.

As Peters and Bach (1968) point out, animate NP's can sometimes be pseudo-clefted, e.g.

- (131) (a) What Bill saw on the horizon was Mary.
 (b) What concerned John was Mary.

One might suppose that in sentences of this type the animate NP is considered an object, i.e., it is treated as inanimate. Thus, much the same thing is happening as in:

- (132) James Bond broke the window with the Russian.

where the Russian is an instrument, but while there is some motivation for presupposing instrumentals are [-Animate], there appears to be no independent motivation for doing so in the case of (131).

A second explanation is proposed in the consideration of Peters and Bach's analysis. Cf. III.B.2.

3. Dubious Restrictions On Pseudo-Clefting

(a) We have noted above that a preposed genitive can not be pseudo-clefted. There is some uncertainty however regarding postposed genitives.

- (133) (a) ?What Bill liked the hubcaps of was the car with
 the blue pinstriping('s).
 (b) ?What the handle of broke was the tennis racket('s).

The restriction is enhanced when an animate NP is pseudo-clefted (contrast the cleft parallel).

(134) *Whose shoes are dirty is the big man('s).

(b) There is some uncertainty about whether a R Rel can be split off it head when the head is pseudo-clefted.

(135) (a) ?What John shot which had a magnificent tail was a coon.

(b) ?What Billy likes which has black spots is a snake.

(c) There are curious restrictions on pseudo-clefting complements which have FOR-TO and THAT nominalizations as deep structure subjects.

(136) (a) NP [For her to leave] would prove NP [that she was guilty].

(b) [That she left] proved [that she was guilty].

(c) [Her leaving] proved [that she was guilty].

(d) [That she left] proved nothing.

(137) (a) \Rightarrow *What for her to leave would prove would be that she was guilty.

(b) \Rightarrow *What that she left proved was that she was guilty.

(c) \Rightarrow What her leaving proved was that she was guilty.

(d) \Rightarrow What that she left proved was nothing.

4. Constituents Which Can Not Be Pseudo-Clefted

There are a number of constituents which can not be pseudo-clefted. Some of them are: Preverbs, Modals, NEG, HAVE, BE, Particles, Conjunctions, Articles, Postarticles, Adjectives, Nouns, etc.

(138) (a) *What the fish is rotten is almost.

(b) *What a table is shiny is should.

(c) *What the paper tore easily is not.

(d) *What the water running was was.

(e) *What the pencil broken was has.

(f) *What/where/how the woman ran the bill was up.

(g) *What the pencil was was green.

(h) *What I gave Bill a was pencil.

5. Phrase Structure Implications

There are a few relationships pseudo-clefts have which bear directly on the PS rules.

(a) Provision must be made to allow modals to occur with either or both verbals in the pseudo-clefted S. Note the difference in meaning in pairs (139) and (140).

- (139) (a) What she wants may be spinach.
 (b) What she may want is spinach.

- (140) (a) What she caught may have been a trout.
 (b) What she may have caught was a trout.

- (141) What she may need can't be LSD.

(b) Sentences with pseudo-cleft NP's must be permitted to have negation in one or both verbals; however, a contiguous affirmative sentence or a following contrastive but phrase seems to be implied in the discourse when the negative is on the clefted element.

- (142) (a) What John didn't like was the applesauce.
 (b) What John liked was not the applesauce.

- (143) (a) What John didn't talk about was not the taxes.
 (b) What Sue didn't like was not the applesauce.

[Cf. Sec. III.A.5 for a more detailed consideration.]

(c) Imperative constructions must be made mutually exclusive with pseudo-clefting on the last cycle. That is, when SJC is present in the top S (cf. IMP) pseudo-clefting can not operate on the last cycle.

- (144) Buy the sled \Rightarrow *What buy is the sled.

Peremptory sentences (cf. IMP) can, however, be pseudo-clefted.

- (145) You will buy the sled \Rightarrow What you will buy is the sled.

Clefts may be embedded in an IMP sentence however.

- (146) (a) Forget that what you bought is a white elephant.
 (b) Remember that what you seem to be is an honest politician.

(d) There must be TNS agreement between the copula and the verbal in the WHAT-S. Cf. (105)-(108) for a discussion of this phenomenon.

6. Ordering Of Pseudo-Clefting With Respect To A Few Other Transformations (assuming that Pseudo-cleft is not on a higher cycle)

(a) Pseudo-clefting may follow conjunction reduction since pseudo-clefted NP's may dominate conjuncts. Alternatively, conjunction reduction might operate on a pair of pseudo-clefts.

- (147) (a) What I noticed was parakeets and doves.
 (b) What I was fed up with was parakeets and doves.

(b) Pseudo-clefting comes after Reflexivization

The reflexive transformation must precede the pseudo-cleft transformation unless reflexivization occurs on a lower cycle.

- (148) (a) What Bill saw in the mirror was himself.
 (b) What the missile damaged was itself.

(c) Pseudo-clefting precedes the copula switch transformation since the copula switch transformation can apply to apparently all pseudo-cleft sentences. It puts the clefted item first in the sentence followed by the copula and the remainder of the S.

- (149) (a) What fell was the book. \Rightarrow The book was what fell.
 (b) What she likes is applesauce. \Rightarrow Applesauce is what she likes.

Note the lack of restriction on transposing in comparison to simple copular sentences.

- (150) (a) This is the apple. \Rightarrow *The apple is this.
 (b) This was what I saw \Rightarrow What I saw was this.

- (151) (a) The secretary is a fool. \Rightarrow *A fool is the secretary.
 (b) His secretary is what concerns her. \Rightarrow What concerns her is his secretary.

(d) Pseudo-clefting precedes Relative formation.

The relationship to Rel formation is tentative. Since no NP may be pseudo-clefted out of a relative clause, there does not seem to be any reason to have relativization precede pseudo-clefting. On the other hand, relativization can not occur using a pseudo-clefted NP as the identical N.

- (152) (a) John wanted the pie [what was in the refrigerator was the pie].
 (b) \Rightarrow *John wanted the pie which what was in the refrigerator was.

This suggests that we put relativization before pseudo-clefting. However, if the copula switch T has applied, the previously pseudo-clefted NP is free to be relativized.

- (153) (a) John wanted the pie [the pie was what was in the refrigerator].
 (b) \Rightarrow John wanted the pie which was what was in the refrigerator.

Thus relativization must come after pseudo-clefting. A restriction possibly related to that which prevents predicate nouns from being relativized as in *the teacher that Bill is must then be placed on the relativization rule.

(e) The question transformations follow pseudo-clefting.

- (154) Was what John wanted a match?

(f) Clefting and pseudo-clefting must be made mutually exclusive within the same cycle.

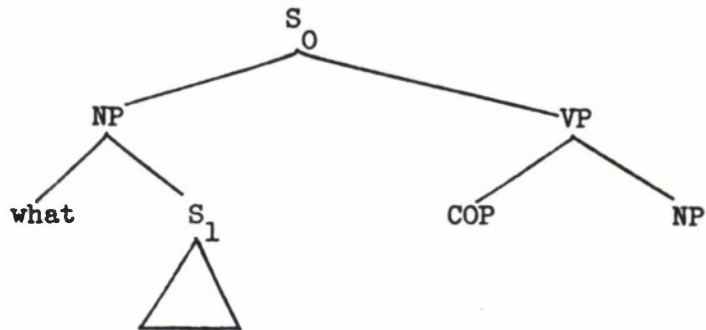
- (155) *It was John that what Bill did was hit.

B. Review Of Analyses

1. Simplex Analysis

This first analysis, which we shall call the simplex analysis, we have not been able to find in print. [Jacobs and Rosenbaum (1967a), p. 20, imply such a source but give no analysis.] Apparently a single transformation would apply to an S_1 converting its P-marker into one like (156).

(156)



An appropriate NP is chosen in S_1 for pseudo-clefting. A new sentence S_0 is created dominating S_1 via an NP. The VP of S_0 dominates COP and the NP removed from S_1 . What is made the left sister of S_1 .

The simplex analysis meets numerous difficulties, the first of which is the need to use powerful structure-building transformations.

Second, the Modals of the sentences are apparently independent.

- (157) (a) What she can drink may be goat's milk.
 (b) What he might have said, not done, may have been the faux pas.

Third, double negation may provide evidence for a two sentence origin.

- (158) (a) What he won't eat isn't apples.
 (b) What he didn't do is not the issue.

Fourth, there is the difficulty of choosing only NP's that can actually be pseudo-clefted. Cf. Peters and Bach's (1968) second attack on Extracting Analyses (see IV.B.2) for a full discussion of this point.

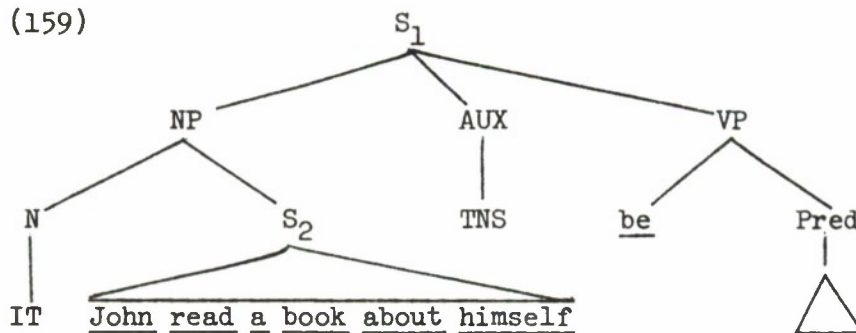
Fifth, no specification was made in the deep P-marker as to which NP would be pseudo-clefted, a criticism which applies equally to the extracting analysis (following).

2. Extracting Analysis (Chomsky, Peters and Bach)

Employing Peters and Bach's (1968) nomenclature, we next consider the extracting analysis of the pseudo-cleft. Peters and Bach

characterize this analysis as assigning pseudo-cleft S's deep structures which (a) include exactly the deep structure of the corresponding unclefted sentences and (b) form the pseudo-cleft sentence by extracting the pseudo-clefted NP from its position in the unclefted S.

Chomsky (1968) suggests in passing one form an extracting analysis might take. He proposes a deep structure such as (159) for pseudo-clefts. [Chomsky, MS, 1968 (47)]



Some NP in S_2 is chosen to replace the unspecified Pred and that NP is replaced by the pro-form IT. The relativization transformation then operates on the identical IT's and a new rule changes IT-THAT to what.

Peters and Bach propose two slightly different forms of extracting analyses. The deep structure in both is identical to (159). The operations performed on it in the first form are the following. Some NP in S_2 is chosen to replace the unspecified Pred by attaching WH- to it. That NP is pro-ed by something. WH-something is then attracted to the front of the S and a morphophonemic T changes IT-WH-something into what. Peters and Bach's first attack on extracting analyses (pp. 2-3) is actually an objection to blocking symbols and is misleading and irrelevant. They argue that blocking symbols allow an incorrect (descriptively inadequate) account of the post-determiners main, chief, etc. and hence should not be used in the pseudo-cleft analysis and should be excluded from the metatheory. However, Peters and Bach do not show conclusively that blocking symbols cannot be appropriately constrained in use.

Peters and Bach's second argument against extracting analyses also runs into problems. They first (pp. 5-6) present evidence that the restriction on which NP's can be pseudo-clefted is not tied simply to animacy. They note sentences such as the following:

- (160) $\left\{ \begin{array}{l} \text{Mary} \\ \text{The news} \end{array} \right\}$ concerned John \Rightarrow What concerned John was $\left\{ \begin{array}{l} \text{Mary} \\ \text{the news} \end{array} \right\}$.
- (161) John saw $\left\{ \begin{array}{l} \text{Mary} \\ \text{the ship} \end{array} \right\}$ \Rightarrow What John saw was $\left\{ \begin{array}{l} \text{Mary} \\ \text{the ship} \end{array} \right\}$.
- (162) John amazed $\left\{ \begin{array}{l} \text{Mary} \\ \text{*the ship} \end{array} \right\}$ \Rightarrow What John amazed was $\left\{ \begin{array}{l} \text{*Mary} \\ \text{*the ship} \end{array} \right\}$.

Their observation is that only an NP which can be replaced by something in the unclefted S may be clefted.

They consider this devastating to all extracting analyses since after transformations like subject raising and passive have applied, it is impossible to tell if the NP extracted could have originally been replaced by something. However, some verbs allow, for example, both subjects which can be pro-ed by something and those which can't. Viz.,

- (163) (a) The mouse ate the cheese.
 (b) Mary ate the cheese.
- (164) Something ate the cheese.
- (165) (a) What ate the cheese was the mouse.
 (b) *What ate the cheese was Mary.

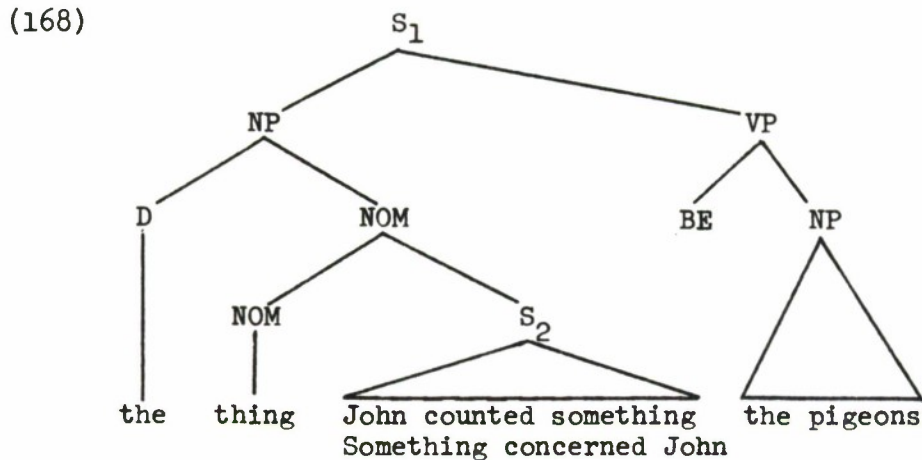
The diagnostic something fails in all such cases.

The third problem which Peters and Bach point out for the extracting analysis concerns the place of semantic interpretation. If semantic interpretation is on the base then there is no way of indicating the difference in interpretation between the following pairs of sentences all of which presumably have the same base P-marker.

- (166) (a) What struck the house was lightning.
 (b) What lightning struck was the house.
- (167) (a) Was it lightning that struck the house?
 (b) Was it the house the lightning struck?

3. Something Analysis (Peters and Bach, Kuroda, Moore)

A second type of analysis presented by Peters and Bach we shall call the Something Analysis. It assigns pseudo-cleft sentences a deep structure similar to the following.



The relativization transformation applies to S₂ giving the thing which/that which is optionally converted into what.

This analysis avoids the problem of determining the pseudo-cleftability of the NP and shows the paraphrase relationship of what and the thing which/that.

Kuroda (1965a) implies an analysis very similar to the above. He refines the pro-forms used, however, and correlates what with that which. The basic pro-form in S₂ is then SOME PRO. The two possible derivations from (168) are as follows.

- (169) (a) THAT PRO #WH SOME PRO John counted# was the pigeons
 (b) Def ⇒ THAT PRO #WH THAT PRO John counted# was the pigeons
 (c) Pro Del ⇒ THAT PRO #WH THAT John counted# was the pigeons
 (d) WH amalg ⇒ THAT PRO #which John counted# was the pigeons
 (e) Pro-ing ⇒ That which John counted was the pigeons

[The R Rel identity condition is met with PRO.]

- (170) (a) THAT PRO #WH SOME PRO John counted# was the pigeons
 (b) Regr Del \Rightarrow #WH SOME PRO John counted# was the pigeons
 (c) WH amalg \Rightarrow What PRO John counted was the pigeons.
 (d) Pro-ing \Rightarrow What John counted was the pigeons.

Under Kuroda's analysis the thing which has the following derivation.

- (171) (a) the thing #WH SOME thing
 (b) Def \Rightarrow the thing #WH THAT thing
 (c) Prog Del \Rightarrow the thing #WH THAT
 (c) WH amalg \Rightarrow the thing which

(It is not obvious how Kuroda plans to get the thing that.)

Kuroda's analysis, in contrast to the Something Analysis, distinguishes the thing which from what and that which. This accords well with the difference in paraphrase relations possible when the clefted item varies in abstractness. For example:

- (172) (a) What/that which they laid aside was the tissue [-Abst].
 (b) What/that which they laid aside was the issue [+Abst].
- (173) (a) The thing which they laid aside was the tissue [-Abst].
 (b) *The thing which they laid aside was the issue [+Abst].

Moore extends this analysis to include the various PRO's which Katz and Postal (1964) proposed. Viz.

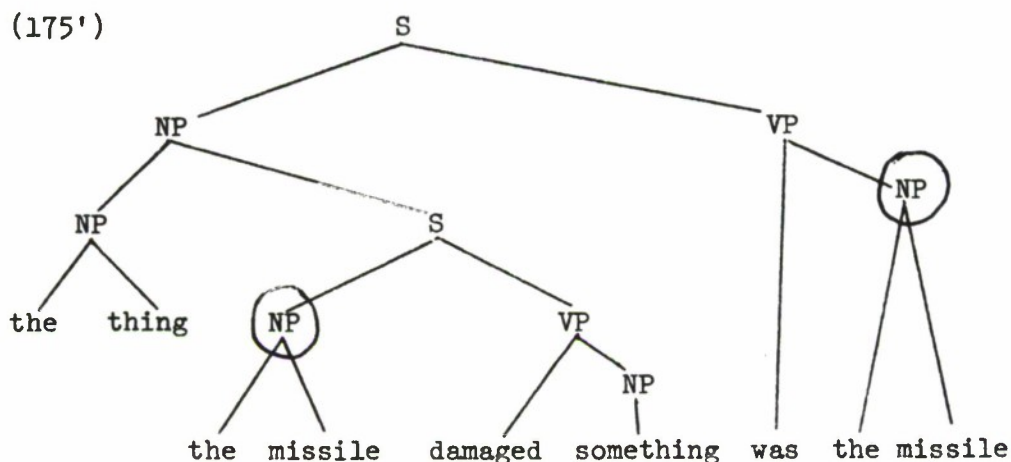
- (174) (a) the thing that \Rightarrow what
 (b) the place that \Rightarrow where
 (c) the time that \Rightarrow when
 (d) the way that \Rightarrow how
 (e) the question that \Rightarrow whether
 (f) the reason that \Rightarrow why

He thus includes a great deal more under pseudo-cleft than any of the proposals have.

Against the Something and SOME PRO analyses, Peters and Bach point out the complication they entail for numerous transformations which require knowledge of the position of NP's in the S (e.g., reflexive, reciprocal, pronominalization, case marking, and number agreement). These analyses do not indicate the position of the clefted NP in its correlated unclefted S. Thus the reflexive transformation, to use Peters and Bach's example, must be extended in such a way as to allow reflexives outside a single S, for example, in order to generate (175):

(175) What the missile damaged was itself.

The Reflexive transformation has to operate on the marked NP's in the tree structure (175'):



A second disadvantage of the Something Analysis is the difficulty of stating co-occurrence restrictions across the copula. Thus, in example (168), the thing S BE the pigeons is all right regardless of the verb used, but the thing S BE Mary must be excluded if S contains the verb noticed but not if S contains the verb concerned. Viz.,

- (176) (a) What John counted was the pigeons.
 (b) What concerned John was the pigeons.

- (177) (a) *What John noticed was Mary.
 (b) What concerned John was Mary.

The third point against this analysis is the failure of the something diagnostic exemplified in sentences (163)-(165) and discussed immediately above them.

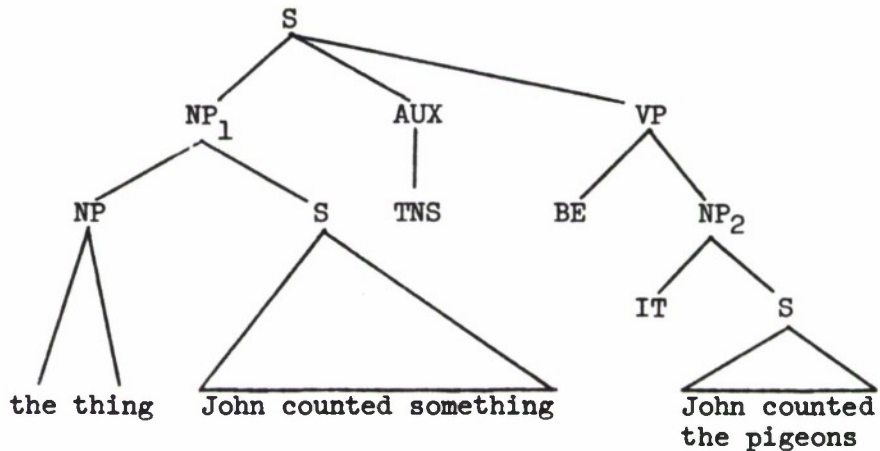
4. Parallel IT-S Analysis (Ross, Peters and Bach)

Having noted the deficiencies of the first three analyses, especially their failures to (a) have the pseudo-clefted NP indicated in the deep structure, and (b) derive the pseudo-cleft NP in a single S identical to the unclefted S, Peters and Bach suggest the following deep structure (suggested to them by Ross) which meets both of the requirements. Let us call this analysis the Parallel IT-S Analysis.

The deep structure source for (178) is (179).

(178) What John counted was the pigeons.

(179)



The relative T applies to NP₁ yielding a P-marker which the following pseudo-cleft T operates on.

(180) SD: the thing S [that, X Y] AUX BE, IT # S [X' NP Y'] #

	1	2 3	4	5	6 7 8 9
SC: ==	1	2 3	4	∅	∅ 7 ∅ ∅

There are several things to be said against this analysis as it stands. First, as in the Something Analysis there is an optional rule permitting the thing that to become what. The above arguments against this and how it can be corrected can be repeated here. (See sentences (172) -(173).

Second, the base structure is not a plausible one for semantic interpretation (cf. "the thing that John counted was (it) that John counted the pigeons"). NP₂ does not naturally provide a reading

the pigeons. As it stands, semantic interpretation must wait until the application of the pseudo-cleft transformation--a position Peters and Bach rejected for the Extracting Analysis.

Third, from the parallelism of the thing S and the one S, (as Kuroda (1968) points out) the Parallel IT-S analysis will not account for sentences like the following.

(181) The one John told Mary to shave was himself.

(182) The one who shot John was John himself.

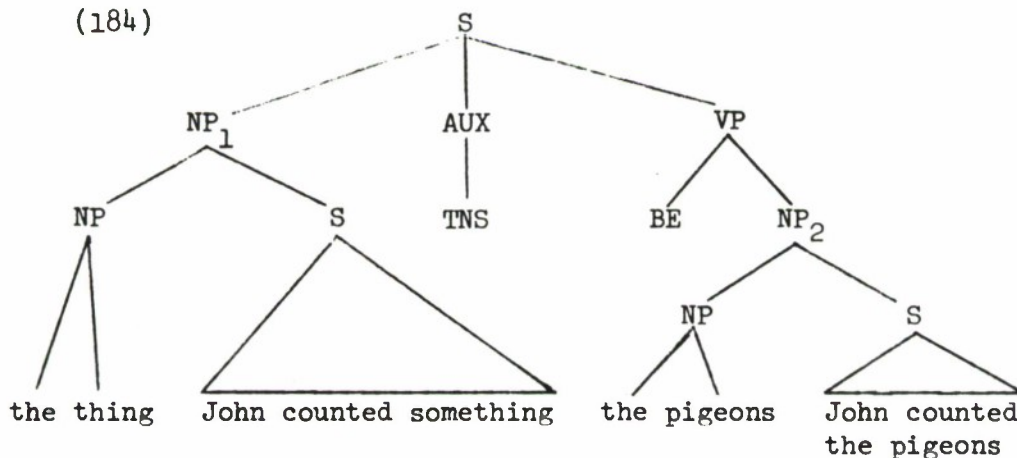
The problem with (181) is the inability to reflexivize under the IT-S, viz.,

(183) NP[IT_S[*John told Mary to shave himself]]

And the problem with (182) is accounting for the presence of N plus the reflexive (intensive?).

5. Parallel NP-S Analysis (Kuroda)

Kuroda's proposal (1968) to correct the Parallel IT-S Analysis simply involves replacing IT by the clefted NOM and making the following S non-restrictive. The deep structure for the tired out pigeon sentence thus looks like (184).



This provides a much more plausible source for semantic interpretation.

We fail to see however how this analysis accounts for Kuroda's problem sentences. (185) will have the deep structure of (186).

(185) The one who John told Mary to shave was himself.

(186) NP [the one_S [John told Mary_S [Mary shave someone]]] BE
 NP₂ [John_S [John told Mary_S [Mary shave John]]]

All of the elements in NP₂ will be deleted except those underlined. What kind of rule will reflexivize the second John remaining in NP₂ and delete the first here but not do the same to the pigeons in (184)?

V. A SUGGESTED APPROACH

Previous analyses have treated clefting and pseudo-clefting as two separate unrelated operations. We should like to suggest that they are related in that they have a common deep structure and that, in essence, the cleft transformation has an input the result of pseudo-clefting. This suggestion is a highly tentative one, with problems which we have so far been unable to resolve. The major unresolved problem is that of deriving both the it of the cleft and the what of the pseudo-cleft from a common deep structure in a well-motivated way.

We seek to relate these two transformations, not only because of an intuitive feeling that they are two different ways of doing the same thing, but also because of a rather large number of properties which they share, including:

- a. Both constructions share essentially the same constraints on which constituents may be focussed on (cf. sections III.A.1-4 and IV.A.1-4) except that NP's whose referential pronouns are who cannot be pseudo-clefted and PROP's cannot be clefted.
- b. Both constructions have the same tense restrictions on the main and embedded verbs (cf. section IV.A.1.(a)(3)).
- c. Both constructions allow independent occurrence of modals and negation in the main and embedded verbals (III.A.5.(a)-(b); IV.A.5.(a)-(b)).
- d. Both exclude the occurrence of the imperative in the top S (III.A.5.(c); IV.A.5.(c)).

- e. They are mutually exclusive within the same cycle (III.A.6.(d); IV.A.6.(f)).
- f. They have the same ordering relationships with conjunction reduction, reflexivatization, and question (III.A.6; IV.A.6.).
- g. Under negation, they share the same type of implicational discourse structure (III.A.5.(b); IV.A.1.(a)(4); IV.A.5.(b)).
- h. Whenever the same elements can be either clefted or pseudo-clefted, the cleft and pseudo-cleft appear synonymous, as in:

(187) It was the cheese that the mouse ate.

(188) What the mouse ate was the cheese.

Because of differences in the two constructions, however, there are difficulties in a sequential derivation of the type that we propose. For example, we must generate some ungrammatical pseudo-cleft structures in the derivation of their corresponding grammatical clefts, as in:

- (189) (a) *Who lost his contact lenses was Alfred.
- (b) It was Alfred who lost his contact lenses.

- (190) (a) *Where they bought those bracelets was (in) Solvang.
- (b) It was in Solvang that they bought those bracelets.

In addition, we must prevent the cleft operation from applying to pseudo-cleft PROP's:

- (191) (a) What he did was fasten down the carpet.
- (b) *It was fasten down the carpet that he did.

For the former cases, we must make clefting obligatory and for the latter, restrict the cleft-transformation from applying to PROP's. Obviously, too many such examples would begin to make the analysis suspect, but the major problem, as mentioned above, is with the pronouns. Because of this major unresolved difficulty, we present no specific analysis here.

December 1968

PASSIVE

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PASSIVE

I. BIBLIOGRAPHY

- Chomsky, N. (1957), Syntactic Structures
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_____ (1967a), "The Case for Case"
Hasegawa, K. (1967), "The Passive Construction in English"
Katz, J. and P. Postal (1964b), An Integrated Theory of Linguistic Descriptions
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II. INTRODUCTION

In the development of generative transformational grammar, there have been four basic analyses of the passive in English so far proposed.

A. Chomsky (1957)

In this analysis, the passive was an optional transformation which could be performed on the structure underlying an active kernel sentence as follows:

$$(1) NP_1\text{-Aux-V-NP}_2 \rightarrow NP_2\text{-Aux+be+en-V-by+NP}_1$$

Chomsky claimed that the passive was not always synonymous with the active to which it was transformationally related and cited his well-known example:

- (2) Everyone in the room knows at least two languages.
- (3) At least two languages are known by everyone in the room.

where the claim was, essentially, that in the "normal" interpretation of (2), different languages may be known by different people, but in (3) the languages must be the same for all of the people in the room.

B. Katz and Postal (1964b)

In order to support the hypothesis that singular transformations do not change meaning, it was necessary for Katz and Postal to deal with Chomsky's claim. They argued both possible alternatives. First, they stated that while there was considerable disagreement about the data, to them both sentences could have the same two interpretations. Further, they argued that even if issue were taken with their interpretation of the data, the underlying structures of (2) and (3) should differ by the presence or absence of a manner adverb in order to capture the relations between manner adverbs and passivizability. That is, it was claimed that the verbs whose sentences could be passivized were also the verbs which allowed manner adverbs. The underlying forms of passive sentences thus contained the ADVERB_{Manner} constituent dominating by plus a passivedummy marker, whereas the underlying forms of active sentences did not. In the phrase structure rules one could choose either the by plus PASSIVE or an actual manner adverb. Since dummy morphemes were regarded as having no semantic content, the semantic interpretations of active and passive sentences could be the same, although the underlying forms were distinct.

However, as Lakoff (1965, Appendix F) has pointed out, there are a number of exceptions to the manner adverb-passivizability correlation, such as know, consider, think, perceive which do not allow manner adverbs, but which can be passivized and resemble, owe, have (as main verb), which allow manner adverbs but are not passivizable, as in (4) and (5):

(4)(a) John knows Canada very well.

(b) *Canada is known by John.

(5)(a) John was owed some money by his friends.

(b) *His friends owed John some money very well.

In addition, Lakoff also observed that in sentences such as (6),

(6) 100 soldiers shot two students. [F-9-25]

(which is parallel to sentence (2)), there is indeed an ambiguity, but it is not the same ambiguity found in the corresponding passive (7),

(7) Two students were shot by 100 soldiers. [F-9-26]

(which is parallel to (3)). He argued that while (6) and (7) share one interpretation, namely (8)

- (8) A group of soldiers, who were 100 in number,
shot a total of two students. [F-9-26a]

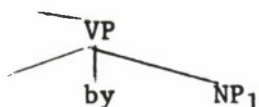
that the two sentences have distinct second interpretations, (9) for (6) and (10) for (7):

- (9) 100 soldiers (perhaps out of a larger group)
shot two students apiece, though not the same
two students. [F-9-26b]

- (10) Two particular students (out of all of those
who were shot) were each shot by 100 soldiers
(though not necessarily the same 100). [F-9-26c]

An additional argument for the Katz-Postal treatment over the earlier treatment was that it avoided structure-building by transformation. As Chomsky pointed out (1957, pp. 73-74), one wants to know that be by + AGENT phrase in the passive is a prepositional phrase. The operation of his passive transformation, however, merely attached the two constituents by and NP₁ to the VP in the configuration (11):

(11)



In order to "be a" prepositional phrase, the two constituents would have to be dominated by a common node, PREP PHRASE, which in turn is dominated by VP. But if transformations are allowed to build structure in this manner (particularly since other instances of the need for such mechanism are rare and rather special cases), it is difficult to see how to limit such structure-building power. In order to constrain the grammar as tightly as possible, the structure-building mechanism was to be avoided if possible. The Katz and Postal solution to this problem (independently motivated) was to derive manner adverbs and a number of other adverb types from prepositional phrases. Note that in a case-grammar framework the structure-building problem does not arise, as all NP's are introduced as part of an actant structure consisting of a case dominating a preposition and a noun phrase. Consequently, it is possible for the Passive Rule to move the entire actant structure, simply replacing an underlying preposition with by. A third alternative, suggested by Lakoff (1965) is to have no prepositional phrases in the base.

A third advantage of the manner adverb formulation over his earlier analysis was pointed out by Chomsky (1965). In his earlier treatment, based on transitivity of verbs, he was not able to include what he called psuedo-passives, such as (12):

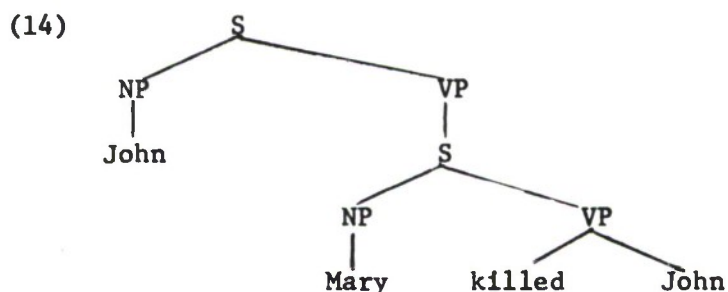
(12) The proposal was vehemently argued against.

and therefore had to have a separate transformation to account for them. Under the manner adverb analysis sentences of this type could be handled by the regular passive rule by using the presence of the manner adverb dominating by + Passive as the condition required to determine passivizability rather than the presence of an NP immediately after the verb (a condition not met by the psuedopassives, since a preposition intervened between V and NP) and so stating the transformation that it made the first NP after V subject rather than the NP immediately after the V.

C. The Two-Sentence Passive

Schachter (UESP, 1967) and Hasegawa (1967) independently proposed a two-sentence analysis which would provide a deep structure of the form (14) for the sentence (13):

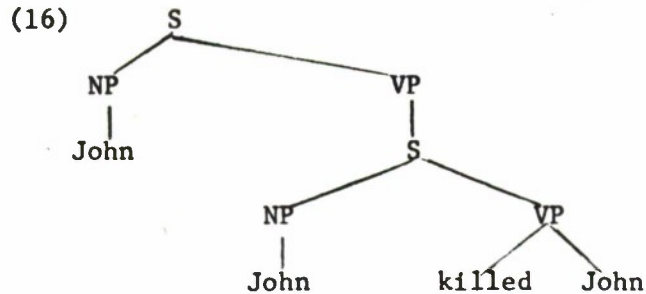
(13) John was killed by Mary.



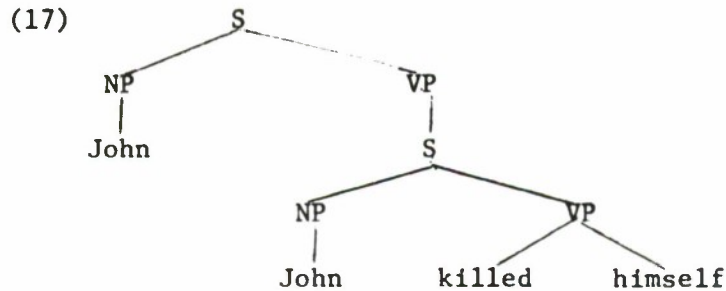
Where, if the subject of the top S is identical to the object of the bottom S, then passivization will take place. This analysis allows the blocking of passive reflexives, such as (15):

(15)* John was killed by himself.

Given the deep structure (16):



reflexivization (being an obligatory, cyclical rule) will operate upon the embedded S, yielding (17):



The subject of the matrix sentence will then not be identical to the object of the embedded sentence, so the passive transformation blocks.

At least two questions arise here, however. First, it is not clear that we want to make it impossible to generate passive reflexives. While only a few people find (15) acceptable, there appear to be many examples, such as (18) which receive widespread acceptance:

(18) A person who is not respected by himself will not be respected by others.

Second, the claim that the reflexive and non-reflexive realizations of the same referent do not meet the identity condition required for the passive transformation (cf. example (17)) is questionable. Ross (at the 1967 UESP Conference) has suggested that there are cases where the reflexive and non-reflexive realizations of the same referent do meet identity conditions. For example, on one reading of (19), there is an obviously deleted wash John.

(19) John washed himself before I could.

Assuming, once again, that reflexivization is obligatory and cyclic, it appears that reflexivization will have taken place in the main clause before deletion of wash John (whatever the structure of subordinate clause-sentences such as (19) is), so that wash himself is identical to wash John in the sense (whatever it is) required for deletion. This particular example is not quite so forceful as it would at first appear, since, on the other reading of (19), wash myself has been deleted, so that whatever is going on in this type of deletion probably is not the same strong sense of identity characteristic of processes such as definite pronominalization, where this strong sense of identity seems to be required. An additional parallel argument against using non-identity of reflexive and non-reflexive forms to block passive reflexives is Chomsky's argument (1965, pp. 176-182) that only inherent features are relevant for the determination of identity. Additional discussion of this issue is to be found in Ross (1967c), pp. 348 ff. and Chomsky (1968).

This analysis also provides a means of explaining the fact that while (20) is ambiguous as to who was willing, the corresponding active sentence (21) is not.

(20) John was willingly sacrificed by the tribe.

(21) The tribe willingly sacrificed John.

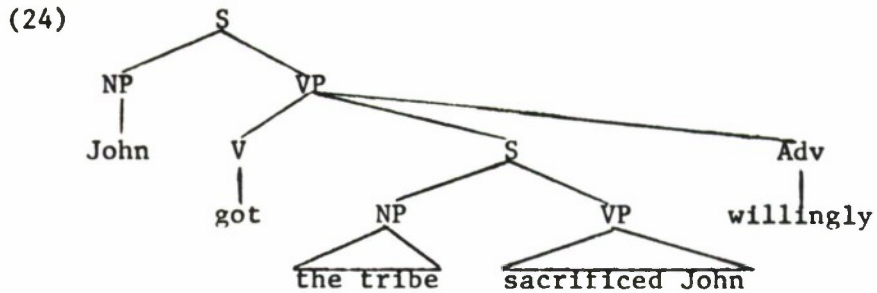
The two-sentence passive allows the presence of the verb phrase adverb willingly in either the matrix or the constituent sentence, whereas for the corresponding active sentence, there is only one such node and therefore only one such possible position for the adverb. Notice that this ambiguity cannot be explained by postulating a complement-type structure for the two readings of (20), such as (22) and (23):

(22) #The tribe was willing # The tribe sacrificed John ##

(23) # John was willing # The tribe sacrificed John ##

since the same ambiguity occurs with such adverbs as on purpose which cannot occur in structures such as (22) and (23) in the same way as willing.

It has been suggested (by Ross at the 1967 UESP Conference) that the "agentive" interpretation of (20) the reading associated with (23)) comes not from an ordinary passive, but from a get passive roughly of the form (24):



While such an approach clearly has problems of its own (it is not clear how one would avoid getting the adverbials on either VP, or even on both), perhaps a more careful formulation of the proposal would offer a solution, in which case the ambiguity of the adverbs would no longer support the Schachter-Hasegawa proposal. Their proposal suffers from a related difficulty in that there seems to be no non-ad hoc way of avoiding the generation of such adverbs on both the lower and upper VP's simultaneously, resulting in a sentence such as (25):

(25) *John was willingly sacrificed by the tribe willingly.

A related difficulty for this analysis is that not all such passive sentences with these adverbials are ambiguous, as in (26):

(26) They were willingly allowed to leave.

It is quite unclear how such phenomena would be accounted for in the two-sentence analysis.

An additional argument against the two-sentence passive, credited by Ross (at the 1967 UESP Conference) to Chomsky, concerns idioms such as keep tabs on, take heed of, etc., as in (27):

(27) Careful tabs were kept on the whereabouts of John.

Nouns such as tabs and heed do not occur freely. They normally occur only as a part of the above idioms, but in the two-sentence passive, they would have to be generated freely like ordinary nouns or would have to be limited by some strange constraint to occurring only in the upper S of a two-sentence passive structure whose lower sentence included the correct idiom. Neither of these alternatives is very desirable. It is not clear, however, how much significance should be attached to arguments based solely on idioms.

We consider that a restricted two-sentence passive may eventually prove most fruitful in explaining these ambiguities, but we do not make such a proposal here.

III. THE CASE-GRAMMAR ANALYSIS

Adopting as a basis Fillmore's (1967a) proposals concerning subject and object placement in active and passive sentences, this grammar handles passivization as an integral part of the early "Case Placement Rules." (see CASE). These rules first objectivize the proper actant. Passive subject-placement may then optionally move the objectivized NP to the beginning of the sentence and mark the preposition of actant which will be the passive (surface) agent [+by]. If passive subject-placement is not chosen, then active subject-placement obligatorily occurs. These same rules operate on NP genitives in a parallel way insofar as genitives are parallel to sentences. For a more complete discussion of this subject, see CASE.

May 1969

RULE ORDERING AND LIST OF TRANSFORMATIONAL RULES

The ordering of rules is summarized on the next page, with rule numbers used to indicate those ordering relations for which there are arguments presented in the list that follows.

The rules are then presented, usually one per page, with rule, example, and ordering arguments for each. Where no number appears to the right of the rule in the ordered list, this means only that we have no argument about what it must precede, only arguments about what it cannot precede (i.e. what it must follow), and these arguments are stated with the relevant preceding rules. The same convention applies in the ordering arguments: the arguments are couched in terms of what other rules each rule must precede.

The conjunction schemata have not been included or ordered in this list; and there are a few obvious minor rules which are not formulated at all, though referred to in discussion.

RULES - 2

RULE ORDERING

<u>Order Number</u>	<u>Rule Name</u>	<u>Ordering: Must Precede the Following:</u>
1.	GERUND [+/-FACT]	2, 3, 5, 19
2.	PREP SPREAD	7
3.	<u>FACT</u> DEL	4,5
4.	<u>FOR</u> INSERT	18, 22, 62, (5?)
5.	EQUI NP DEL	6
6.	RAIS TO OBJ	7, 12, 14, 18, 19, 20, 21
7.	OBJ	10, 11, 12, 13, 17
8.	SINGLE-ACTANT- <u>of</u>	10, 11, 12, 13
9.	SOME-ANY	11, 13, 26, 43, 46
10.	RAIS OBJ TO SUBJ	13, 18
11.	RAIS TO SUBJ	13
12.	PASS SUBJ	13
13.	ACT SUBJ	14
14.	REFLEX	22, 40
15.	PARTITIVE POSTPOSE	16, 18, 47
16.	PARTITIVE REDUCE	18, 47
17.	OF-INSERT	18
18.	ACCUSE MARK	19
19.	<u>TO</u> REPLACE AUX	20, 21, 22, 60, 61
20.	SJC DEL	
21.	<u>THAT</u> INSERT (NOM)	23
22.	<u>ONE</u> DEL (GENERIC)	40
23.	EXTRA (FROM OBJ)	24

RULES - 3

24.	EXTRA (FROM SUBJ)	25
25.	THAT DEL (NOM)	
26.	SOME-ANY (REL)	44
27.	NOUN FEAT TO ART	28, 40
28.	<u>WH</u> ATTACH	29
29.	<u>WH</u> FRONT	31, 34, 38
30.	CLAUSE POSITION	38, 39
31.	REL → <u>THAT</u>	32, 34
32.	POSSESSIVE FORMATION	33
33.	GENITIVE POSTPOSING	
34.	<u>THAT</u> DEL (REL)	
35.	ELSE	36
36.	ART ATTACH	37, 39
37.	ATTACH BLOCK	
38.	REL REDUCE	39
39.	ADJ PREPOSE	40
40.	NOUN REDUCE TO <u>ONE</u> (<u>SELF</u>)	41, 42
41.	NOUN → ∅	47, 48
42.	PROPER NOUN <u>THE</u> DEL	
43.	S INITIAL ADV PLACE	44, 55
44.	NEG ATTRACT	45, 46
45.	INDEF BEFORE QUANT DEL	46, 47
46.	ANY - NO	
47.	QUANT MOVE	52

RULES - 4

48.	ALL THE	49
49.	ALL THREE	
50.	<u>BE</u> INSERT	51, 55, 57, 59
51.	PREVERB PART PLACE	55
52.	PREVERB ADV	
53.	CONJ SPREAD	55, 56
54.	WH COPY	55, 56
55.	AUX ATTRACT	56, 58, 59
56.	<u>WH</u> DEL	
57.	AFFIX SHIFT	58, 59
58.	<u>DO</u> SUPPORT	59
59.	NEG CONTRACTION	
60.	<u>TO</u> DEL	61
61.	<u>TO</u> <u>BE</u> DEL	
62.	PREP DEL	

RULE - 5

GERUND [+FACT]

Order No. 1

Rule:

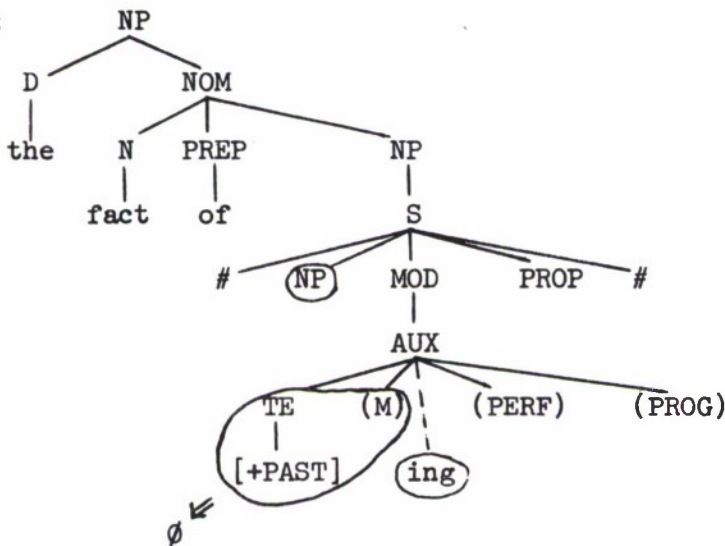
S.I. X NP [the fact of [[# NP [TNS (M) (PERF) (PROG)] X
 NP S AUX
 1 2 3 4 5 6 7

- S.C. (1) Chomsky adjoin POSS as last right daughter of 2.
 (2) If 3 = +PAST and 5 = \emptyset , attach PERF as left sister of 6.
 (3) Replace 3 and 4 by -ing.
 (4) [-EQUI NP DEL] \rightarrow [+EQUI NP DEL].

COND: Optional

Example: John regretted leaving.

Tree:



Ordering Arguments:

- (1) Must precede FACT DEL, because the fact of provides the environment for the rule.
- (2) Must precede EQUI NP DEL to account for
 - (a) I regretted leaving.
- (3) Precedes TO REPLACE AUX, because otherwise we would derive
 - (b) *I regretted to leave.

GERUND [-FACT]

Order No. 1

Rule:

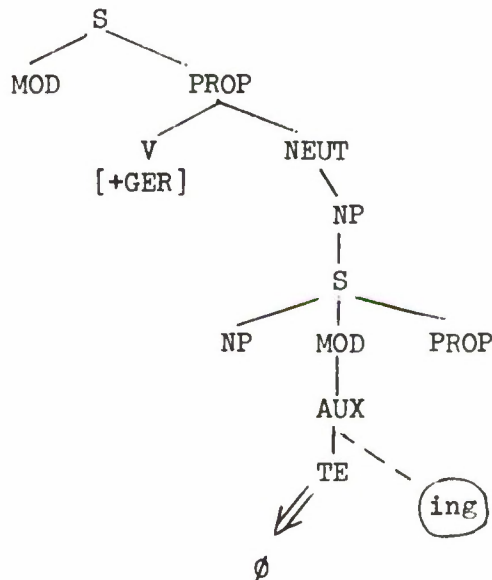
S.I. X { PREP } NP[X S[X_AUX [TNS] X
 V
 [+GER] 3 4 5
 1 2

S.D. (1) Replace 4 by ing

COND: Obligatory

Example: John avoided leaving.

Tree:



Ordering Arguments:

- (1) Precedes EQUI NP DEL to account for
 - (a) John avoided leaving.
- (2) Precedes TO REPLACE AUX to avoid deriving
 - (b) *John avoided to leave.
- (3) Precedes PREP-SPREAD in order to guarantee that the distinction between "real" prepositions and "case-marker" prepositions (see CASE PLACE) can be maintained, since real prepositions demand gerundivization but prepositions introduced transformationally do not.

RULE - 7

PREP-SPREAD

Order No. 2

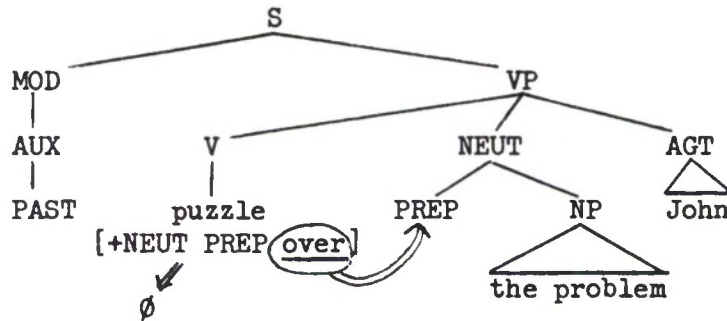
Rule:

S.I. X $\left\{ \begin{array}{l} V \\ N \end{array} \right\} [+C_i \text{ PREP } \alpha]$ X C_i [PREP X
 1 2 3 4 5 6

S.C. Attach 3 to 5, erase 2-3

Example: John puzzled over the problem.

Tree:



Ordering Arguments:

- (1) Must precede OBJ, since that rule moves a marked preposition down under the verb.

FACT DEL

Order No. 3

Rule:

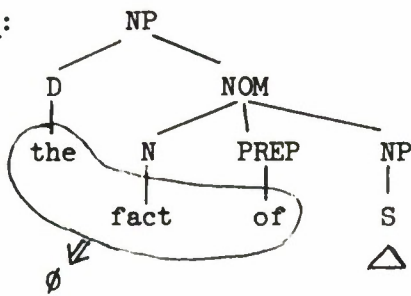
S.I. $\underbrace{X}_{1} \underbrace{NP[\text{the } X \text{ fact of}]}_{2} \underbrace{NP[S] X}_{3}$

S.D. Erase 2

COND: (1) Optional

Example: John regretted (the fact of) Bill's having left.

Tree:



Ordering Arguments:

(1) Precedes EQUI NP DEL to account for

- (a) I regretted the fact of my leaving/having left.
- (b) I regretted the fact of leaving/having left.
- (c) I regretted leaving/having left.
- (d) *I regretted my leaving/having left.

particularly the ungrammaticality of (1.d). The only way we can account for these examples is for FACT DEL to precede EQUI NP DEL, because otherwise FACT DEL would be obligatory just in case EQUI NP DEL has applied.

(2) Must precede FOR INSERT because of [+FACT] [+EMOT] words like "tragedy", as in:

- (e) It would be a tragedy for him to leave.

Rule:

S.I. X $\left\{ \begin{matrix} N \\ V \end{matrix} \right\}$ [+EMOT] $\left\{ \begin{matrix} NEUT \\ INST \end{matrix} \right\}$ (PREP) NP[S[# NP X

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└──┘

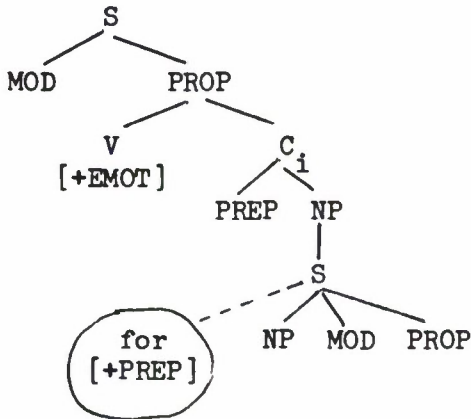
1
2
3
4
5

S.C. Attach for as left sister of 4.
 [+PREP]

COND: Obligatory

Example: It is desirable for him to do it.

Tree:



Ordering Arguments:

(1) We have no strong arguments that this rule must precede EQUI NP DEL, but only if it does will we have the same derivation for

- (a) John prefers (for Mary) to go.
- (b) It scared him (for Mary) to jump off the roof.

(2) Must precede PREP DEL to account for

- (c) John hoped ~~for~~ for Mary to go.
- (d) It scared him ~~for~~ to jump off the roof.

(3) Must precede ACCUSE MARK to get accusative in

- (e) For him to come early surprised me.

(4) Must precede ONE DEL, because the latter rule depends on for or POSS in its environment.

EQUI NP DEL

Rule:

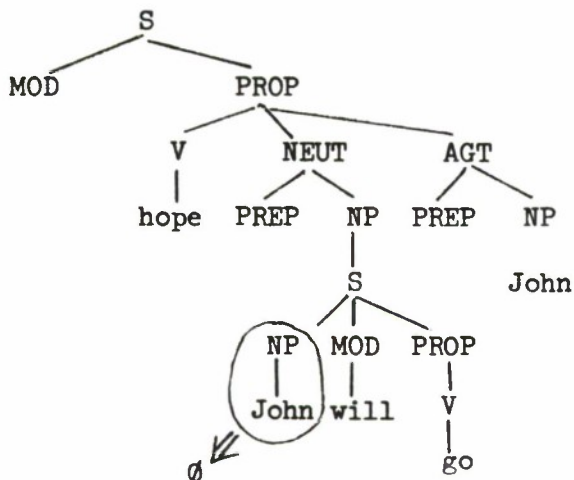
S.I. X NP₁ [S₂ [NP₂ X] DAT₃ [X NP₃] X AGT₄ [X NP₄]]

S.C. Erase 2

COND: (1) 2 = 3
 (2) If 2 ≠ 3, or if 3 = ∅, then 2 = 4
 (3) Optional with "transparent" nouns¹, if the noun was not deleted (cf. John resented the fact of his leaving)

Example: John hoped to go. [AGT identity]

Tree:



Ordering Arguments:

(1) Must precede RAIS OBJ to prevent REFLEX from applying to an identical subject raised to object just in case a verb like expect has both EQUI NP DEL and RAIS OBJ, to avoid ambiguous derivation of:

(a) I expect myself to go.

We believe that (a) is derived from:

(b) I expect [I SJC go] of myself.

with EQUI NP DEL from DAT, which undergoes REFLEX.

Note that:

(c) I expect him to go.

is ambiguous between:

(d) I expect [he SJC go]

RULE - 11

(e) I expect [he SJC go] of him

(2) Must precede SOME-ANY to account for:

(f) John couldn't persuade anyone to come.

That is, if SOME-ANY has applied, there is no longer the required identity between

*John couldn't persuade anyone [someone TNS come].

¹Transparent nouns are here opposed to picture nouns.

RAIS TO OBJ

Rule:

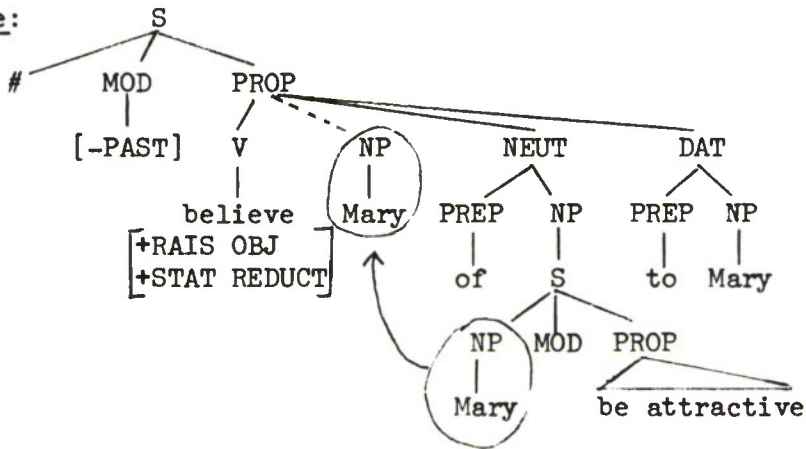
S.I. X S[# MOD PROP[V PREP NP[S[# NP X
└──────────┘ └───┘
1 2 3 4 5 6

S.C. (1) Attach 5 as right sister of 2
 (2) Erase 3 and original 5

COND: (1) 2 contains the feature [+RAIS OBJ], and does not contain the features [-STAT REDUCT] or [-FUT REDUCT].
 (2) Obligatory

Example: Mary believes herself to be attractive.

Tree:



Ordering Arguments:

(1) This rule is governed, hence must precede the general rule of OBJ PLACE, cf.

- (a) I believed B. to be a fool (applied).
- (b) I believed that B. is a fool (not applied).

[where object of "believe" is underlined]

(2) Must precede REFLEX, since the latter rule works in simplexes, and an identical subj. raised to obj. must undergo REFLEX; e.g.

- (c) He considered/believed/etc. himself to be free.

(3) Must precede THAT INSERT because the latter rule depends on the presence of a whole clause (real S). I.e., all sentences deforming rules must precede THAT INSERT.

(4) Must precede ACCUSE MARK to get accusative in, e.g.,

- (d) F. expected him to go.

RULE - 13

- (5) Must precede PASS SUBJ PLACE to account for
 - (e) He was believed to be a fool.
- (6) Must precede TO REPLACE AUX to account for:
 - (f) I expect B. to leave (applied).
 - (g) I expect that B. will leave (not applied).
- (7) Must precede SJC DEL, because the latter rule is triggered (among others) by absence of subject.

M-OBJ (a)

Order No. 7

Rule:

S.I. X $\left\{ \begin{array}{l} V \\ N \end{array} \right\}$ C_i [PREP NP] X C_j [PREP NP] X

[+C_j → OBJ]

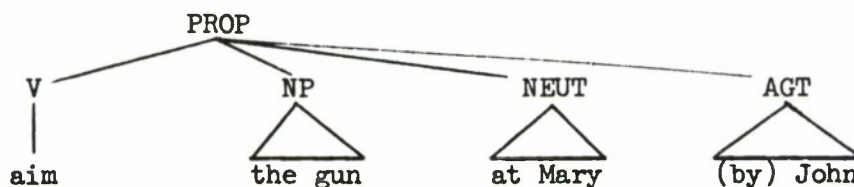
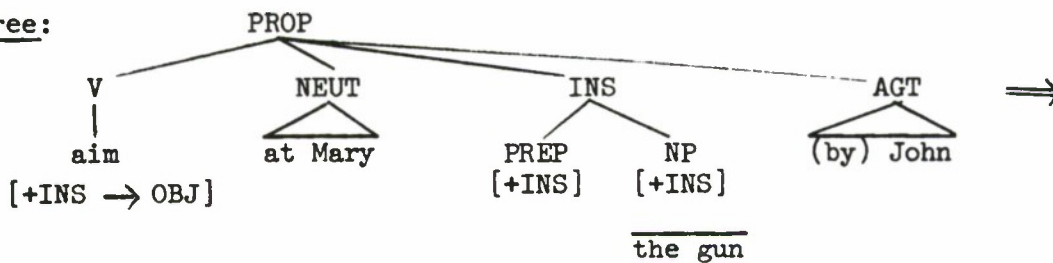
1 2 3 4 5 6 7 8

S.C. (1) Attach 7 as right sister of 2
 (2) Delete 6-7

COND: 2 through 7 are a constituent

Example: John aimed the gun at Mary.

Tree:



Ordering Arguments:

(1) See U-OBJ (b).

RULE - 15

M-OBJ (b)

Order No. 7

Rule:

S.I. X $\begin{Bmatrix} V \\ N \end{Bmatrix}$ NEUT [PREP NP] X C_j [PREP NP] X
 [+C_j → OBJ, NEUT]
 [+Prep]

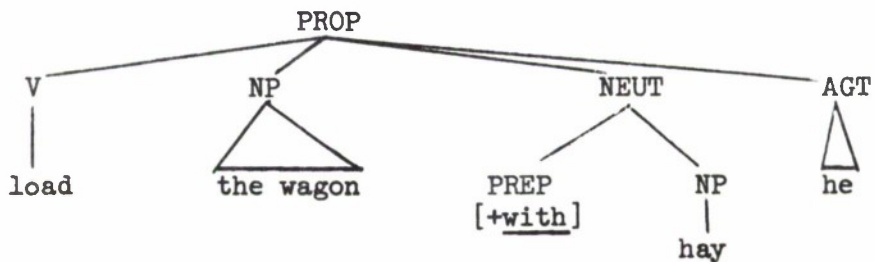
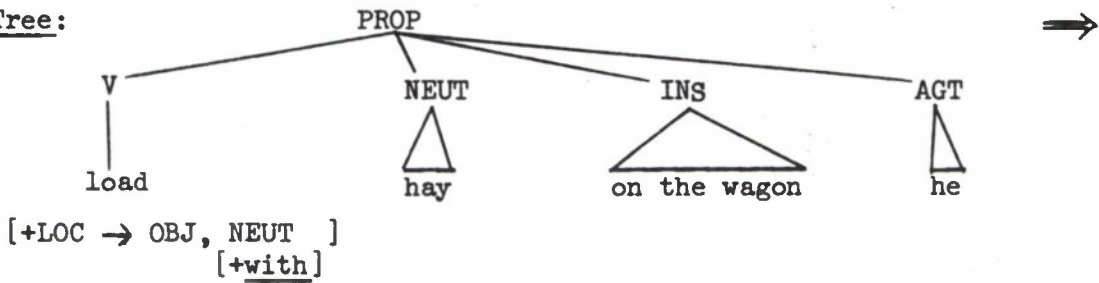
1 2 3 4 5 6 7 8

- S.C. (1) Attach 7 as right sister of 2;
 (2) Attach [+Prep] (from 2) to 3;
 (3) Delete 6-7.

COND: 2 through 7 are a constituent

Example: He loaded the wagon with hay.

Tree:



Ordering Arguments:

- (1) See U-OBJ (b)

U-OBJ (a)

Order No. 7

Rule:

S.I. X $\left\{ \begin{matrix} V \\ N \end{matrix} \right\} C_i [PREP \quad NP] X C_j X$

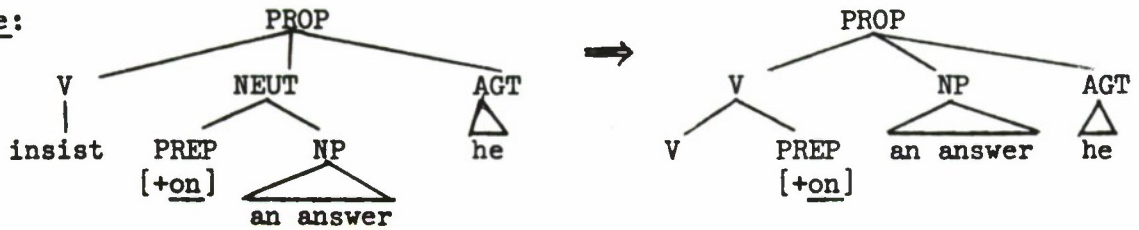
1 2 3 4 5 6 7

- S.C. (1) Chomsky-adjoin 3 as right sister of 2;
 (2) Attach 4 as right sister of 2;
 (3) Erase 3-4.

- COND: (1) 2 through 6 are a constituent
 (2) If 5 is null and 6 = LOC, the rule does not apply.

Example: He insisted on an answer.

Tree:



Ordering Arguments:

- (1) See U-OBJ (b).

U-OBJ (b)

Order No. 7

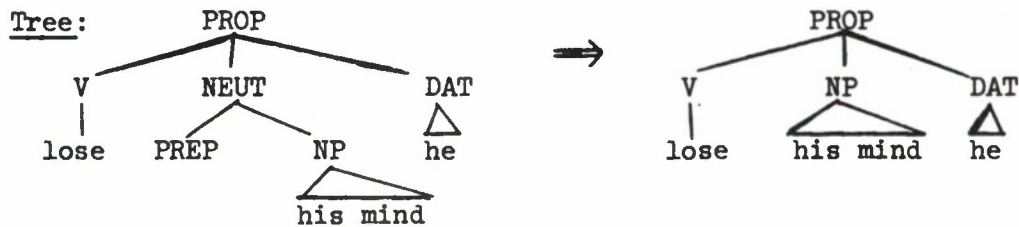
Rule:

S.I. X $\left\{ \begin{matrix} V \\ N \end{matrix} \right\} C_i$ [PREP NP] X C_j X
 1 2 3 4 5 6 7

S.C. (1) Attach 4 as right sister of 2;
 (2) Erase 3-4.

COND: (1) 2 through 6 are a constituent
 (2) If 5 is null and 6 is LOC, the rule does not apply.

Example: He lost his mind.



Ordering Arguments:

(1) The four varieties of objectivalization are disjunctive with respect to each other: if one applies, the other three are excluded, simply because the four structure indices are mutually exclusive: two different features govern the two M-OBJ rules, and the two U-OBJ rules are distinguished by the presence vs. absence of a marked preposition on the first actant that follows the head. In respect to ordering arguments, the four may therefore be treated as a single rule OBJ.

(2) OBJ must precede all SUBJ rules because it provides a condition for the first of the SUBJ rules, namely the removal of the case node over the NP that is permitted to be raised to subject, or to become passive subject.

SINGLE-ACTANT-of

Order No. 8

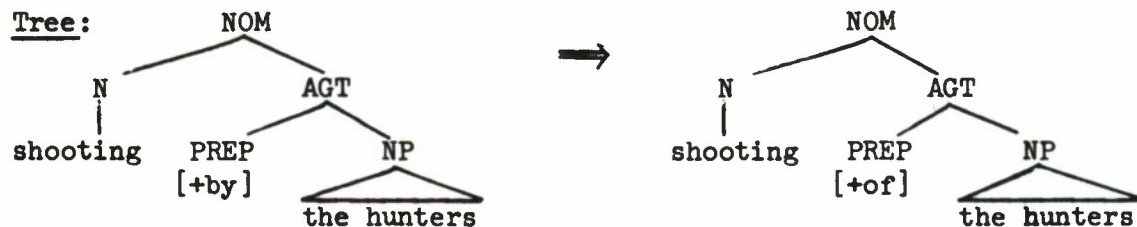
Rule:

S.I. X $\left\{ \begin{matrix} V \\ N \end{matrix} \right\}$ PREP NP X
 1 2 3 4 5

S.C. Attach [+of] to 3 and delete features other than [+PREP] on 3.

COND: 2-4 is a constituent

Example: The shooting of the hunters...



Ordering Arguments:

(1) The rule must precede all SUBJ rules, since the SUBJ rules can move an actant to the left of the head item and leave behind a single actant which could then--but should not--be affected by this rule.

RAIS OBJ TO SUBJ

Order No. 10

Rule:

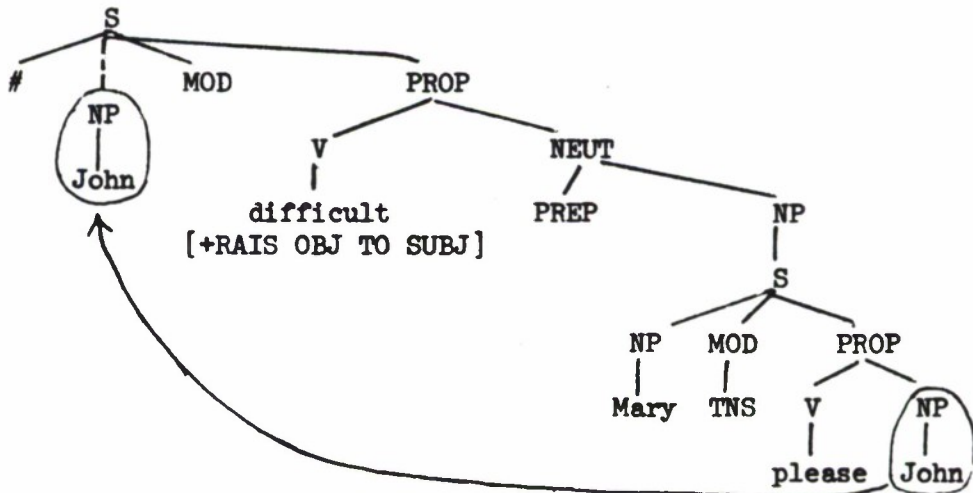
S.I. X S[# MOD PROP[X NP[S[X V NP X
 1 2 3 4 5 6 7

S.C. (1) Attach 6 as right sister of 2
 (2) Erase original 6

COND: (1) 4 contains the feature [+RAIS OBJ TO SUBJ]
 (2) Optional

Example: John is difficult for Mary to please.

Tree:



Ordering Arguments:

(1) Precedes ACT SUBJ PLACE, because the latter rule is oblig., and RAIS OBJ TO SUBJ is optional. Verbs like easy, difficult, etc. allow both, as do

- (a) The book is easy for John to read.
- (b) For John to read the book is easy.

(2) Precedes ACCUSE MARK, because we want to derive

- (c) He is difficult for Mary to please.

and not

- (d) *Him is difficult for Mary to please.

SOME-ANY

Rule:

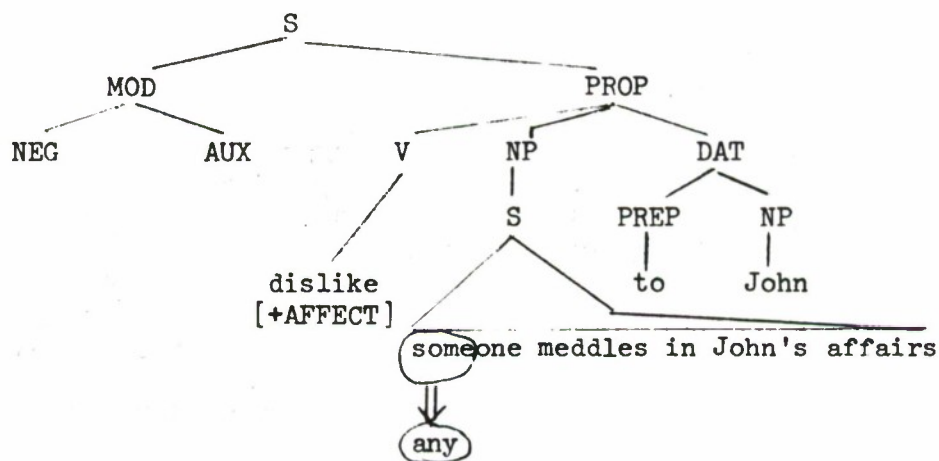
S.I. X [+AFFECT] X $\begin{bmatrix} -SPEC \\ -INDET \end{bmatrix}$ X
 1 2 3 4 5

S.C. Change [-INDET] to [+INDET] in 4.

- COND: (1) 2 commands 4
 (2) If 2 = [+N]; or [+V]; or [+PREP], then 4 does not command 2
 (3) Complex NP constraint holds
 (4) Obligatory

Example: John dislikes anyone meddling in his affairs.

Tree:



Ordering Arguments:

- (1) Must precede SUBJ PLACE to define context for NEG; i.e., to get no-one left from NEG leave someone, since SOME-ANY applies to the right.
- (2) Must precede SOME-ANY (REL) because a converted any can then trigger SOME-ANY REL below it.
- (3) Must precede S INITIAL ADV PLACE, since the latter rule moves ADV to the left of NEG, and SOME-ANY only works to the right of NEG.
- (4) Must precede ANY-NO, because SOME-ANY provides the environment for the latter rule.

RAIS TO SUBJ

Order No. 11

Rule:

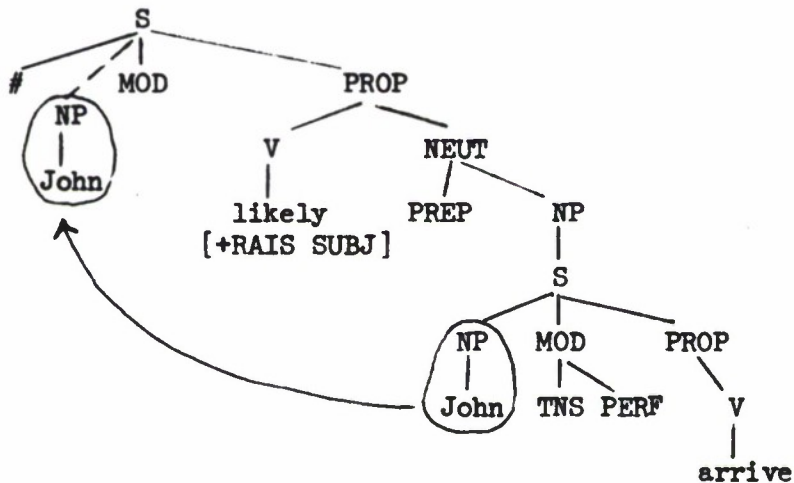
S.I. X S[# MOD PROP[X NP[S[# NP X
 1 2 3 4 5 6 7

S.C. (1) Attach 6 as right sister of 2
 (2) Erase original 6

COND: (1) 4 contains the feature [+RAIS SUBJ]
 (2) Optional

Example: John is likely to have arrived.

Tree:



Ordering Arguments:

(1) Precedes ACT SUBJ PLACE, because the latter rule is oblig., and verbs like appear, likely, etc. take either

- (a) That he left is likely.
- (b) He is likely to have left.

PASS-SUBJ-BY-PLACE

Order No. 12

Rule:

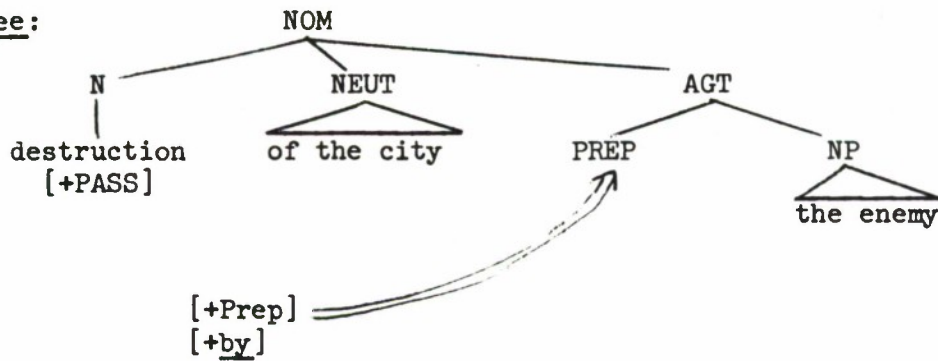
S.I. X $\left\{ \begin{matrix} N \\ V \end{matrix} \right\}$ NP X PREP NP X
 1 2 3 4 5 6 7

S.C. [+Prep, by] replaces features on 5

- COND: (1) 2-6 is a constituent
 (2) 2 has the feature [+PASS]
 (3) If 2 = N, then 5-6 immediately dominated by AGT or INS

Example: The destruction of the city by the enemy...

Tree:



PASS-SUBJ

Order No. 12

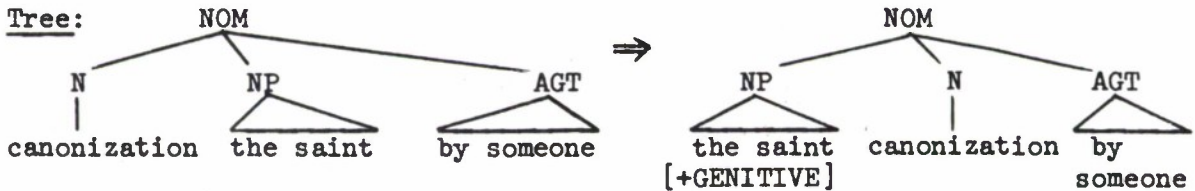
Rule:

S.I.	X	{	MOD	V	}	NP	X	PREP	NP	X
			DET	N				[+by]		
			[-Dem]							
	1		2	3		4	5	6	7	

- S.C. (1) Attach 4 as left sister of 2;
 (2) If 3 = N, attach the feature [+Genitive] to 4;
 (3) If 3 = V, attach be + en as right daughters of 2;
 (4) Erase original 4.

- COND: (1) 3-6 is a constituent
 (2) If 3 = N, the rule is optional
 (3) If 3 = V, the rule is obligatory

Example: The saint's canonization (by someone)...



Ordering Arguments:

- (1) Must precede ACT-SUBJ because it is a governed rule whose application removes a set of possible candidates from the domain of ACT-SUBJ.

M-ACT-SUBJ

Order No. 13

Rule:

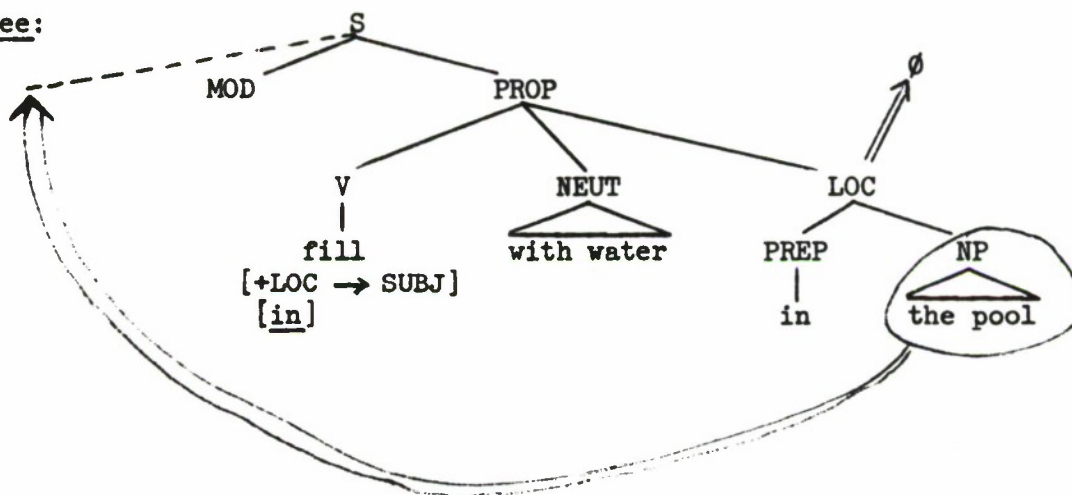
S.I. X { DET N } X C_i [PREP NP] X X
 1 2 3 4 5 6 7 8
 1 2 3 4 5 6 7 8

S.C. (1) If 3 is V, attach 6 as left sister of 2; delete 5-6.
 (2) If 3 is N, attach 6 to 2; add [+GENITIVE] to 6; delete 5-6.

COND: (1) 3-7 is a constituent;
 (2) 3 has a feature of the form [+C_i → SUBJ]

Example: The pool filled with water.

Tree:



ACT-SUBJ

Order No. 13

Rule:

S.I. X $\left\{ \begin{array}{l} \text{MOD} \text{ PROP}^{[V]} \\ \text{DET} \text{ NOM}^{[N]} \end{array} \right\} X \ C_i \text{ [PREP NP] X } \left\{ \begin{array}{l} \text{PROP} \\ \text{NOM} \end{array} \right\} X$

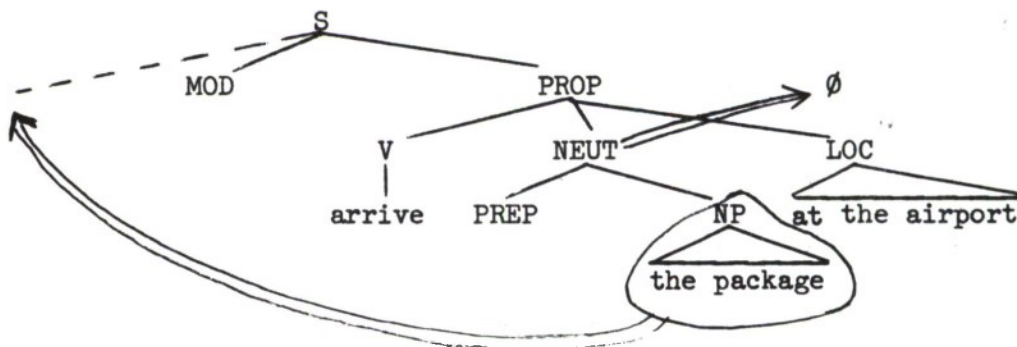
1 2 3 4 5 6 7 8 9

S.C. (1) If 3 is V, attach 7 as left sister of 2; delete 5-6-7.
 (2) If 3 is N, attach 7 to 2 with the feature [+Genitive] added to it; delete 5-6-7.

COND: (1) Obligatory if 3 = V, or if 3 = N and 5 = DAT
 (2) 8 = LOC, or is null
 (3) 5 ≠ LOC

Example: The package arrived at the airport.

Tree:



Ordering Arguments:

(1) Since REFLEX (ignoring crossover conditions) is most easily stated as working on LEFT-RIGHT surface order, and our underlying structure has active subjects generally right-most, this rule preceded REFLEX.

REFLEX

Order No. 14

Rule:

S.I. X NP[DET[ART X] X N X] X NP[DET [ART
+DEF
-DEM
-GENITIVE] X] X N X] X

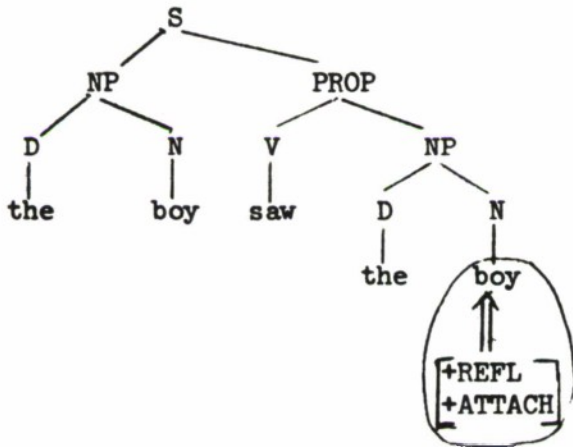
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

S.C. Attach [+REFL
+ATTACH] to 13 and 10

- COND: (1) 2 is immediately dominated by lowest S or NP that dominates 9
 (2) 6 = head of its NP
 (3) 13 = head of its NP
 (4) 5,6,7 = 12,13,14
 (5) If 3 = [+DEF,-GENERIC], then 3 = 10 and 4 = 11
 If 3 ≠ 10, then 11 = ∅, and 10 = [-I,-II]
 (6) If 3 = [+I] or [+II] optional, otherwise obligatory

Example: The boy saw himself.

Tree:



Ordering Arguments:

- (1) Must precede NOUN REDUCT TO ONE, so that the latter can be obligatory for items marked [+REFLEX].
- (2) Must precede ONE DEL to get
 - (a) Patting oneself on the back is ungracious.
- (3) Must precede YOU DEL to get
 - (b) Help yourself!
- (4) Must precede ART DEL with proper nouns,
- (5) Must precede PRON CONJ to get
 - (c) John and Mary shot themselves.

PARTITIVE POSTPOSE

Order No. 15

Rule:

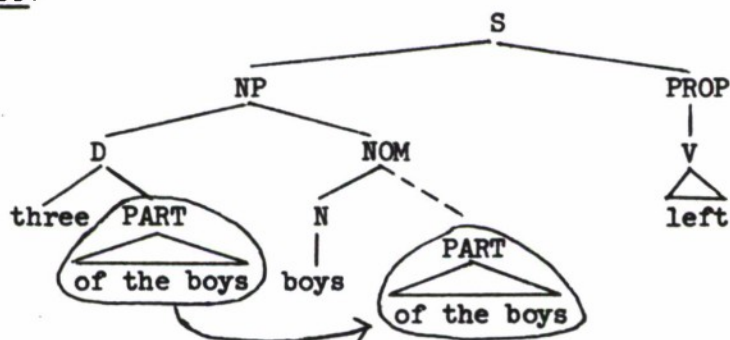
S.I. X₁ D₂ [X₃ PART] NOM₄ [N] X₅

S.C. (1) Attach 3 as right sister of 4
 (2) Erase original 3

COND: Obligatory

Example: Three (boys) of the boys left.

Tree:



Ordering Arguments:

(1) Must precede PARTITIVE REDUCE because otherwise we get

(a) *three of the ones boys

from the above.

(2) Must precede QUANT MOVE because otherwise we derive

(b) each of them

from each of the boys, instead of the correct each of the boys or the boys each.

(3) Must precede ACCUSE MARK to derive

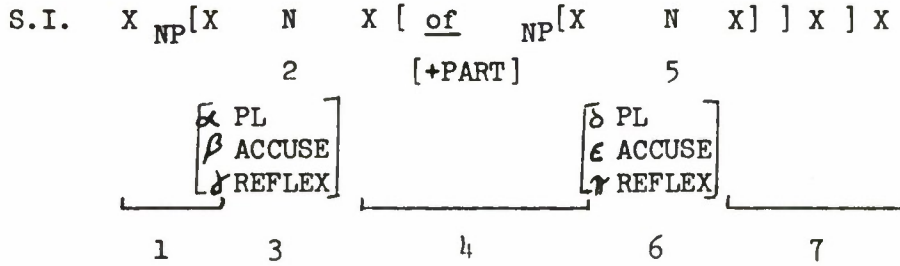
(c) each of them

rather than *each of they.

(4) As far as we know, this rule is not ordered with respect to any of the preceding rules. That is, this rule does not seem to have to follow any rule.

PARTITIVE REDUCE¹

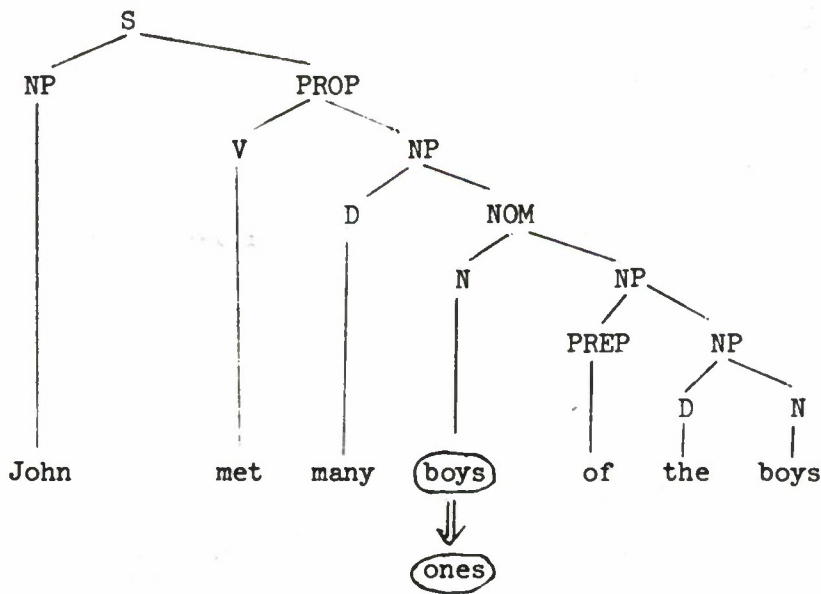
Rule:



- S.C. (1) Attach [+PRO] to 3
 (2) Delete all features of 2 not specified in 3
- COND: (1) 2 = 5 (except for NUMBER, CASE, REFLEX)
 (2) Obligatory

Example: John met many (ones) of the boys.

Tree:



Ordering Arguments:

- (1) Must precede QUANT MOVE because otherwise we get

(a) *boy of them each

instead of the boys each.

- (2) Must precede ACCUSE MARK for the same reason as PARTITIVE POSTPOSE must precede the former rule.

¹This rule slightly changed from earlier version.

OF-INSERT

Order No. 17

Rule:

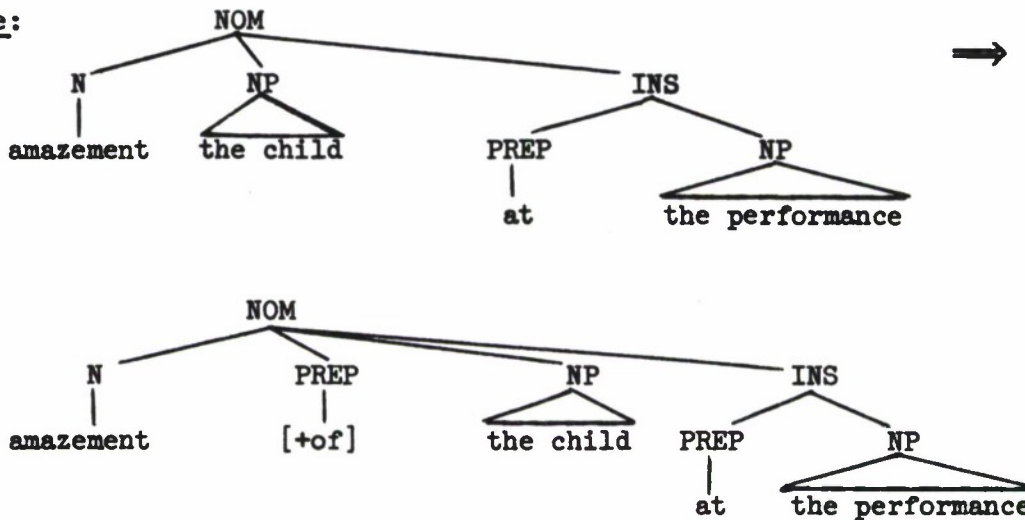
S.I. X N NP X
 1 2 3 4

S.C. Attach PREP [+of] as left sister of 3

COND: 2 and 3 are immediately dominated by NOM

Example: The amazement of the child at the performance...

Tree:



Ordering Arguments:

- (1) The rule must follow OBJ, since its distinctive environment is established by that rule.
- (2) It must precede ACCUSE-MARK because the inserted preposition of provides a condition for applying the rule.

ACCUSE MARK¹

Order No. 18

Rule:

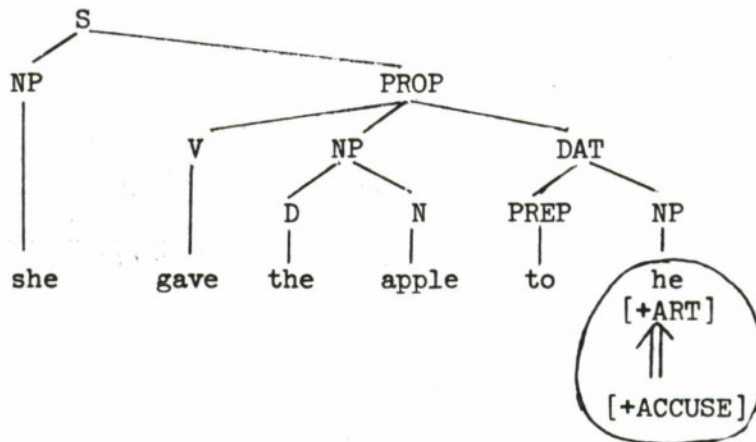
S.I. X { V }
 1 2 { PREP } NP[ART X
 3 4 5

S.C. Attach [+ACCUSE] as feature to 4

COND: (1) 2 and 3 must be a constituent
 (2) Obligatory

Example: She gave {him the apple }
 {the apple to him} .

Tree:



Ordering Arguments:

(1) Must precede TO REPLACE AUX because the accusative provides one of the environments for the latter rule; i.e. the subject of the nominal is marked [+ACCUSE], thus permitting TO REPLACE AUX to take place.

¹This rule slightly changed from earlier version.

TO REPLACE AUX

Rule:

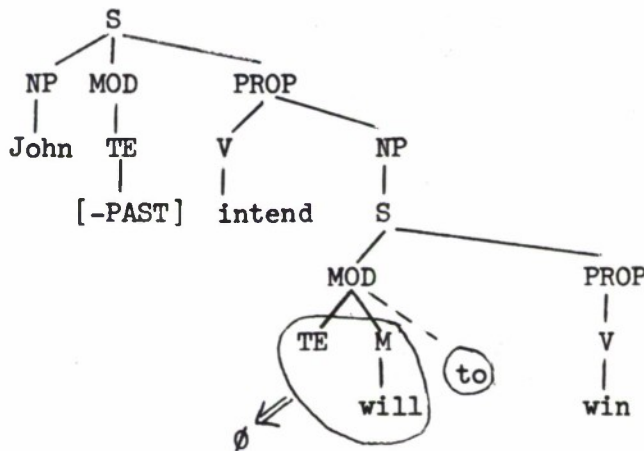
S.I. X NP[S[(for NP) {TE(M)} (PERF) (PROG) X
 1 2 3 4
 SJC

S.C. (1) Replace 2 by to
 (2) If 2 = [+PAST], and 3 does not contain PERF, then attach PERF as right sister of 2

COND: Obligatory

Example: John intends to win.

Tree:



Ordering Arguments:

- (1) Must precede THAT INSERT (NOM) because THAT insertion depends on presence of AUX.
- (2) Must precede SJC DEL because there must be an AUX to replace.
- (3) Must precede ONE DEL so that the derivation of e.g.,
 - (a) NP is easy for NP[+ACCUSE] to please.
 - (b) NP is easy to please.

is the same. That is, so that TO REPLACE AUX should be triggered by the same condition in both examples above, but if ONE DEL precedes TO REPLACE AUX, then in example (a) the rule would be triggered by the presence of the for (the feature [+ACCUSE]), while in example (3.b) the rule would be triggered by the absence of the subject.

SJC DEL

Order No. 20

Rule:

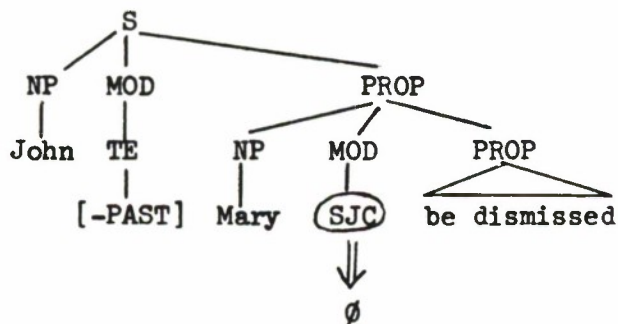
S.I. X SJC X
 1 2 3

S.C. Erase 2

COND: Obligatory

Example: John demands that Mary be dismissed.

Tree:



Ordering Arguments:

(1) We have no strong arguments why this rule must precede THAT INSERT (NOM). That is, this is simply the earliest place the rule can have in the ordering.

THAT INSERT (NOM)

Rule:

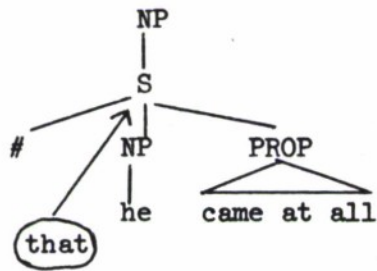
S.I. X NP[S[# NP AUX[TNS X
 └──┬──┘ └──┬──┘
 1 2 3

S.C. Insert that as right sister of 2

COND: Obligatory

Example: That he came at all astonished us.

Tree:



Ordering Arguments:

(1) Precedes EXTRA, because THAT clauses can be extraposed, while GERUNDIVES cannot.

Rule:

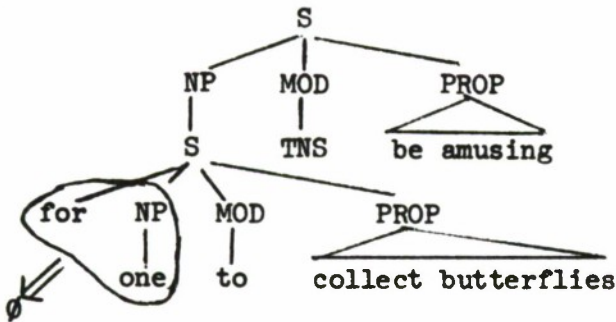
S.I. X NP[S[# for NP[one] AUX[to X
 └───┬───┘ └───┬───┘ └───┬───┘
 1 2 3

S.C. Erase 2

COND: Optional

Example: To collect butterflies is amusing.

Tree:



Ordering Arguments:

(1) Must precede NOUN REDUCT TO ONE because the abstract one can be pronominalized to him, but only when the antecedent has not been deleted; cf.,

- (a) laughing at people and expecting them to like { *him } ...
- (b) One shouldn't laugh at people and expect them to like him.

EXTRA (from OBJECT)

Rule:

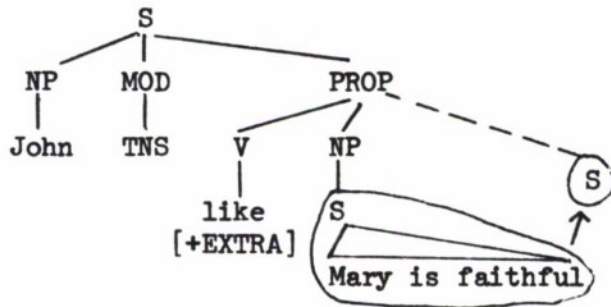
S.I. X PROP[V [+EXTRA] NP[S] X
 1 2 3 4 5

S.C. (1) Attach 4 as last daughter of 2
 (2) Replace 4 by it
 [-PRO]

COND: (1) Obligatory
 (2) 4 does not dominate AUX[ing X]

Example: John likes it that Mary is faithful.

Tree:



Ordering Arguments:

- (1) Must precede EXTRA (from SUBJECT), because of e.g.,
 - (a) It clinches it that she is a fool that she put the eggs in the bottom of the basket.

Sentences like this one have the extraposed object inside the extraposed subject. [Note that the example is not acceptable to all of our informants. For dialects not accepting the sentence cited above, EXTRA (from OBJECT) and EXTRA (from SUBJECT) appear to be disjunctively ordered.]

EXTRA (from SUBJECT)

Order No. 24

Rule:

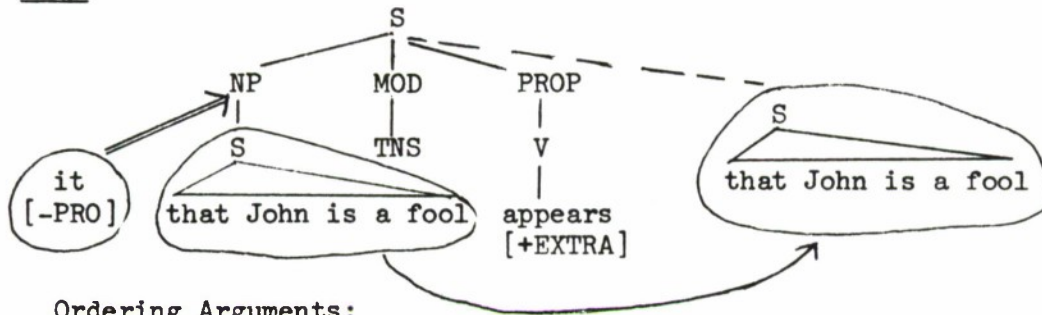
S.I. X S[NP[S] MOD PROP] X
 1 2 3 4 5 6

S.C. (1) Attach 3 as right sister of 5
 (2) Replace 3 by it
 [-PRO]

COND: (1) Obligatory if 5 dominates v [+EXTRA], optional otherwise
 (2) 3 does not dominate AUX[ing X]

Example: It appears that John is a fool.

Tree:



Ordering Arguments:

(1) Must precede THAT DEL (NOM), since all sentences in subject position (THAT clauses) disallow THAT DEL (NOM).

THAT DEL (NOM)

Rule:

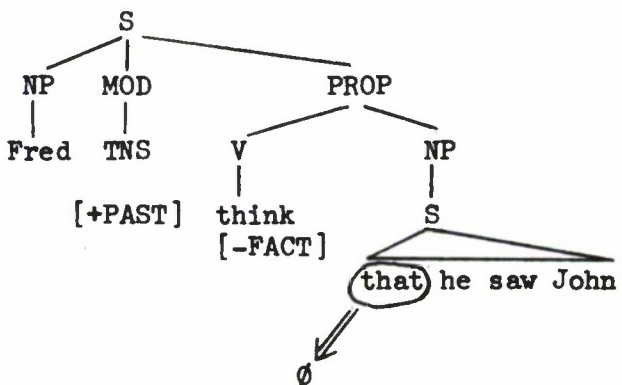
S.I. X PROP[₁ V NP[S[that X₂ X₃]]]
 [-fact]

S.C. Erase 2

COND: Optional

Example: Fred thought he saw John.

Tree:



Ordering Arguments:

(1) As far as we know, this could be the last rule.

SOME-ANY (REL)

Order No. 26

Rule:

S.I. $X \text{ NP} [\text{D} [X \begin{bmatrix} +\text{AFFECT} \\ +\text{INDET} \end{bmatrix} X] \text{ NOM} [\text{NOM} \text{S} X \begin{bmatrix} -\text{SPEC} \\ -\text{INDET} \end{bmatrix} X]]] X$

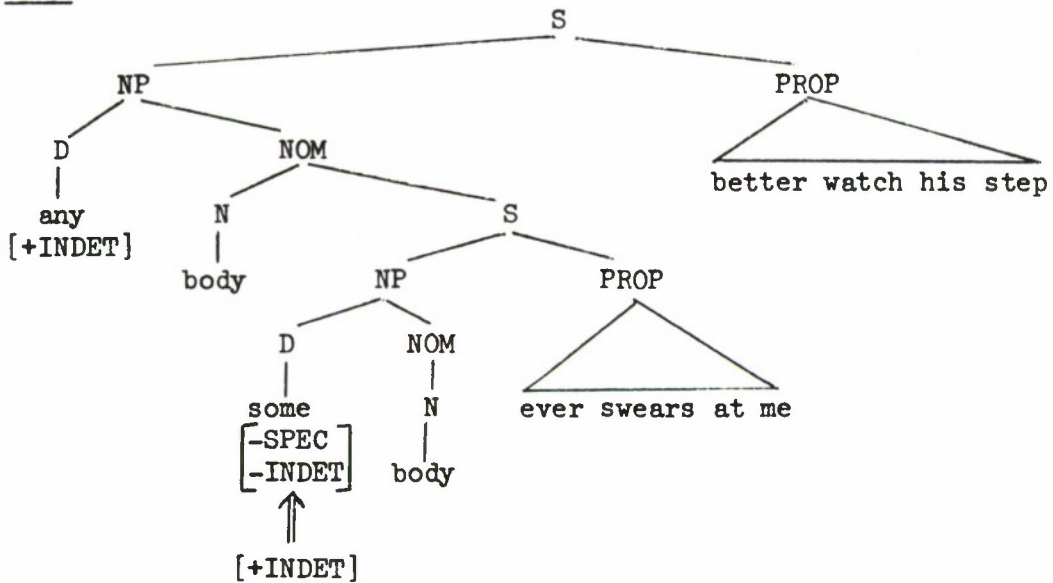
1 2

S.C. Change [-INDET] to [+INDET] in 2

COND: (1) 1 = lowest S dominating 2
 (2) Obligatory

Example: Anybody who ever swears at me better watch his step.

Tree:



Ordering Arguments:

(1) Must precede NEG ATTRACT because of

- (a) No-one who ever swears at me is likely to leave this room.

NOUN FEATURE TO ART

Rule:

S.I. X NP[ART X N X] X
 4

+COUNT (+HUMAN) (+MASC) (-PLURAL)
--

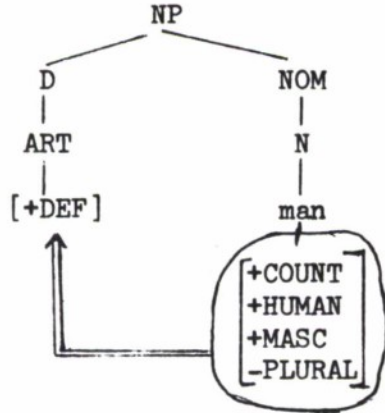
 1 2 3 5 6 7

S.C. Attach 5 as features to 2

COND: (1) 4 = head of its NP
 (2) Obligatory

Example: When I saw the man, he was eating.

Tree:



The whole set of features under ART will become he in the second lexical look-up.

Ordering Arguments:

- (1) This rule does not seem to be ordered with respect to the preceding rules; i.e., this is simply the latest place at which it fits.
- (2) This rule must precede WH ATTACH, because WH ATTACH deletes head nouns.
- (3) This rule must precede NOUN REDUCT TO ONE because the latter rule wipes out the environment on which this rule operates.

Rule:

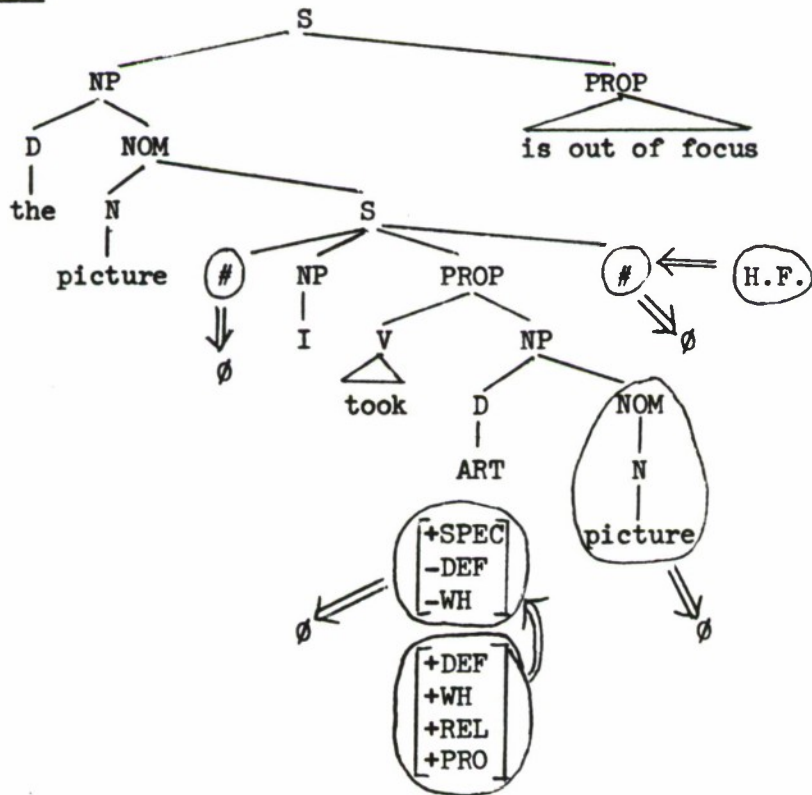
S.I. X NOM_S [# X NP [X ART + NOM] X #] X
 1 2 3 4 5 6 7 8 9 10

- S.C. (1) Replace [-WH] in 6 by: $\begin{bmatrix} +WH \\ +REL \\ +PRO \end{bmatrix}$
 (2) Replace $\begin{bmatrix} +SPEC \\ -DEF \end{bmatrix}$ in 6 by [+DEF]
 (3) Erase 3 and 7
 (4) Replace 9 by "Half-Fall"

- COND: (1) 2 = 7
 (2) 6 dominates $\begin{bmatrix} +SPEC \\ -DEF \\ -WH \end{bmatrix}$
 (3) If there is a [+WH] anywhere within the S immediately dominating 7 which is also [-REL], the S.I. is not met
 (4) Obligatory

Example: The picture which I took is out of focus.

Tree:



Ordering Arguments:

- (1) This rule must precede WH FRONT for obvious reasons.

Rule:

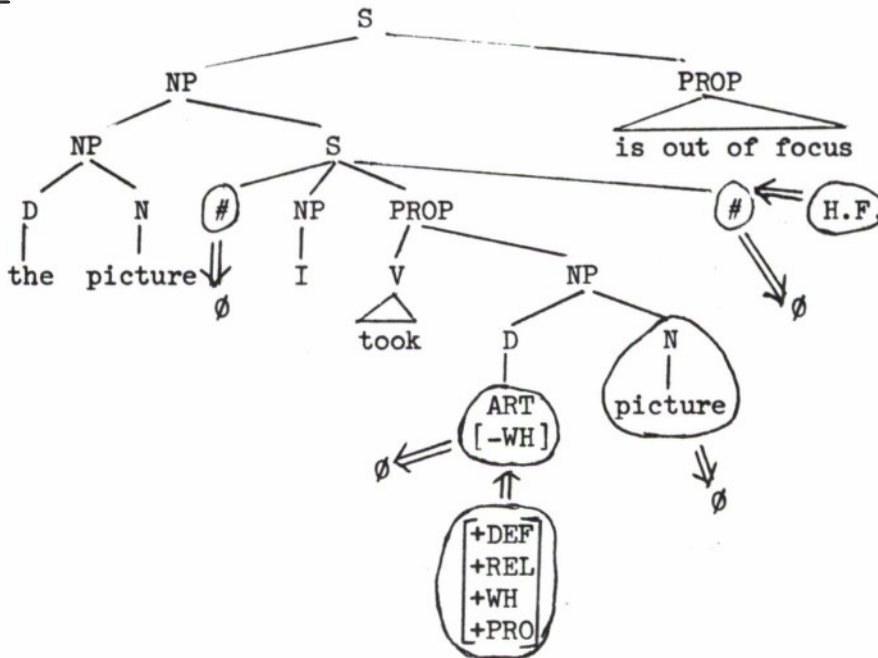
S.I. X NP_S [# X NP [D N] X #] X
 1 2 3 4 5 6 7 8 9 10

S.C. (1) Replace [-WH] in 6 by $\begin{bmatrix} +WH \\ +REL \\ +PRO \end{bmatrix}$
 (2) If 6 dominates [-DEF], replace it by [+DEF]
 (3) Erase 3 and 7
 (4) Replace 9 by "Half-Fall"

COND: (1) 2 = 5, and 4 ≠ X + that
 (2) Obligatory
 (3) 6 dominates [-WH]
 (4) If there is a [+WH] anywhere within the S immediately dominating 7, which is also [-REL], the S.I. is not met

Example: The picture which I took is out of focus.

Tree:



Ordering Arguments:

(1) This rule must precede WH FRONT for obvious reasons.

Rule:

S.I. X_D[X ART S[# N NP[ART N] X #] NP N X
 1 2 3 4 5 6 7 8 9 10 11 12 13 14

S.C. (1) Replace [-WH] in 8 by

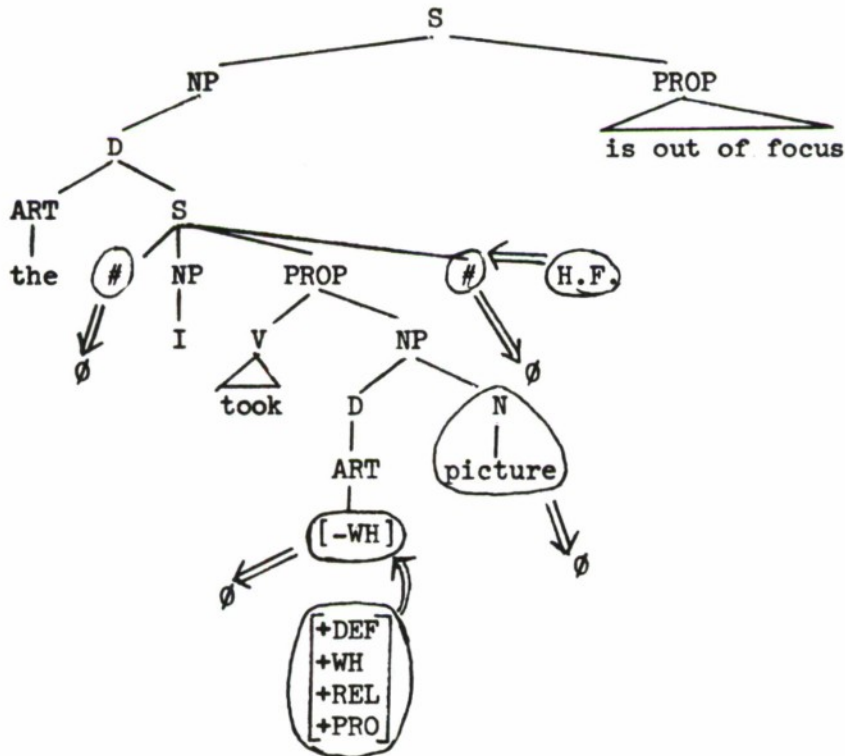
+WH
+REL
+PRO

 (2) If 8 dominates [-DEF], replace it by [+DEF]
 (3) Erase 5 and 9
 (4) Replace 11 by "Half-Fall"

COND: (1) 3 + 13 = 8 + 9
 (2) If there is a [+WH] anywhere within 4, which is also [-REL], the S.I. for the rule is not met.
 (3) 8 dominates [-WH]
 (4) Obligatory

Example: The picture which I took is out of focus.

Tree:



Ordering Arguments:

(1) This rule must precede WH FRONT for obvious reasons.

Rule:

S.I. X S[X NP[X X NP[ART] X
 1 2 3 4 5 6 7 8

- S.C. (1) Chomsky adjoin 6 as left daughter of 2, OR Chomsky adjoin 5 + 6 as left daughters of 2 (in accord with Pied Piping convention)
 (2) Erase original (5), 6

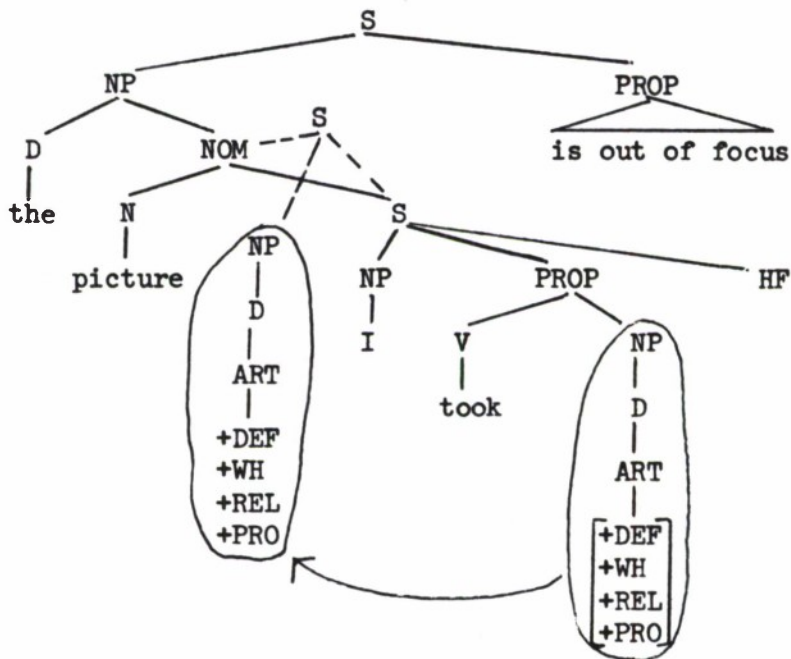
- COND: (1) 7 dominates

+WH
+REL
+PRO
+DEF

 (2) General constraints on movements hold
 (3) Obligatory

Example: The picture which I took is out of focus.

Tree:



Ordering Arguments:

- (1) This rule precedes THAT DEL because deletion of that is possible only if the that precedes another NP, a condition to be found only after WH FRONT.
- (2) This rule is not ordered with respect to REL ⇒ THAT, but should precede it.
- (3) This rule precedes REL REDUCT for obvious reasons.

Rule:

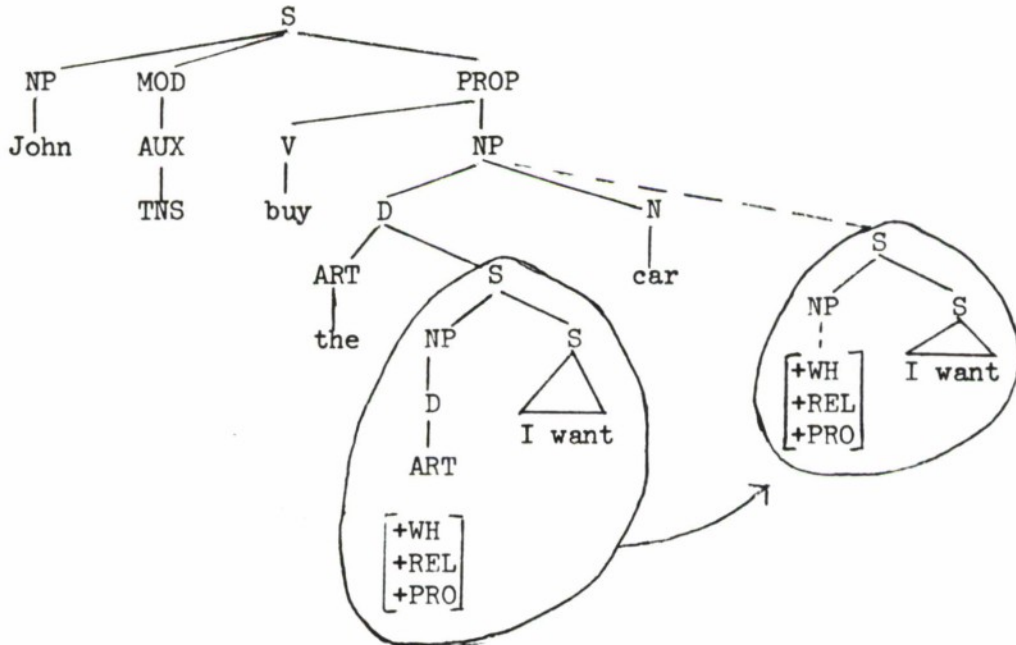
S.I. X NP^D[X^D[S] X] X
 1 2 3

S.C. (1) Attach 2 as last daughter of 1
 (2) Erase original 2

COND: (1) 2 dominates $\begin{bmatrix} +WH \\ +REL \\ +PRO \end{bmatrix}$
 (2) 2 does not dominate an S which dominates $\begin{bmatrix} +WH \\ +REL \\ +PRO \end{bmatrix}$
 (3) 1 is the highest NP dominating 2
 (4) Obligatory

Example: John bought the car which I want.

Tree:



Ordering Arguments:

(1) This rule is not strictly ordered with respect to any rules in this block except REL REDUCT and ADJ PREPOSE, which it must precede.

REL ⇒ THAT

Order No. 31

Rule:

S.I. X ART X

+WH
+REL
+PRO
+F

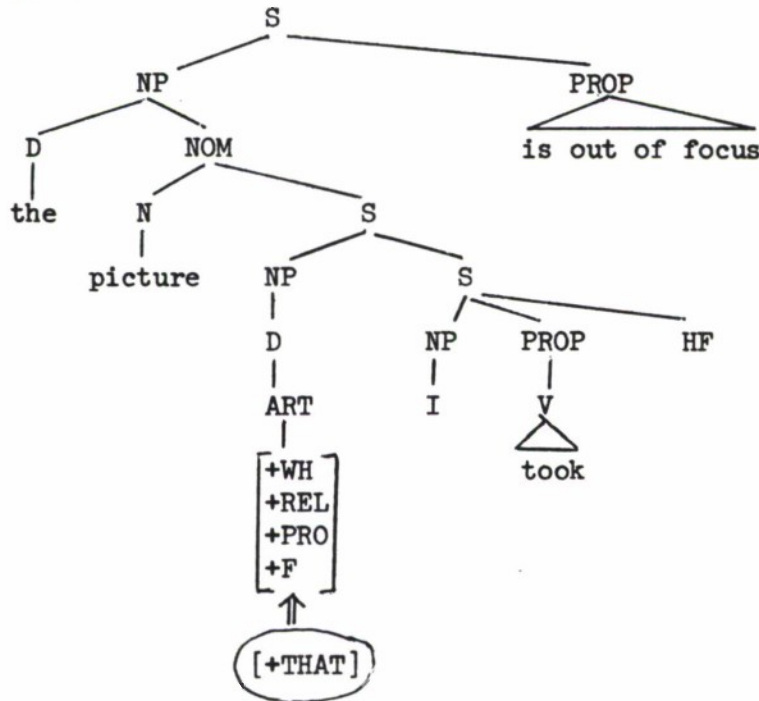
1 2 3

S.C. Attach [+THAT] as feature to 2

COND: (1) 1 ≠ X + PREP
(2) Optional

Example: The picture that I took is out of focus.

Tree: (NOM-S)



Ordering Arguments:

- (1) This rule precedes THAT DEL for obvious reasons.
- (2) This rule is not ordered with respect to REL REDUCT and ADJ PREPOSE

POSSESSIVE FORMATION

Order No. 32

Rule:

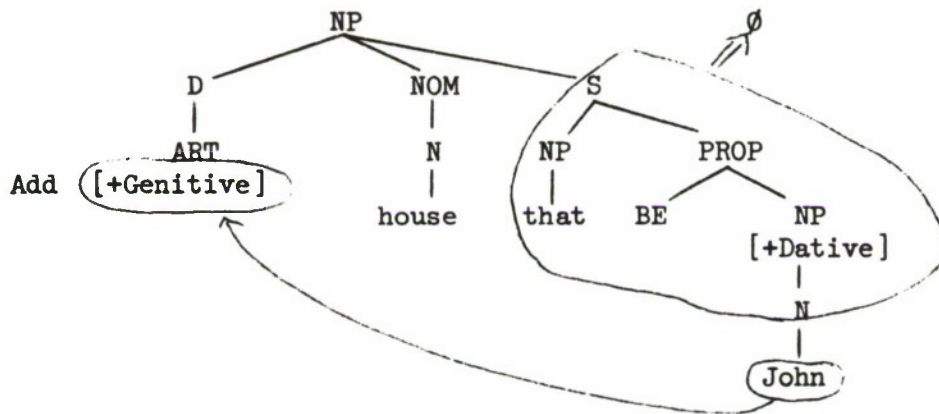
S.I. NP [NP [X ART X N X] S [NP BE NP]]
 [+Dative]
 1 2 3 4 5 6 7 8 9

S.C. (1) Attach 9 to 3
 (2) Erase 7, 8, 9
 (3) Add [+Genitive] to 3

COND: (1) 3 does not dominate NP
 (2) 7 dominates [+THAT]

Example: John's house...

Tree:



Ordering Arguments:

- (1) Must follow REL → that, for condition (2).
- (2) Must precede Genitive Postposing to obtain: that house of John's.

GENITIVE POSTPOSING

Order No. 33

Rule:

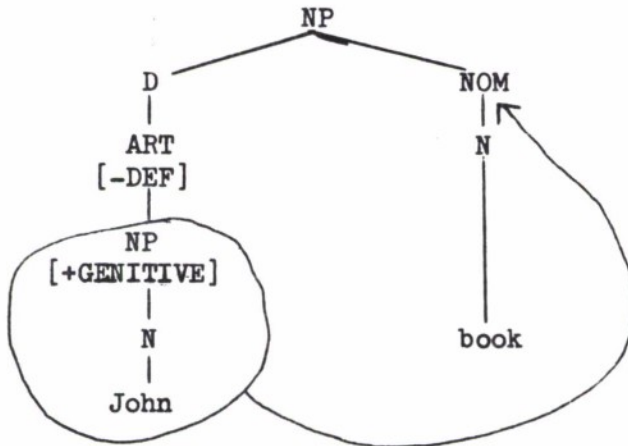
S.I. ART [NP] X N X
 [+Genitive]
 1 2 3 4 5

S.C. (1) Attach 2 as right sister of 4
 (2) Delete 2

COND: (1) 1 ≠ [+Def] (Note: This is understood strictly: if 1 dominates anything in addition to [+Def] the rule does not apply.)
 (2) 3 does not directly dominate NP

Example: That house of John's...

Tree:



Ordering Arguments:

(1) Follows Possessive Formation to obtain: that book of John's.

THAT DEL (REL)

Order No. 34

Rule:

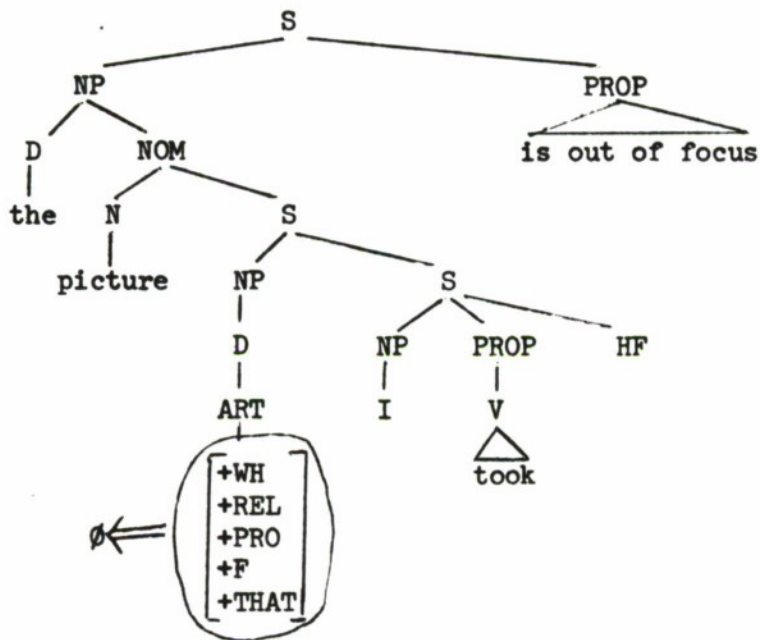
S.I. X ART NP X
 [+WH]
 [+REL]
 1 2 3 4

S.C. Erase 2

COND: Optional

Example: The picture I took is out of focus.

Tree:



Ordering Arguments:

(1) This rule is not ordered with respect to REL REDUCT or ADJ PREPOSE.

ELSE

Order No. 35

Rule:

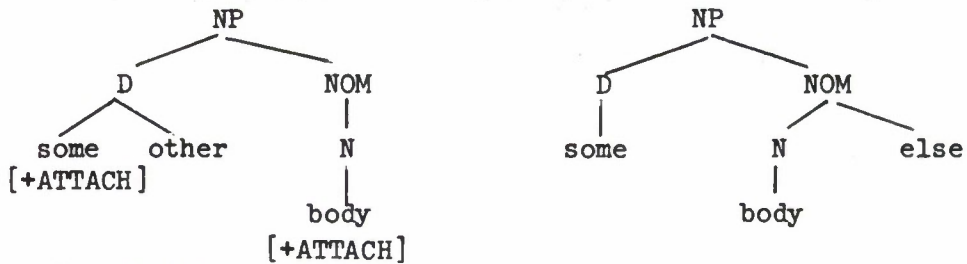
S.I. X [+ATTACH] other [+ATTACH] X
 1 2 3 4 5

S.C. (1) Attach else as right sister of 4
 (2) Erase 3

COND: Obligatory

Example: "somebody else" (from "*some other body")

Tree:



Ordering Arguments:

(1) This rule must precede ART ATTACH because other (which is the source for else) stands between ART and NOUN; e.g.,

(a) some other person ⇒ someone else

Rule:

S.I. X D [[+ATTACH]] N [[+ATTACH]] X
 1 2 3 4

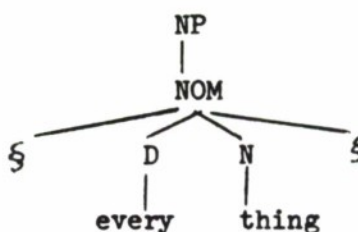
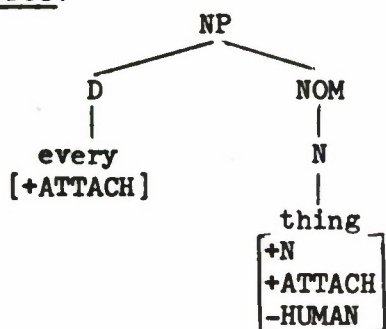
S.C. (1) Insert "§" as right and left sister of 3.
 (2) Insert 2 as left sister of 3.
 (3) Erase original 2.

(i.e., 1 - Ø - § + 2 + 3 + § - 4)

COND: Obligatory
 where "§" is an ad hoc symbol for word-formation

Example: "everything", "anyone"

Tree:



Ordering Arguments:

(1) This rule must precede ATTACH BLOCK, since nouns marked [+ATTACH] cannot stand alone, yet they are not constrained in the P.S. rules to co-occur only with ART's marked [+ATTACH].

(2) This rule precedes ADJ PREPOSE

(a) somebody nice

i.e., the fact that attached ART + NOUN structures have the ADJ following them.

ATTACHMENT BLOCK

Rule:

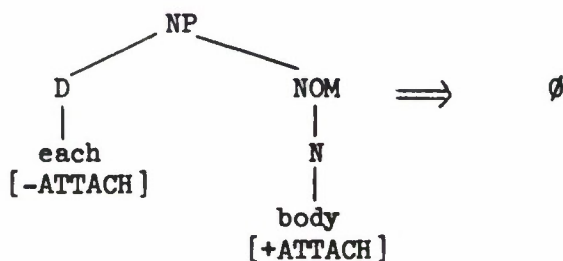
S.I. X D NOM[N [+ATTACH]] X
└──────────────────────────┘
1

S.C. Erase 1

COND: Obligatory

Example: *each body

Tree:



Ordering Arguments:

(1) This rule must be last in this block of rules, because it blocks ungrammatical strings like

- (a) *three bodies
- (b) *each body

which would otherwise be formed on the analogy of somebody, anybody, etc.

REL REDUCE A

Rule:

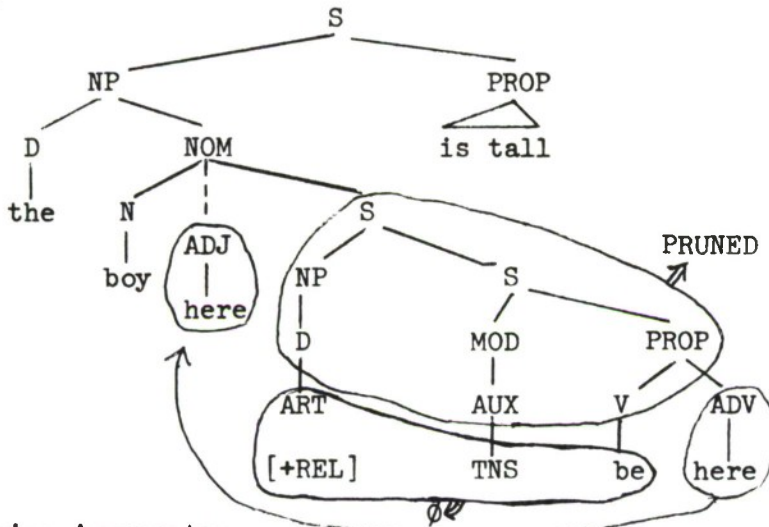
S.I. X NOM S[ART TNS be X] X
 [-PRO] [+REL]
 1 2 3 4 5

S.C. (1) Erase 3
 (2) Attach 4 as last daughter of 1

COND: Optional

Example: The boy here is tall.

Tree:



Ordering Arguments:

(1) This rule must precede ADJ PREPOSE to derive pre-nominal adjectives like

(a) the tall girl

without needing two rules which reduce relative clauses.

RULE - 56

He starts out as a definite article on the second occurrence of John, and must be prevented from being deleted. This is accomplished by ordering this rule before PROPER NOUN THE DEL, since the former rule deletes (among other things) the feature [-COMMON], so that the structure index of PROPER NOUN THE DEL will no longer be met.

NOUN $\Rightarrow \emptyset$

Rule:

S.I. X NP[DET[X [+NDEL] $\left[\begin{array}{l} \alpha \text{ PL} \\ \beta \text{ COUNT} \\ +\text{PRO} \\ -\text{REFLEX} \end{array} \right]$ X] X

N

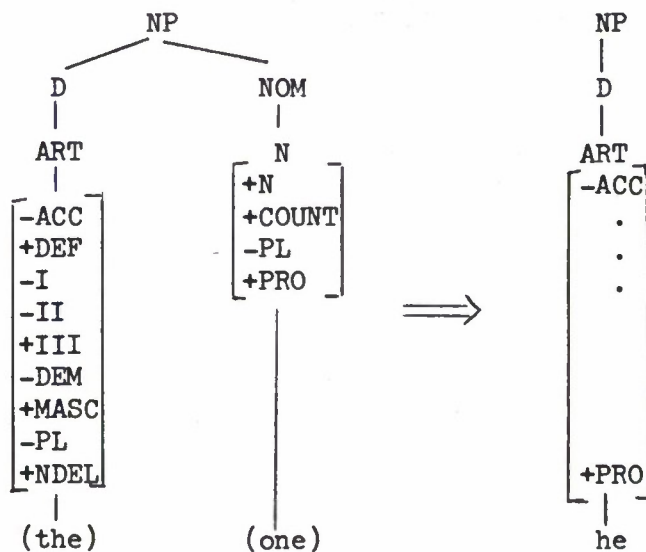
1 2 3 4 5 6

S.C. (1) Attach [+PRO] to 3
 (2) Erase 4

COND: (1) If $\alpha = [-]$, and $\beta = [+]$, and 3 = $\left[\begin{array}{l} +\text{DEF} \\ +\text{DEM} \end{array} \right]$, then 5 = \emptyset
 (2) Obligatory

Example: After he had eaten, Fred went to the movies.

Tree:



Ordering Arguments:

(1) Must precede ALL THE because the latter deletes of in the string all of the NOUN, and NOUN $\Rightarrow \emptyset$ creates the environment for ALL THE to apply.

(2) Must precede QUANT MOVE, in order to avoid

(a) *ones the boys each left

PROPER NOUN THE DEL

Order No. 42

Rule:

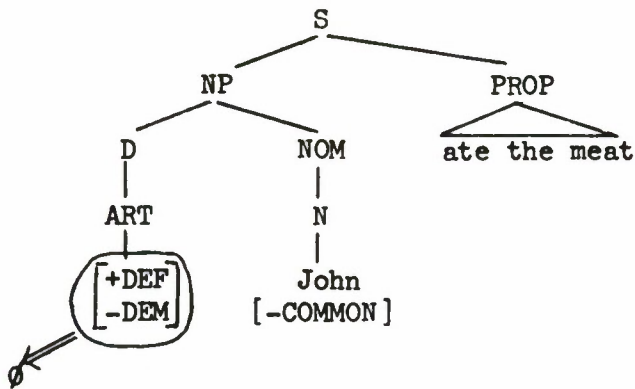
S.I. X NP[ART^[+DEF]₂ N^[-COMMON]₃] X
 1 2 3 4

S.C. Erase 2

COND: (1) 4 does not contain (≠) S + X
 (2) Obligatory

Example: John ate the meat.

Tree:



Ordering Arguments:

(1) There are no strong arguments that this rule must precede any of the following rules; i.e., this is simply the earliest place at which it can be ordered.

S-INITIAL ADV PLACE

Rule:

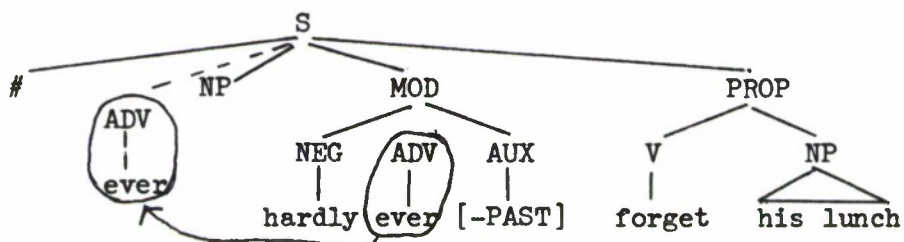
S.I. # NP MOD [X ADV AUX] X
 1 2

S.C. (1) Attach 2 as right sister of 1
 (2) Erase original 2

COND: Optional

Example: Hardly ever does John forget his lunch.

Tree:



[the NEG (hardly) will be preposed by the next rule (NEG ATTRACT)]

Ordering Arguments:

- (1) Must precede NEG ATTRACT to account for
 - (a) Hardly ever does John forget his lunch.
 - (b) Sometimes John forgets his lunch.
- (2) Must precede AUX ATTRACT for the same reason (same examples).

NEG ATTRACT

Rule Part a:

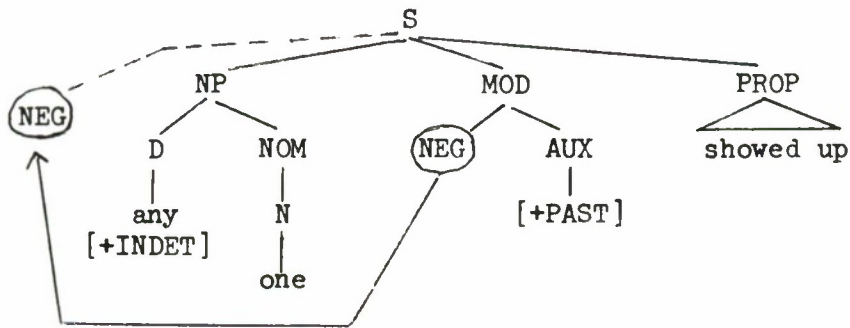
S.I. X [+INDET] (QUANT) X NEG X
 1 2 3 4 5

S.C. (1) Attach 4 as left sister of 2
 (2) Erase 4

COND: (1) If 4 = ADV, then 2 ≠ [-HARDLY] + X
 (2) 1 ≠ X [+INDET] X
 (3) Obligatory

Example: No-one showed up.

Tree:



Part b:

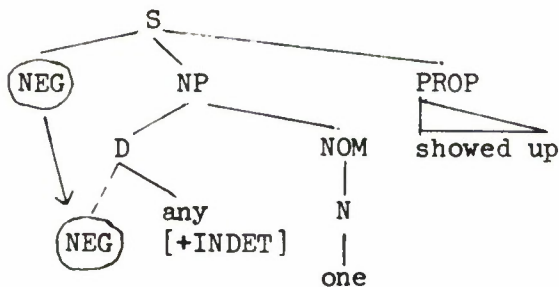
S.I. X NEG X [+INDET] X
 1 2 3 4 5

S.C. (1) Attach 2 as left sister of 4
 (2) Erase 2

COND: (1) 3 ≠ X [+INDET] X
 (2) 5 ≠ X QUANT
 (3) Obligatory

Example: No-one showed up.

Tree:



RULE - 61

Ordering Arguments:

- (1) Must precede INDEF-BEFORE-QUANT DEL, so that the [+INDET] ART which triggers NEG ATTRACT is still present.
- (2) Must precede ANY-NO, because the latter rule depends on a NEG as first daughter of the D(eterminer) node.

INDEF-BEFORE-QUANT DEL

Rule:

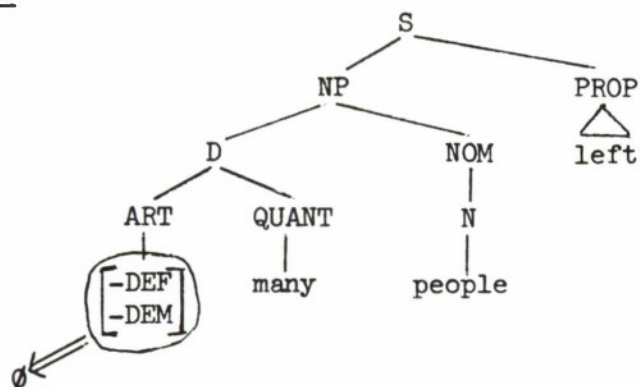
S.I. X ART $\begin{bmatrix} -DEF \\ -DEM \end{bmatrix}$ QUANT X
 1 2 3 4

S.C. Erase 2

COND: Obligatory

Example: Many people left.

Tree:



Ordering Arguments:

(1) Must precede QUANT MOVE, because otherwise

(a) a each of the boy

will become

(b) *a the boy each

and we will need a separate rule deleting the indef. ART preceding the definite ART.

(2) Must precede ANY-NO, otherwise we would derive

(c) *no many people

(from NEG ART $\begin{bmatrix} -DEF \\ +INDET \end{bmatrix}$ QUANT[many] people) instead of

(d) not many people

RULE - 63

ANY-NO

Order No. 46

Rule:

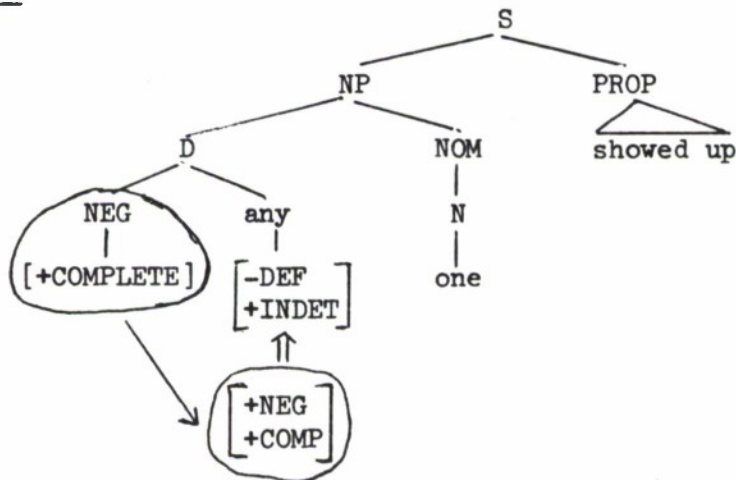
S.I.	X	NEG	$\left[\begin{array}{l} -DEF \\ +INDET \end{array} \right]$	X
		$\left[+COMPLETE \right]$		
	1	2	3	4

S.C. (1) Add 2 as feature to 3
 (2) Erase original 2

COND: (1) Optional if 3 dominates ever, and $1 \neq \#$
 Obligatory otherwise

Example: No-one showed up.

Tree:



Ordering Arguments:

(1) No arguments why this rule must precede BE-INSERT; i.e., ANY-NO is the last rule of this block.

QUANT MOVE¹

Order No. 47

Rule:

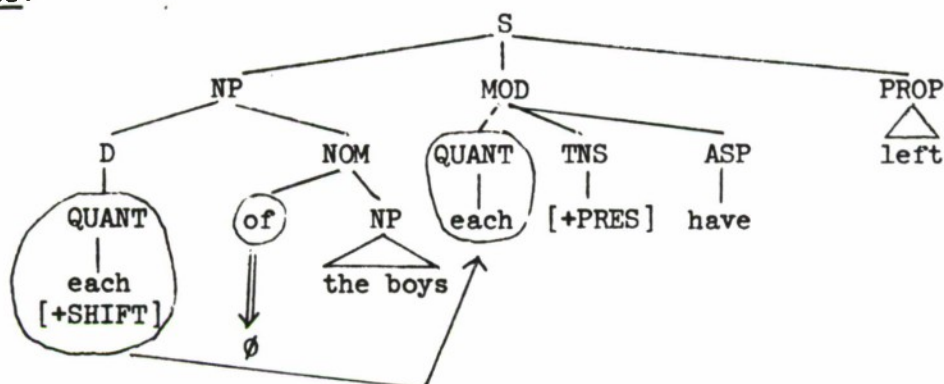
S.I. X QUANT[+SHIFT] of NP[D N] X TNS X
 1 2 3 4 5 6 7 8

S.C. (1) Attach 2 as left sister of 7
 (2) Erase 2 and 3
 (3) Erase [+ACCUSE] in 4

COND: Optional

Example: The boys each have left.

Tree:



Ordering Arguments:

(1) There are no strong arguments why this rule must precede ALL THE, because both rules are optional. Hence

- (a) all of the boys \Rightarrow (QUANT MOVE) \Rightarrow the boys all left
- \Rightarrow (ALL THE) \Rightarrow all the boys left

(2) The rule is not ordered with respect to ALL THREE, since the latter rule has QUANT[+INTEGER] in its S.I., while QUANT MOVE has QUANT[+SHIFT].

(3) Must precede NBR AGREE to derive

- (b) They each have left.
- (c) Each of them has left.

(4) Must precede PRE-Vb ADV MOVE because the QUANT, after it was moved into the ADV slot (the one preceding TNS), can be moved like an Adv; e.g.,

- (d) The boys have all left.

RULE - 65

Although our rules do not actually move the QUANT like an adverb (into post-verbal position), we feel that in principle this is how things should work.

(5) We account for examples like

- (e) Each of them had a piece of pie.
- (f) They each had a piece of pie.

by the ad hoc device of deleting the feature [+ACCUSE]. This is not offered as a solution, but only as a way of avoiding an ordering paradox. We know very little about ACCUSE MARK, and do not account for e.g.,

- (g) Who did you come with?
- (h) The man who John came with...

¹This rule slightly changed from an earlier version.

RULE - 66

ALL THE

Order No. 48

Rule:

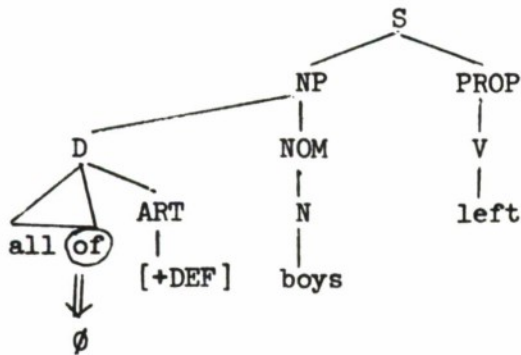
S.I. X $\begin{bmatrix} \text{all} \\ \text{both} \end{bmatrix}$ of ART^[+DEF] X
 1 2 3 4 5

S.C. Erase 3

COND: Optional

Example: All (of) the boys left.

Tree:



Ordering Arguments:

(1) Must precede ALL THREE, because it sets up the environment for the latter rule.

ALL THREE

Order No. 49

Rule:

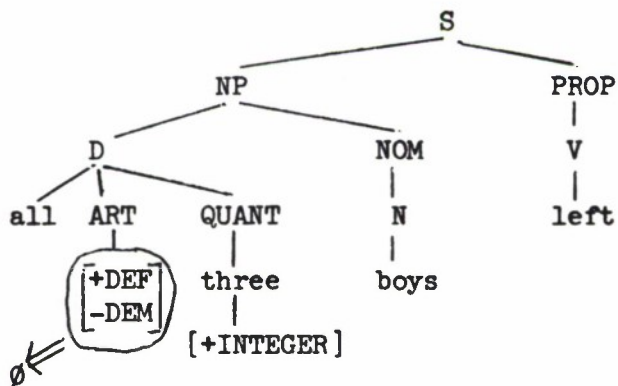
S.I. X all ART $\begin{bmatrix} +DEF \\ -DEM \end{bmatrix}$ QUANT $[+INTEGER]$ X
 1 2 3 4 5

S.C. Erase 3

COND: Optional

Example: All (the) three boys left.

Tree:



Ordering Arguments:

(1) We have no arguments that this rule must precede PRE-VERBAL PRT PLACE; i.e., this rule is the last of the preceding block.

BE INSERT

Order No. 50

Rule:

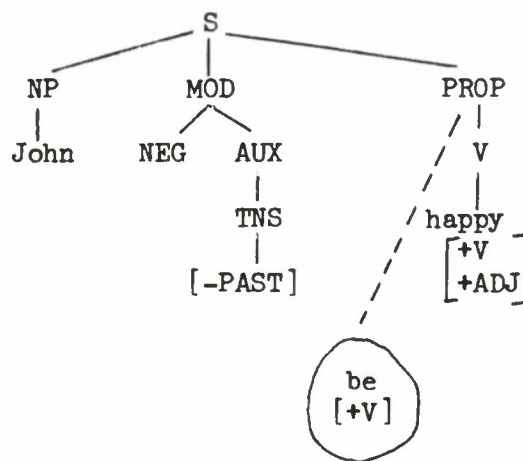
S.I. X PROP [[+V] X
 1 2 3 4

S.C. Insert be as first daughter of 2
 [+V]

COND: Obligatory

Example: John is not happy.

Tree:



Ordering Arguments:

(1) Precedes AUX ATTRACT because the be inserted by this rule is one of the AUX's attracted by the latter rule; cf.,

(a) Is he happy?

(2) Precedes PRE-Vb PRT because the latter rule also attracts the be, cf.,

(b) John is not happy.

(3) Precedes AFFIX SHIFT to account for e.g.,

(c) Mary isn't pretty.

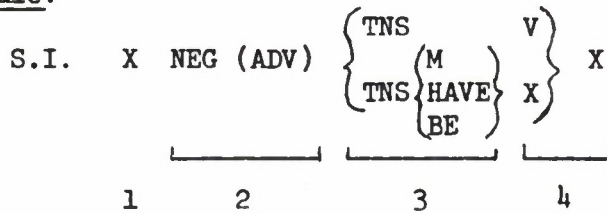
(4) Precedes NEG CONTRN to account for e.g.

(d) Mary isn't pretty.

PRE-VERBAL PRT PLACE

Order No. 51

Rule:

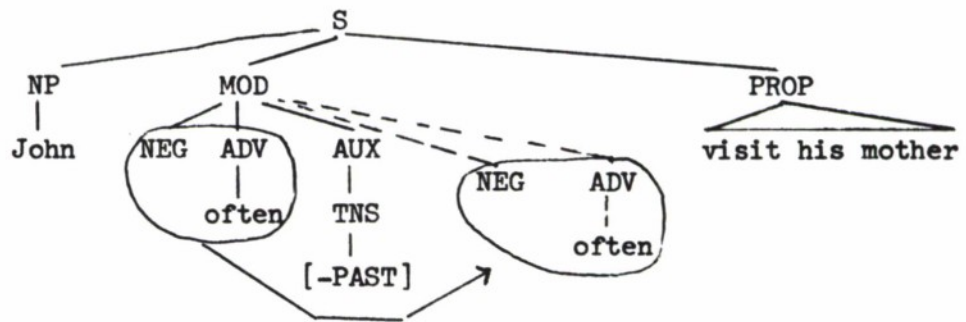


- S.C. (1) Attach 2 as right sister of 3
 (2) Erase original 2

COND: Obligatory

Example: John didn't often visit his mother.

Tree:



Ordering Arguments:

(1) Must precede AUX ATTRACT because NEG can attract with AUX, cf.,

- (a) Doesn't he like it?
 (b) Hasn't he left?

PRE-VERBAL ADV PLACE

Order No. 52

Rule:

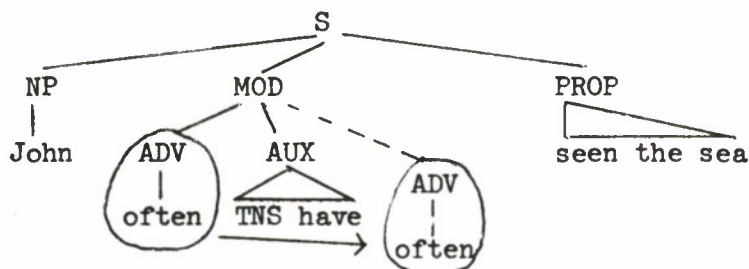
S.I. X ADV TNS { M
HAVE
BE } X
1 2 3 4

S.C. (1) Attach 2 as right sister of 3
(2) Erase original 2

COND: Optional

Example: John has often seen the sea.

Tree:



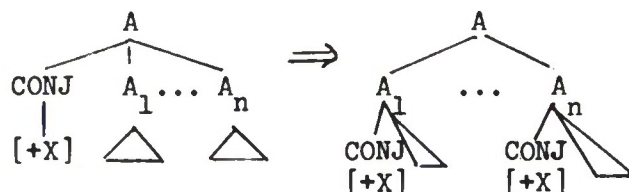
Ordering Arguments:

(1) There are no strong arguments for placing this rule here.

CONJ SPREAD SCHEMA¹

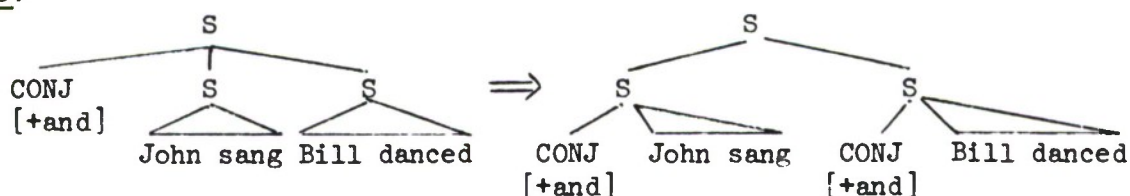
Order No. 53

Rule:



COND: Obligatory

Example:



Ordering Arguments:

- (1) Must precede AUX ATTRACT because it is one of the reasons why the AUX is attracted.
- (2) Must precede EITHER INSERT (CONJ p.110)
- (3) Must precede WH DEL (if there is such a rule), since the latter rule deletes the feature [+WH].

Note: CONJ
 [+OR]
 [+WH] is one of the CONJUNCTIONS spread by this schema. This

CONJ is used for alternative (Yes-No) questions.

¹This rule slightly changed from earlier version.

Rule:

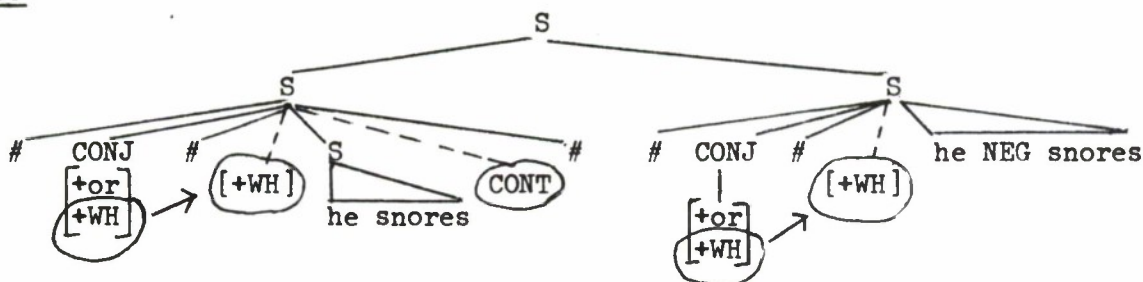
S.I. # CONJ[+WH] # X # CONJ[+WH] # X #
 1 2 3 4 5 6 7 8 9 10

- S.C. (1) Attach 3 and 8 as right sisters of 4 and 9 respectively
 (2) Erase 3 and 8 from complex symbols 2 and 7 respectively
 (3) Insert CONT as left sister of 6

COND: Obligatory

Example: Does he snore (or doesn't he snore)?

Tree:



Ordering Arguments:

- (1) Must precede WH DEL (if that rule is needed) for obvious reasons.
- (2) Must precede AUX ATTRACT, because [+WH] is one of the reasons why AUX is attracted.
- (3) (This rule may not be needed if CONJ SPREAD SCHEMA is changed as indicated on the preceding page.)

AUX ATTRACT

Order No. 55

Rule:

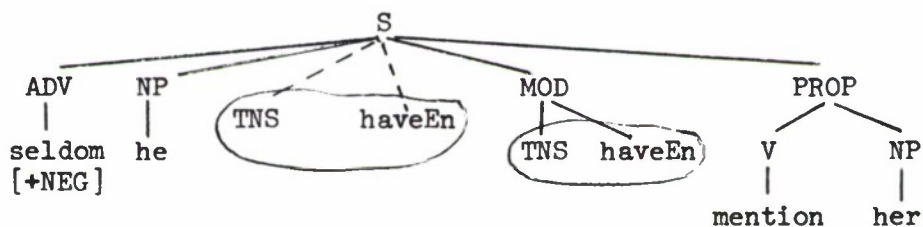
S.I. (S CONJ)* # [ADV NP] [X { [+WH] } X] X TNS ({ M HAVE BE }) (NEG) (ADV) X #
 1 2 3 4 5 6 7 8 9 10

S.C. (1) Attach 5,6,7 as right sister of 3
 (2) Erase original 5,6,7

COND: (1) If 6 = ∅, 9 = [+V -BE]X
 (2) Obligatory
 (3) Last cyclic

Example: Seldom has he mentioned her.
 Does he snore (or doesn't he snore)?

Tree:



Ordering Arguments:

(1) Must precede DO SUPPORT for obvious reasons. Therefore, the rule is last-cyclic, and not post-cyclic.

(2) Must precede WH DEL, since the WH provides the environment for AUX ATTRACT.

(3) Must precede NEG CONTRCN, because the latter rule operates on the environment created by AUX ATTRACT.

WH DEL (THIS RULE MAY NOT BE NEEDED)

Order No. 56

Rule:

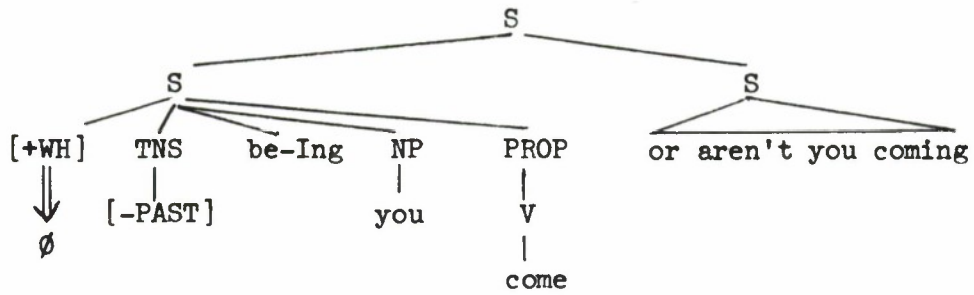
S.I. # [+WH] TNS X
 1 2 3

S.C. Erase 2

COND: (1) Last-cyclic
 (2) Obligatory

Example: Are you coming (or aren't you coming)?

Tree:



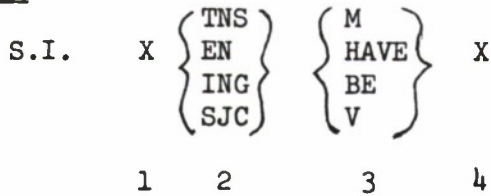
Ordering Arguments:

(1) (We can do without this rule if we change the CONJ SPREAD SCHEMA as indicated above.)

AFFIX SHIFT

Order No. 57

Rule:

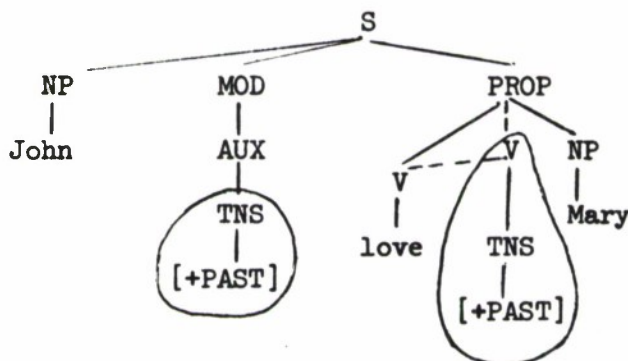


S.C. (1) Chomsky adjoin 2 to the right of 3
 (2) Erase original 2

COND: (1) Obligatory
 (2) Last-cyclic¹

Example: John loved Mary.

Tree:



Ordering Arguments:

- (1) Must precede DO SUPPORT in order to get
 - (a) John didn't go home.
 - (b) Did you see the man?

since affixes can only be shifted across elements marked [+VERBAL].

- (2) Must precede NEG CONTRCTN, because NEG contracts only in the environment $\left\{ \begin{matrix} [+TNS] \\ [+SJC] \end{matrix} \right\}$.

¹This rule must be last-cyclic, applying to all levels of the tree. This is because all embedding rules which deform AUX require deep structure AUX's for input and introduce new stems and affixes in their output; hence, the embedded AUX must not have undergone AFFIX SHIFT on its own cycle.

DO SUPPORT

Order No. 58

Rule:

S.I. X { TNS } X
 1 2 3
 { SJC }

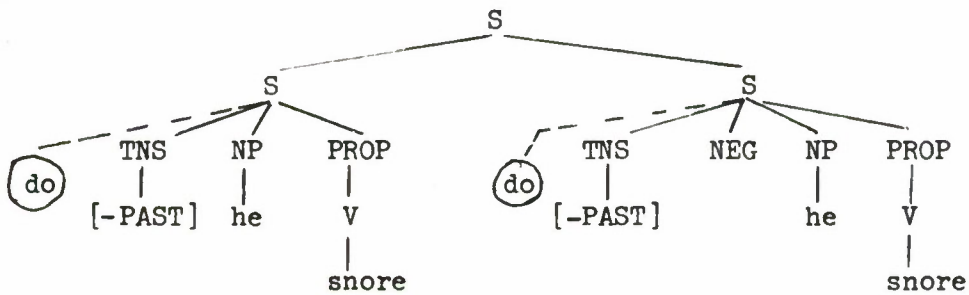
S.C. Attach do as left sister of 2

COND: (1) 2 is not dominated by { PERF }
 { PROG }
 { M }
 { V }

(2) Obligatory

Example: Does he snore (or doesn't he snore)?

Tree:



Ordering Arguments:

(1) Must precede NEG CONTRCTN for obvious reasons.

NEG CONTRCN

Order No. 59

Rule:

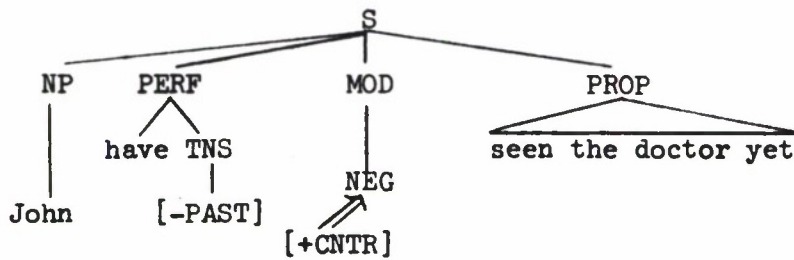
S.I. X {TNS} NEG { [+V] } X
 {SJC} { NP }
 1 2 3 4 5

S.C. Add [+CNTR] as feature to 3

COND: Obligatory if 4 = NP; optional otherwise

Example: John hasn't seen the doctor yet.

Tree:



Ordering Arguments:

(1) There are no strong arguments why this rule must precede any of the following rules; i.e., this is simply the earliest point at which this rule may be ordered.

TO DEL

Order No. 60

Rule:

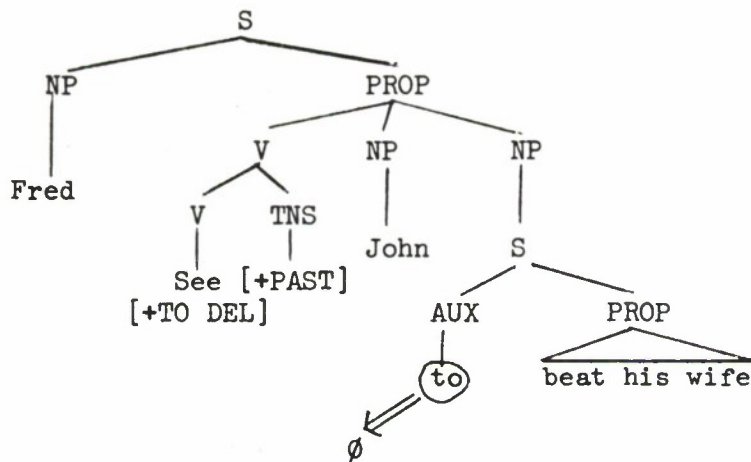
S.I. X V NP [S [AUX [to X]]]
 [+TO DEL]
 └──────────────────────────┘
 1 2 3

S.C. Erase 2

COND: Obligatory

Example: Fred saw John beat his wife.

Tree:



Ordering Arguments:

(1) There are no strong arguments for placing this rule here, since the rule is not ordered with respect to any rule other than TO REPLACE AUX, which it must follow and TO BE DEL, which it must precede. Because this rule is governed, it is not surprising that ordering it is not crucial.

TO BE DEL

Order No. 61

Rule:

S.I. X V NP [S [X to PROP [be X
 [+TOBEDEL]

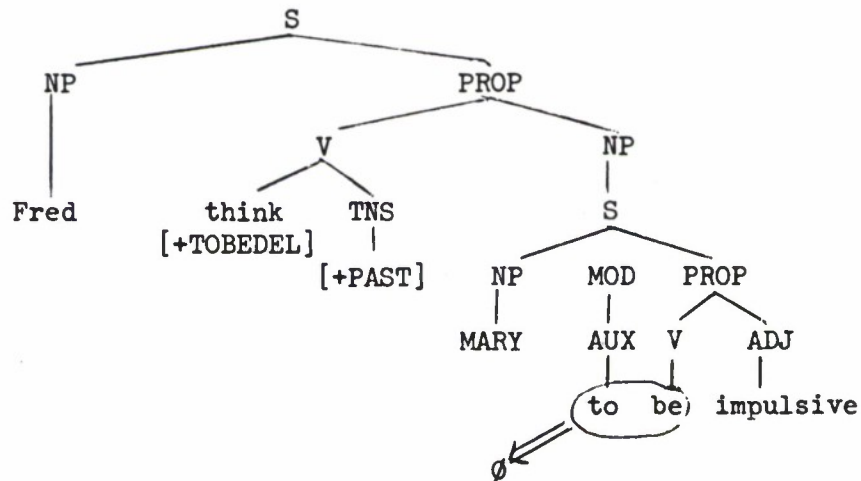
 1 2 3 4 5

S.C. Erase 2 and 4

COND: Obligatory

Example: Fred thought Mary (to be) impulsive

Tree:



Ordering Arguments:

(1) There are no strong arguments for placing the block TO DEL - TO BE DEL here. This is not surprising, because both rules are governed, and are ordered only with respect to TO REPLACE AUX, which they must follow.

PREP DEL

Order No. 62

Rule:

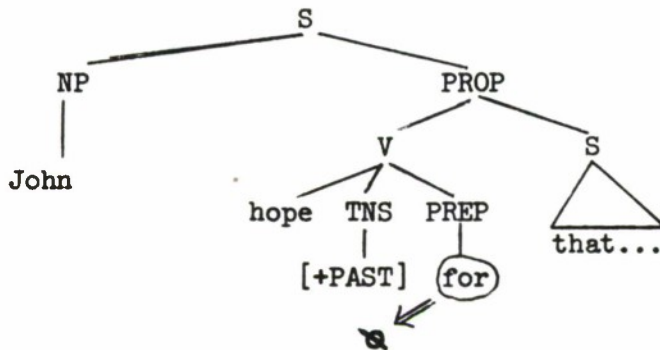
S.I. X PREP {that
PREP} X
1 2 3 4

S.C. Erase 2

COND: (1) 3 is not dominated by ART
(2) Obligatory

Example: John hoped that Mary would be here.

Tree:



Ordering Arguments:

None.

July 1969

SAMPLE LEXICON

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II. FIRST LEXICAL LOOKUP

A. Discussion

1. Introduction

There are many ways in which the present lexicon is provisional and exploratory. Late changes in a number of rules (particularly Nominalization) have prevented testing it for internal consistency; the decision not to include selectional restrictions systematically has left crucial areas unexplored; doubts about the number of cases in the proposition have made it difficult to resolve a number of questions; and the fact that the ordering of the rules had not been definitely fixed at the time the lexicon was compiled has meant that the redundancy rules are incomplete. Moreover, new problems arose during the compiling of the lexicon which it has not been possible to investigate fully in relation to the grammar as a whole.

However, this preoccupation with the problems does not mean that no progress has been made in specifying lexical entries. Small-scale computer tests of lexical insertion using interim grammars "AFESP Case Grammars I and II" were run in March and May 1968 respectively at Stanford University, employing J. Friedman's system (Friedman and Bredt, 1968) and the results were encouraging enough to suggest that the form of the lexical entries is at least

coherent. Since the time when the tests were run, the scope of the grammar has increased considerably with a consequent increase in the complexity of the lexical entries, but it is assumed that essentially the same format will continue to work.

2. Order of Insertion of Lexical Items

In the earliest kinds of transformational grammars lexical items were introduced by the terminal rewriting rules of the phrase structure component. Chomsky (1965) suggested two alternative ways of inserting lexical items so as to take into account strict subcategorization and selectional restrictions. In the first of these, the base component includes rewriting rules which introduce complex symbols (sets of specified syntactic features) so that the output of the base component is a "pre-terminal string" consisting of complex symbols and grammatical formatives. The lexicon consists of an unordered list of lexical entries, each of which is a phonological matrix for a lexical formative accompanied by a complex symbol containing a collection of specified syntactic features. A terminal string is formed by inserting for each complex symbol in the preterminal string a lexical formative whose complex symbol is not distinct from that of the given complex symbol. (Two symbols are not distinct if there is no feature which is positively specified in one symbol and negatively specified in the other.) However, the use of rewriting rules to introduce complex symbols into the preterminal string of a tree has the effect of changing the base component from a phrase structure grammar to a kind of transformational grammar. Consequently, Chomsky proposed an alternative method of inserting lexical entries. For this purpose, the base component is divided into a categorial component and a lexicon. The categorial component is context-free phrase structure grammar whose output is a string of dummy symbols, " Δ ", (to mark the position of the lexical categories) and grammatical formatives. The lexical items are then inserted by a substitution transformation where the complex symbol in the lexical entry is the structure index for the transformation, and the lexical item is appropriate for substitution if the tree meets the conditions of the structure index specified by the complex symbol.

It is the second of these alternatives that we have adopted, primarily for the practical reason that it permits greater latitude and flexibility in making and changing decisions about the lexicon while leaving the categorial component fixed. However, for a variety of reasons, both practical and theoretical, we have incorporated a feature of Friedman's system whereby verbs are inserted before nouns. Chomsky (1965: 114-115) argued against the insertion of verbs before nouns on the grounds that

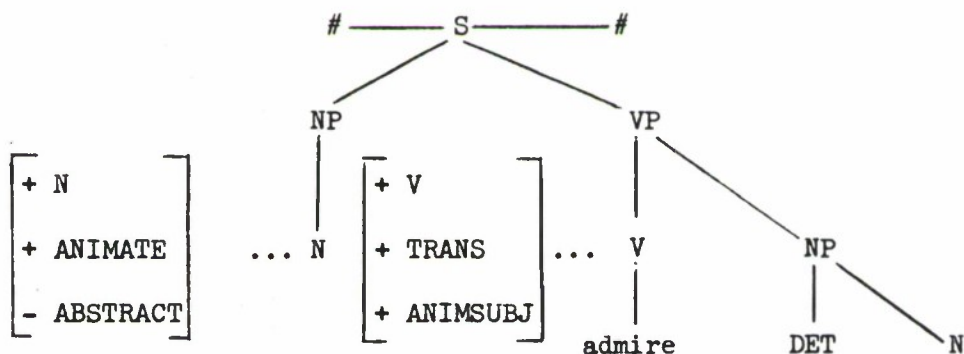
the complex symbols for the nouns would require such features as

[PRE- +[+ABSTRACT]-SUBJECT, PRE- +[+ANIMATE]-OBJECT]

and [POST- +[+ABSTRACT]-SUBJECT, POST- +[+ANIMATE]-OBJECT]

for the subject and object respectively of a verb such as frighten. Chomsky pointed out that these specifications were excessively redundant since "the feature [PRE- +[+ANIMATE]-OBJECT] is irrelevant to choice of Subject Noun, and the feature [POST- +[+ABSTRACT]-SUBJECT] is irrelevant to choice of Object Noun". Chomsky maintained that there was "no alternative to selecting Verbs in terms of Nouns ... rather than conversely." However, it turns out that the insertion of verbs first need not lead to such unwieldy specifications.

This is because of what Friedman has called "side effects."⁽¹⁾ Side effects are effects on other nodes in a tree after an item had been inserted. Thus, if verbs are inserted first, the selectional features in the complex symbol for the verb must be specified for the relevant category nodes in the tree. Friedman and Bredt give the example of admire, which is positively specified for animate subject, thus requiring the corresponding NP to be so specified.

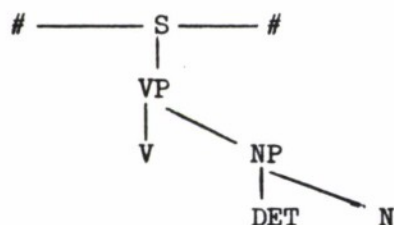


[Friedman and Bredt, 1968: 30]

Side effects thus achieve the same ends as were gained by Chomsky in making verbs selectionally dependent on nouns, so that, in many ways, Chomsky's system and Friedman's can be considered notational variants of each other.

(1) This notion is similar to that of "transfer features" as proposed by Weinreich (1966) to account for certain semantic questions of disambiguation, selectional deviance, etc.

We have provisionally adopted Friedman's approach because the notion of side effects seemed sufficiently promising to bear further exploration, particularly in terms of a deep case grammar. Moreover, the insertion of verbs first makes for much more economical testing in a computerized program, because random selection of nouns will lead to a large number of "impossible" strings in which no verb can be inserted. Nor is this a purely practical issue, since in a very real sense verbs are selectionally dominant. It must be admitted, however, that the theoretical implications of side effects need investigating more fully than we have been able to do thus far. Part of the difficulty is that we have not investigated selectional restrictions in any depth but even at this early exploratory stage it is clear that there are problems which we do not yet know how to handle. For example, as Friedman and Brecht point out, negatively specified selectional restrictions cause problems since a verb marked for [-ANIMATE SUBJECT] would be acceptable for insertion in a tree such as



[Friedman + Brecht, 1968:32]

though this is presumably wrong. Consequently, Friedman and Brecht conclude that contextual features containing selectional restrictions should be positively specified. We have adopted this principle but it causes problems for which we have at present no solution. The difficulty is not with the animacy of subjects since we are assuming that agents and datives are always [+ANIMATE], though as we shall see below this is not altogether correct.

The trouble arises with a selectional restriction which applies to an optional contextual feature. For example, the verb answer must take an agent and may or may not take a dative or neutral case:

- (1) (a) Nobody answered (AGT)
 (b) Nobody answered JOHN (DAT)
 (c) Nobody answered the question (NEUT)

If we now wish to place a selectional restriction on the verb to allow only an abstract object⁽¹⁾ this must be positively specified

(1) We are assuming that the verb in he answered the door is a different verb. The example is perhaps unfortunate because of sentences such as he answered the letter, which raises other questions, but it is the point being illustrated which is important not the particular example.

[+ [+ABSTRACT] OBJECT]. However, we have now assigned (by side effects) a feature to a constituent which may not be present. If we followed Chomsky, the restriction could be negatively specified, [- [+CONCRETE] OBJECT], and this would leave the presence of the object optional, but as we have seen negatively specified features cannot have side effects. This may be an important argument against the use of side effects, but we are still hopeful that the principle may be saved. What we need is some kind of device that will indicate that if optional feature $[F_i]$ is present then it is positively specified for feature $[F_i]$. We could call this device "implicational specification" and employ a notation such as $[\&F_i [+F_i]]$ which would mean $[+F_i]$ if and only if $[+F_i]$, otherwise $[-F_i]$. We could not use an α convention because, for reasons stated below, optional contextual features are left unspecified. However, we have not attempted to incorporate such a device into our specification of features because it is not absolutely clear that something of this nature will be required.

There are further problems in the ordering of lexical insertion which we have not resolved. In Friedman's algorithm embedded sentences are considered in lowest to highest, right to left order.⁽¹⁾ Lexical items are inserted for each lexical category node in the order specified in the lexicon (e.g. V N PREP ART, which would mean that verbs were to be inserted first, followed by nouns, prepositions, and articles). In each category, the order is left to right in the tree. This is the type of algorithm that was used in the test grammars I and II. However, since then certain problems have arisen. One of them is that the order of insertion of the category nodes has not yet been fixed, although we are assuming at the moment that verbs will be inserted before nouns. A more important point is that the use of side effects to specify selectional restrictions will in some cases require that subtrees be considered in highest to lowest order. For example, verbs such as persuade and force require that the verb in the lower embedded sentence be [STATIVE]:

- (2) (a) He persuaded them to be good
 (b) *He persuaded them to be delighted

(1) This is what the text says; in the accompanying diagram (p. 25) the order is shown as left to right. As the choice is presumably arbitrary and of no substantive significance the discrepancy is unimportant.

- (c) She forced him to eat it
- (d) *She forced him to know it

If such restrictions are to be specified by side effects, the verb in the higher sentence will have to be inserted first, which means top to bottom processing. On the other hand, these particular selectional restrictions are too weak to base such a decision on, since the feature [+/-STATIVE] itself is not particularly transparent and there are many putative [+STATIVE] verbs which can occur after persuade and force.

- (g) He persuaded them to like it
- (h) He forced them to respect him

It seems likely that the constraints imposed by these verbs are directly related to the Imperative, and only indirectly to the feature [STATIVE]. (1)

3. Form of Lexical Entries

The form of the lexical entries follows, in principle, the lines of the Stanford University Computational Linguistics Project (Friedman and Bredt, 1968). Each vocabulary word has associated with it a complex symbol containing four types of features: category features, contextual features, inherent features and rule features. A category feature denotes a lexical category such as noun or verb. In the present format each complex symbol contains only one positive specification for a category feature and this means that there is no disjunctive ordering of related lexical entries. Thus, each vocabulary word which belongs to more than one lexical category, e.g. torment, empty, has associated with it a separate complex symbol for each lexical category. Derivational processes have also been ignored in the present lexicon. Although, in principle, we would like to have a single complex entry for items such as produce, productive, production, product, etc. and though we have tentatively explored some possibilities in this direction, there are so many complex problems that nothing has reached a formalizable state. (See NOM for further discussion.)

(1) This whole question needs further investigation along the lines suggested by Gruber (1965), who posits causative agents, passive agents and non-agents. Some such classification is relevant to the feature [STATIVE], as can be seen in the following examples:

This report deals with export subsidies/*is dealing with
John deals with your requests usually/is dealing with...today
That matter does not concern me/*is not concerning me.
I concern myself with such matters/I am concerning myself

This problem is also related to that of Genericness (cf. Chapin, 1967). See below for the relationship between agency and stativity.

A number of the contextual features are represented by a "case-frame" (Fillmore, 1967a:35) in which the cases that can occur with a lexical item are shown. For example, Fillmore suggests the case-frame [___ DAT (INS) AGT] as a suitable one for the verb kill in, say, the farmer killed the chicken (with an axe), where the parentheses round the instrumental case show that the instrument may be omitted. However, this case-frame will not account for the sentence the poison killed the chicken, since there is no agent, which is obligatory in the above frame. This situation can be covered by a second entry for kill with the case-frame [___ DAT INS] where the instrument is now obligatory and the agent omitted. Fillmore suggests an ingenious notation for combining these two entries by means of linked parentheses, which indicate that at least one of the two elements thus specified must be chosen, [___ DAT (INS) AGT] to account for the sentences Mother is cooking the potatoes, the potatoes are cooking and Mother is cooking. However, cook may also optionally take a locative and an instrument, Mother is cooking on the stove, Mother is cooking with gas and these optional cases cannot be included in the case-frame with linked parentheses, given our decision that the order of cases is fixed, with LOC and INS both intervening between NEUT and AGT. Furthermore, we have (for reasons given below) chosen to specify obligatory contextual features positively, impossible contextual features negatively, and omit optional contextual features. Thus our case-frames for kill are:

[___ - NEUT + DAT - LOC + AGT]
 [___ - NEUT + DAT - LOC + INS - AGT]⁽¹⁾

(The other contextual features are listed in the complex symbol immediately following the case-frame.)

However, this means that the number of entries is multiplied as an artifact of the system of notation. Although there are a number of ways in which this multiplication of entries could be avoided we have not adopted one because the choice at this stage would be arbitrary and would have the effect of concealing the problem rather than solving it. On the other hand, there are also polysemous items which need separate entries for distinct readings in any lexicon not simply as a consequence of the notation used. For example, sick in John is being sick must

(1) Whether the second entry should be specified [-AGT] or left unspecified for AGT is a question which appears to be an artifact of the representation. (Unspecified uses fewer features but predicts an unrealized ambiguity.)

be kept distinct from sick² in John is sick. This corresponds to a difference in the case-frames:

SICK¹ +[____ -NEUT -DAT -LOC -INS +AGT]

SICK² +[____ -NEUT +DAT -LOC -INS -AGT]

There is, thus, an important difference between the two entries for kill, which are a consequence only of the lack of disjunctions of features and sets of features in the present system of notation, and the two entries for sick, which are semantically distinct, though related. We have accordingly chosen to indicate multiple entries of the kill type by superscript lower-case letters (e.g. KILL^a) and polysemous items of the sick type by superscript numerals (e.g. SICK¹). As might be expected, it is not always easy to decide whether two entries are substantively different or not. For example, we have chosen to represent sick in he is sick of arguing about linguistics as SICK³ although it might also belong with SICK². This is a traditional problem for lexicographers and no attempt has been made to deal with it systematically in the present lexicon. However, the problem forced itself on our attention because of the semantic nature of deep-case relationships (e.g. the relationship between the presence of AGENT and stativity -- see below) and the use of such semantically based syntactic features as [+/- FACT] and [+/- EMOT]. This is one of the ways in which the nature of the present sample lexicon has changed as a consequence of new rule features introduced into the grammar. Moreover, it has become increasingly obvious that the kind of features employed in the present grammar need to be defined much more precisely than they have been so far. One of the benefits of even a small sample lexicon such as the present one is that it draws attention to difficulties in feature specification which might otherwise be overlooked.

Inherent features denote qualities such as animate, human and abstract. Rule features refer to the transformations which can apply to the lexical item, e.g. EXTRA (position), TO-DEL(ation). (See NOM)

The number of inherent features will ultimately depend on where the dividing line between syntax and semantics is drawn. Since selectional rules are not included in the present grammar the number of inherent features needed is quite small and no attempt has been made to incorporate many of the features suggested in recent treatments of semantic theory (e.g., Lakoff, 1963; Weinreich, 1966). There is thus in this formulation no essential difference between inherent features and rule features.

4. Feature Specification

When Chomsky (1965:81-83) first proposed the use of features for the specification of lexical entries similar to the form of phonological entries in a distinctive feature matrix, he only allowed three values for a feature, namely, positive, negative or unspecified. However, it is probable that at least four and possibly five values are necessary. This is partly because different kinds of features may require different values to be specified. For example, contextual features and rule features differ in this respect.

For contextual features, positive specification [+F_i] means that such an element must occur in the proposition to allow insertion of the lexical item and negative specification [-F_j] means that the lexical item cannot be inserted in the presence of such an element. Similarly, for rule features positive or negative specification will indicate whether a given governed rule must or cannot apply. However, there is an important difference between the two kinds of features when the feature may be either positively or negatively specified for a single lexical item. In the case of contextual features such a feature is genuinely optional since its presence or absence does not affect the insertion of the lexical item. Thus, in the present lexicon optional contextual features are left unspecified since the lexical item can be inserted whether the element is present or not. For example, the verb cook, as mentioned above has two entries, one for the transitive verb in Mary is cooking the meat (on the stove) (with gas) and the other for the intransitive verb in the meat is cooking (on the stove). The case-frames for these two entries are

cook^a [____ - DAT +AGT]

cook^b [____ + NEUT - DAT - INS - AGT]

The first case-frame shows that cook^a must take an agent, cannot take a dative, and may or may not take neutral case, a locative or an instrument. The second case-frame shows that cook^b must take neutral case, cannot take a dative, instrument or agent, and may or may not take a locative. For contextual features, therefore, absence of specification means that the element may or may not be present.

The situation is rather different with respect to rule features. Let us consider the following examples:

- (3) (a) I saw him leave.
 (b) Mary helped him (to) do it.

- (c) The government wanted him to accept.
 (d) He avoided {looking } at her.
 {*to look }

We can see that with respect to the rule for TO-deletion (see NOM) there are not three possibilities but four. In (3a) the rule must apply, in (3b) the rule may or may not apply, in (3c) the rule does not apply, and in (3d) the rule is irrelevant since the structural description for the rule is not met. Items which never meet the structural description of the rule can be left unmarked but items where the rule is optional cannot be left unmarked for that feature because the rule will be specified as obligatory and will require the governing item to be positively specified. Consequently, in such cases we have "obligatory specification" [$*F_i$], which means that the value of the feature is left unspecified in the feature index of the complex symbol but must be specified either positively or negatively before the complex symbol is inserted in a tree. Thus, for example, the complex symbols for the verbs see, help, want and avoid will contain the following specifications for the rule feature TO-DEL(ation): (1)

<u>see</u>	<u>help</u>	<u>want</u>	<u>avoid</u>
[+ TO-DEL]	[* TO-DEL]	[- TO-DEL]	[____]

However, since the optionality of governed rules is handled by "obligatory specification" and there are no transformations which required a feature to be negatively specified, it is possible for negatively specified rule features to be left unmarked in the lexical entry. This is equivalent to a redundancy rule:

$$[uF_i] \Rightarrow [-F_i] \text{ where } F_i = \text{rule feature}$$

In this respect, rule features and inherent features are treated differently.

It is possible that a five-valued system might be necessary for inherent features. For example, [+HUMAN] nouns must be specified for gender in order to allow correct pronominalization; thus, boy, man and brother are [+MASC] and girl, woman and sister are [-MASC]. However, nouns such as neighbor, teacher, doctor and cousin can be specified either positively or negatively for the

(1) This is probably more mechanism than we need in many cases. However, our analysis has not yet reached the degree of subtlety where we can attempt to distinguish between major and minor rules. See Lakoff (1965) for a careful analysis of the possibilities.

feature [MASC], though it is not clear whether this is optional or obligatory specification. In any case, it is different from the situation with the [-HUMAN] higher mammals, e.g. horse, monkey and dog, which may be (but need not be) specified for gender. These in turn are possibly different from other forms of life which are seldom, if ever, specified for gender, e.g. fruitfly, worm and jellyfish. If five values are necessary we could adopt the following convention:

- (1) + positive specification
- (2) - negative specification
- (3) * obligatory specification
- (4) +/- optional specification
- (5) absence of specification would mean that the feature was irrelevant

This would provide (partial) entries of the following kinds:

<u>boy</u>	<u>girl</u>	<u>neighbor</u>	<u>mare</u>	<u>horse</u>	<u>fruitfly</u>
+ N +HUMAN + MASC	+ N +HUMAN - MASC	+ N +HUMAN *MASC	+ N -HUMAN -MASC	+ N -HUMAN +/-MASC	+ N -HUMAN

However, it is far from obvious that this is the right way to handle these relationships. In the first place, a sentence such as I haven't met the teacher yet feels intuitively unspecified for gender, although whenever an anaphoric pronoun is used it must be either he or she and not it. Secondly, he often occurs as an unmarked form with indefinites, e.g. everyone did his best, which does not imply that everyone is [+MASC]; everyone did his or her best sounds extremely pedantic and everyone did their best is often stigmatized as substandard, but the three sentences seem to be variants. Thirdly, there is the problem of it as an anaphoric pronoun for [+ANIMATE] [-HUMAN] nouns. As we have seen above many of these (perhaps all of them) can be specified for gender but they need not be. Perhaps we need a feature [+/-GENDER] such that [+GENDER] requires specification for the feature [MASC], whereas [-GENDER] nouns would not require such specification and be anaphorically replaced by it. This, however, will not help with nouns such as neighbor. Alternatively, we might have a feature [+/-FEMININE] in addition to the feature [+/-MASC] so that it would replace a noun which was negatively specified for both features. However, it seems ad hoc and counter-intuitive

to make nouns such as neighbor and teacher hermaphroditic with a positive specification for both features. In the absence of convincing evidence as to the correct choice we have decided to treat inherent features like rule features and have eliminated specification (4) above. This means that items such as horse must either be classed with neighbor or with fruitfly and the latter choice seems preferable. Finally, it is possible that selection of gender for items such as neighbor is fundamentally semantic (as McCawley (1966) has argued) and thus some of the above discussion may relate to a pseudo-problem, but within the scope of the present grammar we have no alternative to a syntactic solution.

As was stated above, optional contextual features are left unspecified whereas optional rule features and optional inherent features have "obligatory specification", indicating that the feature must be positively or negatively specified before the lexical item is inserted into a tree. This means that the entry for a lexical item will show the rule features and inherent features which are relevant to that item but will show only those contextual features which are positively or negatively specified, indicating that their presence or absence is obligatory. To know which contextual features are optionally allowed one must know the set of possible contextual features and consequently which features have been omitted from the feature index. For example, verbs and nouns which can take a neutral case may take a sentential complement, either dominated directly by neutral case or dominated by the fact (see NOM), unless such features are negatively specified. Accordingly, destroy, which does not allow a sentential complement of either kind, must be marked [-FACT] and [-S]; regret, which allows only factive sentential complements, must be marked [-S]; and expect, which allows only non-factive sentential complements, must be marked [-FACT]. This may appear confusing at first sight since factive verbs are identified by the specification [-S] and non-factive verbs by the specification [-FACT]. The absence of both negative specifications in a verb which takes a neutral case would mean that the verb takes both factive and non-factive sentential complements, but in the present lexicon such verbs have two entries.⁽¹⁾

Deep structure articles, pronouns and prepositions which will later be given their appropriate phonological representation in the Second Lexical Lookup are listed in the first lexicon under identifying labels in lower case letters between quotation marks, e.g. "the", "much/many". These labels are identificatory only

(1) The multiplication of entries is not altogether unmotivated here since there is clearly a difference between remember in He remembered telling her, which is factive, and remember in He remembered to tell her, which is non-factive.

since such items have no phonological representation until the Second Lexical Lookup.

5. Redundancy Rules

Redundancy rules help to reduce the number of feature specifications in a complex symbol whenever predictable features can be added by a general rule. The usual form of such rules is outlined in the GENERAL INTRODUCTION-FORMAL ORIENTATION (see under "Lexical Rules"). In addition we allow complex symbols on the left in redundancy rules and such complex symbols may include a feature with "obligatory specification" ($[*F_1]$). For example,

$$\left[\begin{array}{l} + N \\ * HUMAN \end{array} \right] \Rightarrow [+ANIMATE]$$

since any noun that is specified for the feature HUMAN must be ANIMATE.⁽¹⁾ It is important to note that this rule is equivalent to the three rules:

$$\left[\begin{array}{l} + N \\ + HUMAN \end{array} \right] \Rightarrow [+ANIMATE]$$

$$\left[\begin{array}{l} + N \\ - HUMAN \end{array} \right] \Rightarrow [+ANIMATE]$$

$$\left[\begin{array}{l} + N \\ * HUMAN \end{array} \right] \Rightarrow [+ANIMATE]$$

since the redundancy rules apply before the insertion of a lexical item in a tree and thus there may be items where the value "*" has not yet been expanded. Examples for the above feature are man [+HUMAN], horse [-HUMAN], and champion [*HUMAN].

(1) It is important to note, as Friedman and Bredt point out (1968:10), that rules of the kind used by Chomsky (1965:82), e.g. [+ANIMATE]/[+/-HUMAN], are not redundancy rules but generative rules, since the feature HUMAN is certainly not optional for all animates (if any).

Fillmore (1967a:34) suggests redundancy rules of the following kind: (1)

$$\begin{bmatrix} + N \\ + AGT \end{bmatrix} \Rightarrow [+ ANIMATE]$$

$$\begin{bmatrix} + N \\ + DAT \end{bmatrix} \Rightarrow [+ ANIMATE]$$

However, in the present grammar it would be impossible to interpret such rules since syntactic cases are not assigned to nouns and even if they were this would not have happened by the time the redundancy rules apply. On the other hand, it would be useful to capture the generalization that agents and datives are usually [+ ANIMATE] and also that locatives and instruments are usually [- ANIMATE]. It is unfortunately not true that this is always the case:

- (4) (a) The wind opened the door.

$$\begin{bmatrix} + DAT \\ - ANIMATE \end{bmatrix}$$
- (b) John robbed a bank.

$$\begin{bmatrix} + LOC \\ + ANIMATE(?) \end{bmatrix} \quad \begin{bmatrix} + INS \\ + ANIMATE(?) \end{bmatrix}$$
- (c) He hit me in the face with his fist.

$$\begin{bmatrix} + LOC \\ + ANIMATE \end{bmatrix}$$
- (d) There are thieves in the crowd.

It is clear that the problem is not simply one of the character of the cases but also involves the little explored nature of inherent features such as [ANIMATE]. In the above examples, it may be that natural forces such as wind which are the principal class of [-ANIMATE] nouns that can appear as agents are in fact a subclass of [+ ANIMATE] nouns. Similarly, many [-ANIMATE] nouns such as bank which have human associations can often take the genitive and otherwise behave in some sense like [+ANIMATE] nouns. On the other hand, fist and face, though parts of an animate being, share few selectional restrictions with nouns such as man, horse and fruitfly, and thus they are [-ANIMATE]. Perhaps the feature we need should not

(1) This is the form of the rules in the pre-publication version. In the published version Fillmore gives a different formulation which is closer to our rules given below.

be labelled ANIMATE but something like AUTONOMOUS. This might exclude collectives such as crowd. In any event, the question of redundancy rules on cases is complicated by the fact that we are working with such ill-defined features.

It was also thought at one time that locatives and instruments might be predictably [-ABSTRACT]. However, this turns out to be wrong:

- (5) (a) He found the idea in one of Chomsky's footnotes. $\begin{bmatrix} + \text{ LOC} \\ + \text{ ABSTRACT} \end{bmatrix}$
- (b) He destroyed my argument with several counter-examples. $\begin{bmatrix} + \text{ INS} \\ + \text{ ABSTRACT} \end{bmatrix}$

There is, nevertheless, an interesting constraint on verbs such as find which can take a [+ABSTRACT] locative only with a [+ABSTRACT] object:

- (c) He found the pencil in a drawer. $\begin{bmatrix} + \text{ NEUT} \\ - \text{ ABSTRACT} \end{bmatrix}$ $\begin{bmatrix} + \text{ LOC} \\ - \text{ ABSTRACT} \end{bmatrix}$
- (d) *He found the idea in a drawer. $\begin{bmatrix} + \text{ NEUT} \\ + \text{ ABSTRACT} \end{bmatrix}$ $\begin{bmatrix} + \text{ LOC} \\ - \text{ ABSTRACT} \end{bmatrix}$
- (e) *He found the pencil in a footnote. $\begin{bmatrix} + \text{ NEUT} \\ - \text{ ABSTRACT} \end{bmatrix}$ $\begin{bmatrix} + \text{ LOC} \\ + \text{ ABSTRACT} \end{bmatrix}$

Since many lexical items in locative position can be either [+ABSTRACT] or [-ABSTRACT], the concreteness of the object will determine the concreteness of the locative:

- (f) He found the pencil in a book. $\begin{bmatrix} + \text{ LOC} \\ - \text{ ABSTRACT} \end{bmatrix}$
- (g) He found the idea in a book. $\begin{bmatrix} + \text{ LOC} \\ + \text{ ABSTRACT} \end{bmatrix}$

Any redundancy rule that would capture this relationship would presumably also require neutral case to precede locative case in the insertion of lexical items. At the present stage of uncertainty as regards the ordering of lexical insertion this is conceivable and it seems reasonable that the order should not be completely arbitrary, but it is too early to know what consequences this would have.

An alternative proposal has been put forward by Matthews (1968) where dative case "refers to a person or thing which is affected in some way by the action of the verb", whereas in the neutral case (absolute case, in Matthews's terminology) the referent is acted upon by the action of the verb but "not affected by this action". Thus Matthews contrasts

- (6) (a) (AGT) The workman (DAT) broke the window (INS) with a hammer.
- (b) (AGT) The doctor (NEUT) broke the bad news (DAT) to the child's (INS) parents with a telegram.

Matthews argues that the bad news is not in the dative case because it is not affected by the action of the verb, that is, it "is the same before and after it is broken to the child's parents". Although this captures a distinction between neutral and dative that is not handled in the UESP grammar, the examples are not convincing. In the first place, it seems unlikely that we are dealing with the same verb in he broke the window and he broke the news since the former can occur freely with physical objects of a certain degree of rigidity (Fillmore, 1967b:25), but the latter is extremely restricted even with abstract objects:

- (7) (a) He broke { the table
the stick
his leg
a cup }
- (b) He broke { the news
the story
*the idea
*a proposal
*his thoughts }

Secondly, there is no apparent parallelism between the examples of the dative case in

- (8) (a) He broke the window. (DAT)
- (b) He broke the news to the child's parents. (DAT)

nor can they be switched.

- (c) *He broke the child's parents.
- (d) *He broke something to the window.

Thirdly, Matthews makes use of pseudo-cleft constructions to distinguish between neutral case and dative case:

- (9) (a) What the workman did to the window was break it.
 (b) What the doctor did with the bad news was break it to the child's parents.

However, pseudo-cleft constructions with appended prepositional phrases can be so freely generated that it is dangerous to base decisions of this kind on them:

- (c) What John did $\left\{ \begin{array}{l} \text{to} \\ \text{about} \\ \text{with} \end{array} \right\}$ the window was $\left\{ \begin{array}{l} \text{break it} \\ \text{oil the hinges} \\ \text{replace the glass} \end{array} \right\}$
 (d) What John did $\left\{ \begin{array}{l} \text{about} \\ \text{with} \end{array} \right\}$ the bad news was $\left\{ \begin{array}{l} \text{keep quiet} \\ \text{tell his father} \\ \text{about it} \\ \text{suppress it} \\ \text{telephone his mother} \end{array} \right\}$

Accordingly, we have not adopted Matthew's use of dative though semantically, at least, the distinction between an object which is affected by the action of the verb and one which is not is clearly important. However, we do not feel that it can best be captured in the present kind of case-grammar by a contrast between neutral and dative.

There are a few residual problems with apparently [-ANIMATE] datives. For example, in the following sentences

- (10) (a) John gave the house a coat of paint.
 (b) He attributed his success to good looks.
 (c) This evidence lends credence to his argument.

House, good looks and argument all seem possible datives. However, in (10a) house is clearly not a dative in the same sense as Peter in

- (d) John gave Peter his old car.
 (e) John gave his old car to Peter.
 (f) John gave Peter his old car and then took it back again.

since there are no equivalent examples with house to (10e,f)

- (g) *I gave a coat of paint to the house. (1)
- (h) *I gave the house a coat of paint and then took it back again.

In fact, house must be a locative with obligatory objectivalization:

I gave a coat of paint on the house ⇒ I gave the house a coat of paint.

Supporting evidence that this is the right analysis comes from the sentences

- (i) I put a coat of paint on the house.
- (j) *I put the house a coat of paint.
- (k) I gave the house a coat of paint and then took it off again.

This will, of course, be a different lexical item from give in (10d-f). The other two cases are harder to account for without adding to the number of cases or making some apparently ad hoc changes to the rules. In the present analysis they remain as datives.

In Test Grammar II the following rules were proposed:

$$\begin{bmatrix} + N \\ + ANIMATE \end{bmatrix} \Rightarrow \begin{bmatrix} - INS NOUN \\ - LOC NOUN \end{bmatrix}$$

$$\begin{bmatrix} + N \\ - ANIMATE \end{bmatrix} \Rightarrow \begin{bmatrix} - AGT NOUN \\ - DAT NOUN \end{bmatrix}$$

where INS NOUN, LOC NOUN, AGT NOUN, DAT NOUN were abbreviations of contextual features which amounted to "able to appear as head noun in an INS (LOC, AGT, DAT respectively) case frame." Although, as we have seen, these rules are not completely accurate we have decided to retain them until they can be replaced by rules which better capture the generality which lies behind them.

(1) The usual restriction with [-ANIMATE] nouns is exactly the opposite, I brought the water to the table/*I brought the table the water, though there are some problems as to whether table is a dative or a directional locative.

Another suggestion which Fillmore has made regarding the intrinsic content of cases is his claim that only verbs which have an agent in the sentence are non-stative:

The transformation which accounts for the 'true imperatives' can apply only to a sentence containing an A[gent]; and the occurrence of B[enefactive] expressions, progressive aspect, etc., are themselves dependent on the presence of A[gent]. No special features indicating 'stativity' need to be added to verbs, because only those verbs which occur in P[ropositions] containing an A[gent] will show up in those sentences anyway.

[Fillmore, 1967a:42]

This is an important claim since it would, if correct, support the view that deep cases reflect semantic relations in an economical and non-ad hoc manner. However, the statement as it stands is clearly inadequate and is contradicted by one of the examples given by Fillmore two pages before it, namely the potatoes are cooking, where there is no agent in the sentence to account for the progressive, unless Fillmore means that there is a deleted agent in this sentence. It turns out that there are two main groups of possible exceptions to Fillmore's claim:

- (11) Verbs in the progressive without an animate subject
 - (a) The string is breaking.
 - (b) The potatoes are cooking.
 - (c) This material is losing its sheen.
 - (d) The train is arriving.
 - (e) The water is filling the barrel.
 - (f) The garden is swarming with bees.

- (12) Verbs in the progressive with an animate subject which is putatively in the dative case
 - (a) He is dying.
 - (b) John is dreaming.
 - (c) I am hoping to hear from them very soon.
 - (d) I'm regretting it already.
 - (e) She is expecting that there will be a big crowd.
 - (f) They are hating it.

Although such examples show that Fillmore's claim cannot be accepted as it stands, it does not prove that there is no correlation between stativity and lack of agent in the sentence since stativity is not merely a matter of tolerance for the progressive aspect. We will consider the examples in (11) first since the absence of an animate subject otherwise coincides with the criteria for stativity:

- (13) Imperative
 (a) *Break, string!
 (b) *Cook, potatoes!
 (c) *Lose your sheen, material!
 (d) *Arrive, train!
- (14) Do-something
 (a) *What the string did was break.
 (b) *What the potatoes did was cook.
 (c) *What the material did was lose its sheen.
 (d) *What the train did was arrive.
- (15) Do-so
 (a) *The string broke and the rope did so, too.
 (b) *The potatoes cooked and the meat did so, too.
 (c) *This material lost its sheen and that material
 did so, too.
 (d) *The train arrived and the bus did so, too.
- (16) Suasion
 (a) *I persuaded the string to break.
 (b) *I forced the potatoes to cook.
 (c) *I made the material lose its sheen.
 (d) *I ordered the train to arrive.
- (17) Agentive adverbials
 (a) *The string willingly broke.
 (b) *The potatoes cooked carefully.
 (c) *The material deliberately lost its sheen.
 (d) *The train carefully arrived.
- (18) In-order-to
 (a) *The string broke in order to open the parcel.
 (b) *The potatoes cooked in order to feed the people.
 (c) *The material lost its sheen in order to be less
 ostentatious.
 (d) *The train arrived in order to disgorge its passengers.

It is clear that by the above criteria the verbs in (11) are non-stative in spite of the fact that they can take the progressive aspect.

Nevertheless, there remains the problem of why the stative verbs in (11), if they are stative, can take the progressive aspect. The confusion arises because BE+ING has more than one use:

- (19) (a) Look, the young bird is actually flying. (Now)
 (b) John is flying to London next week. (Future)

- (c) John is flying to Europe or Africa these days.
(Habitual within a limited period.)
- (d) John is always flying off somewhere. (Uttered
as a complaint)

If we look at the examples in (11) we find that it is not simply a matter of BE+ING:

- (20) (a) *The string is breaking tomorrow.
(b) *The string is breaking these days.
(c) The string is always breaking.
(d) *The potatoes are cooking tomorrow.
(e) *The potatoes are cooking these days.
(f) *The potatoes are always cooking.
(g) *This (piece of) material is losing
its sheen tomorrow.
(h) *This (piece of) material is losing its sheen
these days.
(i) *This (piece of) material is always losing its sheen.
(j) The train is arriving tomorrow.
(k) *The train is arriving these days.
(l) *The train is always arriving.

However, note also

- (m) ?This (kind of) material is losing its sheen these
days.
(n) This (kind of) material is always losing its sheen.
(o) The train is arriving late these days.
(p) The train is always arriving late.

There is, apparently, some relationship between the classes of verbs and the uses of BE+ING. In connection with such problems Vendler (1967:97-121) has some interesting observations to make. As well as distinguishing between "activity" verbs and "state" verbs, Vendler has two additional categories, "achievement" verbs and "accomplishment" verbs. Vendler's "activity" verbs, e.g. run, walk, swim, push, etc., are unambiguously in the category of non-stative verbs, and his "state" verbs, e.g. know, believe, like, hate, etc., correspond closely to stative verbs. It is the other two categories which are especially interesting. Vendler gives as examples of "accomplishment" verbs ⁽¹⁾ paint a picture, build a house, draw a circle, give a class, play a game of chess, etc., in all of which the perfective use of the verbs requires the completion of a finite task. In other words, if John begins to

(1) The fact that Vendler gives examples of verb phrases rather than verbs is an indication that we are dealing with a fairly complex situation.

draw a circle but stops before the task is completed we cannot say John drew a circle, while with an "activity" verb such as run there is no such requirement. As examples of "achievement" verbs Vendler gives recognize, realize, identify, find, win the race, reach the summit, etc. At first sight, it is not obvious that "achievement" verbs differ significantly from "accomplishment" verbs but the basis of the distinction is that "achievement" verbs take place at an instant of time, whereas "accomplishment" verbs take place over a period of time. Vendler's example is that if it takes you an hour to write a letter you can say at any time during that hour I am writing a letter, but if it takes you three hours to reach the summit you cannot say at any moment during that period I am reaching the top. Since it might be argued that the latter remark is possible, it might be safer to say that it would at least be inappropriate as a reply to the question What are you doing?

However, perhaps more important that the distinction between "achievement" and "accomplishment" verbs is the difference of both of them from "activity" and "state" verbs. Vendler argues that "activity" and "state" verbs do not require unique or definite periods of time. By this, Vendler apparently means that "activity" and "state" verbs do not place definite limits on the duration of the action or state. For example, he is swimming in the sea and he knows the answer do not imply a specific termination of the "activity" of swimming or the "state" of knowing. On the other hand, he is writing a book and he is winning the race require that the terminal point has not been reached; that is, that the book is not yet finished nor the race over.

If we look back at the examples in (11) we find that (11a) and (11c) are similar to Vendler's "achievement" verbs and that (11b), (11d) and (11e) are similar to Vendler's "accomplishment" verbs. If this identification is correct it might help to explain why such verbs allow BE+ING when it is used to indicate a process of indefinite duration. In (11a) the process must end when the string breaks and in (11c) when the train arrives; in (11b), (11d) and (11e) the time will come when the potatoes are cooked, the barrel is filled and the material has lost its sheen. At such a point the process will stop and it will no longer be appropriate to use BE+ING.

It is possible that there is some better classification of such verbs than "achievement" and "accomplishment" but Vendler's distinction at least supports the view that the occurrence of BE+ING with the verbs in (11) is not in itself sufficient grounds for excluding them from the category of stative verbs, in view of the overwhelming evidence from the other criteria that they are in fact stative, and we accordingly treat them as such. However, this also means that the occurrence of BE+ING is not always predictable on the basis of stativity. This seems a small price to pay compared with the advantage of predicting stativity on the basis of deep case relationships.

The verbs in (11), with one exception, are therefore considered to be [+STATIVE] although such a feature will not be marked in the lexicon since it is totally predictable. The recalcitrant example is (11f). For convenience, we repeat the example:

(11) (f) The garden is swarming with bees.

This is clearly closely related to

(21) Bees are swarming in the garden.

However, there are disagreements as to whether (11f) and (21) are paraphrases. Those who argue that they are not synonymous point to the difference in (22):

(22) (a) The garden is swarming with people.
(b) *?People are swarming in the garden.

Those who reject (22b) claim that swarm in (21) is used in a technical or literal sense, which is inappropriate for people, whereas in (11f) and (22a) it is used in a metaphorical sense. A similar distinction can be seen in

(23) (a) The cat was crawling with lice.
(b) Lice were crawling on the cat.

However, if we consider bees, people and lice as agents in these sentences regardless of whether they occur as surface subjects or not the verbs are predictably [-STATIVE], which is what we want. The difference between (11f) and (21) can then be seen as a difference in topic focus, either involving a slight change in meaning or setting up two different verbs, though the latter view seems unnecessary.

We will now consider the examples in (12), namely, the sentences with an animate subject which is putatively in the dative case although the verb is in the progressive. These examples caused considerable trouble at first because the criteria for dative subjects are the same as those for stative verbs; that is, we wish to say that an animate subject is in the dative case if the verb does not require active voluntary participation on the part of the subject. Thus see and hear take dative subjects in contrast to look and listen, which have agentive subjects. However, the presence of the progressive in the sentences of (12) raised doubts about the validity of the criteria involved and it was not at first clear whether the notion of passive, involuntary participation outweighed the use of the progressive, or vice versa. The discussion of

the use of BE+ING in (11), however, shows that there may be an explanation for the apparent discrepancy between the two sets of criteria, though the situation is considerably more complicated than with the inanimate subjects.

In the first place, it is not always clear to what extent mental states or activities are under voluntary control. For example,

- (24) (a) I forget his name.
 (b) *I am forgetting his name.
 (c) *He persuaded me to forget what had happened.
 (d) He told me to forget what had happened.
 (e) Forget it!
 (f) I tried to forget it.
 (g) ?He deliberately forgot to tell her.

In (24a-c) it is clear that the sense of forget is something that is not under voluntary control, whereas in (24d-g) it somehow is. In (24d-f) forget is roughly equivalent to ignore and in (24g), if the sentence is acceptable, it is closer to neglect. Thus, in the sentences of (24) it is not so much the basic meaning of forget which predicts the degree of voluntary control, it is rather the use of the verb which predicts the meaning.

In the second place, Vendler distinguishes "achievements that start activities from achievements that initiate a state" (1967:112). His illustration of the latter is when someone who is trying to find the solution to a mathematical problem suddenly shouts out Now I know it! Another example of know used in an achievement sense might be

- (25) He told me to know the answer by tomorrow.

It is clear that know in (25) is roughly equivalent to learn and it is interesting that in other languages this distinction may be expressed by an aspectual difference rather than by lexical suppletion as is usually the case in English. In Spanish, for example, lo sabía ayer means 'I knew it yesterday', whereas lo supe ayer means 'I found out about it yesterday'.

Accordingly, although it has not been possible to work out the full implications of the decision, we are assuming that stativity is predictable from the absence of an agent in the sentence and that there are convincing explanations for

the apparent exceptions. One of these explanations is that verbs which normally take dative subjects may occasionally be found with agentive subjects with a corresponding effect on the semantic interpretation of the verb. Thus, know is listed in the lexicon as taking a dative subject although in (25) it takes an agent. This is similar to the manner in which the count/non-count distinction may be overridden in a sentence. For example, although butter is marked [-COUNT] it appears in the following examples as a count noun:

- (26) (a) This is a very fine butter.
 (b) Some butters are more expensive than others.

The fact that not everyone will accept the sentences in (26) is not important. The point is that if they are acceptable they must be interpreted in a count sense. Similarly, (25) may not be acceptable to everyone but if it is acceptable it requires an agentive subject for know. Consequently, we consider the examples in (12) to have dative subjects.

Thus stative verbs such as know, believe, understand have no agent in the case-frame and take the dative as subject. Other verbs such as annoy, amuse, scare, frighten need two entries, one with an agent where the action of the verb is done "deliberately", the other without an agent where the action of the verb "happens" without the deliberate intention of an agent. The first is non-stative and the second stative:

- (AGT)
 (27) (a) John (deliberately) frightened Mary (by bursting a balloon behind her back).
 (AGT)
 (b) John was frightening Mary (by bursting balloons behind her back).
 (INS)
 (c) John (accidentally) frightened Mary (by opening the door suddenly).
 (INS)
 (d) The noise frightened Mary.
 (INS)
 (e) *John was (accidentally) frightening Mary.
 (INS)
 (f) *The noise was frightening Mary. (1)

(1) This sentence is, of course, perfectly grammatical in the sense "Mary was growing more and more frightened because of the noise" but it is ungrammatical if taken as parallel to "was frightening" in (27b). This is another example of the complex relationship between BE-ING and stativity.

6. Problems with Cases

As mentioned above there are six cases in the present grammar but it is clear that more will be needed since there are many sentences which cannot be generated by the grammar in its present form. The number of cases that may ultimately be required is uncertain for two reasons. The first is the doubt as to the status of the category adverb and the relationships of such a putative category both inside and outside of the proposition. The second reason for uncertainty is that the addition of one case may have implications for the adoption or exclusion of another. In the light of such doubts the following discussion is purely exploratory.

Among the possible additional cases that have been suggested are BEN(efactive), COM(itative), DEG(ree), MAN(ner), MEANS, REF(erential), RES(ultative), SOU(rce) and TIME. For example,

- (28) (a) I built a house for father
(BEN)
(COM)
- (b) He brought a friend with him.
(DEG)
- (c) He liked it extremely.
(MAN)
- (d) The chancellor spoke threateningly.
- (e) He drained the water from the tank with a hose
(MEANS)
by sucking on it like a straw.
(REF)
- (f) She wouldn't tell us anything about the accident.
(RES)
- (g) He broke the chocolate bar into three pieces.
(SOU)
- (h) My mother taught me Russian from a book.
(TIME)
- (i) The concert lasted for three hours.

For each of these cases, however, there is considerable uncertainty as to its scope and definition. As we have seen above, there are problems even with dative, agent, instrument and locative, which are far from intuitively simple categories, but the problems are multiplied with most of the cases illustrated in (28). For instance, the Benefactive in (28a) can have at least three different interpretations:

- (i) He'll get the rent from it each
I built a house for father. month. (for the benefit of)
- (ii) His lumbago has been bothering him.
(in place of)

- (iii) We'll move him in on the first
of the month. (intended/
reserved for)

Moreover, (i) and (iii) might well be datives since the same interpretations would apply to I built father a house. This would simply mean that build had an idiosyncratic dative preposition since the sentence I built a house for myself could not have this interpretation but only those of (i) and (iii). In the absence of a clearer notion of Benefactive either inside or outside the proposition we have chosen to exclude it from the propositional frame and treat examples (i) and (iii) above as datives.

A similar argument regarding the reflexive applies to (28b) where the ungrammaticality of *he brought it with himself shows that the Comitative is also outside of the proposition. Moreover, there seem to be no verbs which would either obligatorily require or exclude such a case as a contextual feature⁽¹⁾ and thus no justification for including it within the frame.

The situation is quite different with regard to Manner and Degree. Although there are no verbs which require such cases⁽²⁾ there are many verbs which exclude them:

- | | | |
|------|--|---|
| (29) | {
John killed him
He died
I heard a noise
He keeps it in his drawer
} | {
*completely
*utterly
*slightly
*moderately
} |
| (30) | {
He knows the answer
She resides in Sacramento
John is intelligent
The room is empty
} | {
*carefully
*easily
*slowly
*freshly
} |

(1) The situation is complicated by the fact that with him in he brought it with him is pleonastic since the sense of with is contained in bring.

(2) This is an overstatement because of examples such as The guards treated the prisoners badly/*The guards treated the prisoners, but it is not clear how many verbs are like treat in this respect.

It seems likely that Manner and Degree should be included in the propositional frame but lack of an analysis of adverbs outside of the proposition has so far prevented us from incorporating them.

Of the other cases illustrated in (28) Time certainly and possibly Resultative are closely related to adverbials, while Means is often difficult to distinguish from instrumental or a third possibility which might be called Method. Although we have investigated some of the possibilities we have not found convincing arguments for the exclusion or inclusion of these cases and we shall not discuss them further here. The remaining two cases illustrated in (28) raise interesting problems. The inclusion of Source as a case would affect the character of the locative case. For example, a verb such as drain may objectivize the locative case or subjectivize the neutral case:

- | | | | |
|------|-------|-------------------------------------|-------|
| | (AGT) | (NEUT) | (LOC) |
| (31) | (a) | He drained the water from the tank. | |
| | (b) | He drained the tank. | |
| | (c) | The water drained from the tank. | |

However, there is also the possibility of an additional prepositional phrase which might be considered a second locative:

- (d) He drained the water from the tank into the barrel.
 (e) The water drained from the tank into the barrel.

However, it is not possible to objectivize this second locative:

- (f) *He drained the barrel from the tank.

One solution would be to consider from the tank as Source and into the barrel as the sole locative. One disadvantage of this is that it loses the parallel with

- (g) The water in the tank drained into the barrel.

which seems much closer to (31e) than

- (h) The water from the tank drained into the barrel.

On the other hand, we could allow two locatives with [+DIRECTIONAL] verbs, one [+TO], the other [-TO]. This would help with all transitive verbs that are "motional" in Gruber's sense:

- (32) (a) He brought his old car from England to the United States.
 (b) The Martians have sent a rocket from their planet to the earth.

It would also help with the distinction between locative and dative in

- (c) He sent a letter from New York to London and it got there in two days.
- (d) He sent a letter from New York to his brother (in London) and it got there in two days.
- (e) He sent his brother a letter from New York.
- (f) *He sent London a letter from New York.

The last sentence would be unstarred if London is an abbreviation for our branch in London or some other entity with human associations, but then it could properly be treated as a dative. From such examples it is not clear that there are grounds for setting up a case such as Source. There are, however, examples of a quite different sort, to which we now turn.

It is tempting to look to deep cases for the expression of converse relations. For example, if John bought a car from Peter implies Peter sold a car to John and vice versa, and similarly if John borrowed ten dollars from Bill implies Bill lent ten dollars to John and vice versa, one way to express these paraphrase relations would be if John, Peter and Bill were in the same case in each of the pairs of sentences:

- (33) (a) (AGT) Peter sold a car to John. (NEUT) (DAT)
- (b) (DAT) John bought a car from Peter. (NEUT) (AGT)
- (c) (AGT) Bill lent ten dollars to John. (NEUT) (DAT)
- (d) (DAT) John borrowed ten dollars from Bill. (NEUT) (AGT)

In the first place, it is important to note that the verbs buy and borrow are not [+STATIVE] and this would contradict the claim that only verbs with agentive subjects are [-STATIVE]. Moreover, if it were not for the converse relations there would seem no good syntactic reason for considering the subjects of sentences (33b) and (33d) as other than agents. In addition, the number of lexical items which have strict converse relations of this kind is fairly small and hardly justifies the inclusion of such a principle in the grammar. On the other hand, if we do not adopt an analysis of this kind we are left without a suitable case for from Peter in (33b) and from Bill in (33d). This could be Source, if such a case were admitted into the proposition. At the moment, we are rejecting the analysis which shows the converse relations and we are also not yet clear enough about the nature of the possible case Source to include it.

Sentence (28f), which illustrates a possible Referential case, also raises other interesting questions. For convenience, we repeat the example:

- (REF)
- (28) (f) She wouldn't tell us anything about the accident.

In the first place, either the indefinite noun or the prepositional phrase can be omitted but not both:

- (34) (a) She wouldn't tell us anything.
 (b) She wouldn't tell us about the accident.
 (c) *She wouldn't tell us. (Only possible as a response to a question.)

However, the indefinite and the prepositional phrase could also appear alone:

- (d) Anything about the accident would interest them.

or with the other indefinites

- (e) Nothing about the accident appeared in the paper.
 (f) Something about the accident is bound to leak out.

and the prepositional phrase cannot appear with the verb if the object is a definite pronoun:

- (g) *She wouldn't tell it to us about the accident.

Thus only example (34b) suggests that the prepositional phrase is a case on the verb; the other examples make it appear to be a case on the indefinite noun. However, we have no clear notion of the specific constraints that the dummy noun might have, though it seems that there are some. To take another set of examples:

- (35) (a) I read something by Chomsky.
 (b) ?I ate something by Chomsky.
 (c) Something by Chomsky was on the table.
 (d) *Something to Chomsky arrived yesterday. (??)
 (e) *Something into the city arrived yesterday.
 (f) Something from Chomsky arrived yesterday.
 (g) Something on the table must have caught her eye.

These could perhaps be analyzed as reduced relative clauses, but then the problem is simply pushed one step back to that of the occurrence of prepositional phrases in the predicate of a copular sentence, which we have regarded elsewhere as cases on a predicate noun, bringing the problem back full circle.

The problems with the configuration of cases in the proposition would be greatly reduced if we adopted a proposal put forward by Matthews (1968). Matthews suggested that instead of having the phrase structure component assign cases to the several noun phrases introduced in the expansion of the proposition, the proposition could be expanded into a verb followed by any number of phrases (up to a certain number). Then the cases would be assigned to the phrases by the particular choice of a verb from the lexicon, which would be marked for the number of phrases that may appear with it and the cases to be assigned to each of them. This suggestion is attractive in many ways and should be further explored but at the moment we retain a Fillmore-type base with the cases assigned by the phrase structure component.

A special problem has arisen with the extension of case grammar to the structure of the NP, having to do with apparent "inherent cases" of certain nouns.

In testing an early sample lexicon on Friedman's system, it was noted at various stages that finding nouns of given types (e.g. animate nouns, instrument nouns) that could take a wide range of cases was sometimes difficult. The easiest cases are deverbal abstract nouns such as shooting, destruction, etc., which generally take the same cases as the corresponding verb, although instrument seems to be generally excluded from noun complements. Other abstract nouns with a variety of cases are also fairly easy to find (the sort for which Lakoff et al posit an underlying verb, e.g. idea, novel, portrait). Animate nouns which take agent are much harder to find than those which take other cases; and this would seem readily explainable by the fact that most animate nouns which take cases at all are themselves "agent nouns". Thus owner, donor, and guide seem to be agent nouns derived from corresponding verbs (Latin in one case), and accordingly take all the cases of the corresponding verbs except agent. Similarly for the non-deverbal king, father, ambassador, nurse. The few found so far that allow agent seem themselves to be datives, i.e. captive, victim, employee, delegate. But emissary seems to allow both a dative and an agent.

The same problem appears from a different angle when we note that author takes book as an object, while book takes author as an agent. And triples such as employment, employer, employee; lease, lessor, lessee clearly have a deverbal member, an agent member, and a dative member. The problem thus boils down to the fact that many of what we have thus far regarded as head nouns are really case-marked themselves. One approach to a solution, would be to have headless NP's with rules for inserting one of the case-marked nouns into head position. This would obviously require some pretty complex mechanisms. Perhaps something more moderate could be worked out with redundancy rules. In any case, the area needs and deserves much study. In our present grammar,

no representation of these apparent "inherent cases" is given; it is simply taken (incorrectly) as an accidental fact that author takes an object, book an agent, etc.

It is clear from the foregoing that many problems remain to be solved in specifying lexical entries and the sample lexicon which follows makes no claims to do more than illustrate some of the information which a more developed lexicon ought to include, but as the other areas of the grammar are more fully explored we hope to expand the lexicon and make it more representative than we have been able to do so far.

July 1969

B. Sample First Lexicon

Redundancy Rules

$$\left[\begin{array}{l} + V \\ + NEUT \\ + DAT \\ + LOC \\ + INS \\ + AGT \end{array} \right] \Rightarrow [-ESS]$$

$$\left[\begin{array}{l} + V \\ + ESS \end{array} \right] \Rightarrow [+NEUT -DAT -LOC -INS -AGT]$$

$$\left[\begin{array}{l} + V \\ - S \end{array} \right] \Rightarrow [*EXTRA]$$

$$\left[\begin{array}{l} + N \\ * HUMAN \end{array} \right] \Rightarrow [+ANIMATE]$$

$$\left[\begin{array}{l} + N \\ + ABSTRACT \end{array} \right] \Rightarrow \left[\begin{array}{l} -ANIMATE \\ -HUMAN \end{array} \right]$$

$$\left[\begin{array}{l} + N \\ + ANIMATE \end{array} \right] \Rightarrow \left[\begin{array}{l} -INS NOUN \\ -LOC NOUN \end{array} \right]$$

$$\left[\begin{array}{l} + N \\ - ANIMATE \end{array} \right] \Rightarrow \left[\begin{array}{l} -AGT NOUN \\ -DAT NOUN \end{array} \right]$$

$$\left[\begin{array}{l} + ART \\ + DEF \end{array} \right] \Rightarrow [-ATTACH]$$

$$\left[\begin{array}{l} + ART \\ + DEM \end{array} \right] \Rightarrow \left[\begin{array}{l} +N-DEL \\ -WH \end{array} \right]$$

$$\begin{bmatrix} + \text{ART} \\ - \text{DEF} \\ + \text{DEM} \end{bmatrix} \Rightarrow \begin{bmatrix} +\text{ATTACH} \\ -\text{N-DEL} \end{bmatrix}$$

$$\begin{bmatrix} + \text{ART} \\ - \text{DEF} \end{bmatrix} \Rightarrow [-\text{GEN}]$$

$$\begin{bmatrix} + \text{ART} \\ + \text{DEM} \end{bmatrix} \Rightarrow [-\text{GEN}]$$

$$\begin{bmatrix} + \text{ART} \\ [\quad] \end{bmatrix} \Rightarrow \begin{bmatrix} -\text{PRO} \\ -\text{INDET} \\ -\text{NEG} \\ -\text{PL} \end{bmatrix}$$

"a/sm"

+ ART
 - DEF
 - DEM
 * SPEC
 - ATTACH
 * COUNT

ACCUSE

+ V
 - ADJ
 + [_____ +NEUT +DAT -LOC -INS +AGT]
 - FACT
 - IMPER
 - WH-S
 * PASS
 + GER
 + DAT → OBJ
 + PREP NEUT of

ACKNOWLEDGE¹

+ V
 - ADJ
 + [_____ +NEUT -LOC -INS +AGT]
 - FACT
 - IMPER
 - WH-S
 * PASS
 + STAT-REDUCT
 * RAISE-TO-OBJ

ACKNOWLEDGE²

+ V
 - ADJ
 + [_____ +NEUT -LOC -INS +AGT]
 - S
 * PASS

ADVOCATE

+ V
 - ADJ
 + [_____ +NEUT -LOC -INS +AGT]
 - FACT
 - INDIC
 - WH-S
 * PASS
 * GER

ADMIT¹

+ V
 - ADJ
 + [_____ +NEUT -LOC -INS +AGT]
 - FACT
 - IMPER
 - WH-S
 * PASS
 + STAT-REDUCT
 + RAISE-TO-OBJ

ADMIT²

+ V
 - ADJ
 + [_____ +NEUT -LOC -INS +AGT]
 - S
 * PASS

AFTER

+ PREP
 + TEMPORAL
 - AFFECT

AIM

+ V
 - ADJ
 + [_____ -NEUT -DAT +LOC +AGT]
 * PASS
 * INS → OBJ

ALL

+ QUANT
 + DIST
 + N-DEL
 - ATTACH
 - [[+DEF] _____]
 - [[+SPEC] _____]
 - INTEGER
 + SHIFT

ALWAYS

+ ADV
 + TEMPORAL
 - DEF
 - SPEC

AMBASSADOR

+ N
 + [_____ -NEUT -DAT -INS -AGT]
 + COMMON
 + COUNT
 + HUMAN

AMUSE^a

+ V
 - ADJ
 + [_____ -NEUT +DAT -LOC +INS -AGT]
 * PASS
 * EMOT

AMUSE^b

+ V
 - ADJ
 + [_____ -NEUT +DAT -LOC +AGT]
 * PASS

AMUSED

+ V
 + ADJ
 + [_____ -NEUT +DAT -LOC -AGT]
 + PREP INS at

AMUSEMENT

+ N
 + [_____ -NEUT -LOC -AGT]
 + COMMON
 - COUNT
 + ABSTRACT
 + PREP INS at

"and"

+ CONJ
 + AND

ANGRY

+ V
 + ADJ
 + [_____ -NEUT +DAT -LOC +INS -AGT]
 + DAT → SUBJ
 + PREP INS at

ANNOUNCE

+ V
 - ADJ
 + [_____ +NEUT -LOC -INS +AGT]
 - S
 * PASS

ANNOUNCEMENT

+ N
 + [_____ -LOC -INS]
 + COMMON
 + COUNT
 + ABSTRACT

ANNOY^a

+ V
 - ADJ
 + [_____ -NEUT +DAT -LOC +INS -AGT]
 * PASS
 * EMOT

ANNOY^b

+ V
 - ADJ
 + [_____ -NEUT +DAT -LOC +AGT]
 * PASS

ANNOYANCE

+ N
 + [_____ -NEUT -LOC -AGT]
 + COMMON
 - COUNT
 + ABSTRACT
 + PREP INS at

ANNOYED

+ V
 + ADJ
 + [_____ -NEUT +DAT -LOC -AGT]
 + PREP INS at

ANSWER

+ V
 - ADJ
 + [_____ -LOC -INS +AGT]
 - FACT
 - IMPER
 - WH-S
 * PASS
 + [[+ABSTRACT] OBJ]

ANSWER

+ N
 + [_____ -LOC -INS]
 - FACT
 - IMPER
 - WH-S
 + COMMON
 + COUNT
 + ABSTRACT
 + [[+ ABSTRACT] OBJ]
 + PREP NEUT about

ANTICIPATE

+ V
 - ADJ
 + [_____ +NEUT -DAT -LOC
 -INS +AGT]
 - FACT
 - IMPER
 - WH-S
 * PASS
 * GER
 + STAT-REDUCT
 * RAISE-TO-OBJ
 + [[+ABSTRACT] OBJ]

ANXIOUS¹

+ V
 + ADJ
 + [_____ +DAT -LOC -INS -AGT]
 - FACT
 - INDIC
 - WH-S
 + EMOT
 + EQUI-NP-DEL

ANXIOUS²

+ V
 + ADJ
 + [_____ +DAT -LOC -INS -AGT]
 - S
 + PREP NEUT about

ANY

+ QUANT
 + DIST
 + ATTACH
 + N-DEL
 - [[+DEF] _____]
 - [[+SPEC] _____]
 - INTEGER
 - SHIFT

APPEAR

+ V
 - ADJ
 + [_____ +NEUT -LOC -INS -AGT]
 - FACT
 - IMPER
 - WH-S
 * RAISE-SUBJ

APPRECIATE

+ V
 - ADJ
 + [_____ +NEUT +DAT -LOC -INS -AGT]
 - S
 * PASS
 + [[+ABSTRACT] OBJ]

APPRECIATION

+ N
 + [_____ -LOC -INS -AGT]
 - S
 + COMMON
 - COUNT
 + ABSTRACT

ARM

+ N
 + [_____ -NEUT -LOC -INS -AGT]
 + COMMON
 + COUNT
 - ABSTRACT
 - ANIMATE

ARRIVE

+ V
 - ADJ
 + [_____ +NEUT -DAT -INS -AGT]
 - FACT
 - S

ASK¹

+ V
 - ADJ
 + [_____ +NEUT -LOC -INS +AGT]
 - FACT
 - INDIC
 * PASS
 + EQUI-NP-DEL
 * DAT → OBJ
 + PREP DAT of

ASK²

+ V
 - ADJ
 + [_____ +NEUT -LOC -INS +AGT]
 - FACT
 - S
 * PASS
 + DAT → OBJ
 + PREP NEUT for

ASSUME

+ V
 - ADJ
 + [_____ +NEUT -DAT -LOC -INS +AGT]
 - FACT
 - IMPER
 - WH-S
 * PASS
 + STAT-REDUCT
 * RAISE-TO-OBJ

ASSUMPTION

+ N
 + [_____ -DAT -LOC -INS]
 - FACT
 - IMPER
 - WH-S
 + COMMON
 + COUNT
 + ABSTRACT
 + [[+ABSTRACT] OBJ]

AT

+ PREP
 + LOC
 - DIR

AUTHOR

+ N
 + [_____ -DAT -LOC -INS -AGT]
 - FACT
 - S
 + COMMON
 + COUNT
 + HUMAN

AVAILABLE

+ V
 + ADJ
 + [_____ +NEUT -INS -AGT]
 - FACT
 - S

AVOID

+ V
 - ADJ
 + [_____ +NEUT -DAT -LOC
 -INS +AGT]
 - FACT
 - IMPER
 - WH-S
 + AGT-IDENT
 * PASS
 + GER
 + EQUI-NP-DEL
 + AFFECT

AWARE

+ V
 + ADJ
 + [_____ +NEUT +DAT -LOC
 -INS -AGT]
 - S

AWARENESS

+ N
 + [_____ -LOC -INS -AGT]
 - S
 + COMMON
 - COUNT
 + ABSTRACT

"be"

+ V
- ADJ
+ [_____ +ESS]
- FACT
- S

BEARER

+ N
+ [_____ -INS -AGT]
- FACT
- S
+ COMMON
+ COUNT
+ HUMAN
* MASC

BEFORE

+ PREP
+ TEMPORAL
+ AFFECT

BEGIN¹

+ V
- ADJ
+ [_____ +NEUT -DAT -LOC -INS -AGT]
- FACT
- IMPER
- WH-S
* GER
+ RAISE-TO-SUBJ

BEGIN²

+ V
- ADJ
+ [_____ +NEUT -DAT -INS +AGT]
- FACT
- S
* PASS

BEGINNING

+ N
+ [_____ -DAT -LOC -INS]
- FACT
- S
+ COMMON
+ COUNT
+ ABSTRACT

BELIEF

+ N
+ [_____ -LOC -INS -AGT]
- FACT
- IMPER
- WH-S
+ COMMON
+ COUNT
+ ABSTRACT
+ PREP NEUT in

BELIEVE

+ V
- ADJ
+ [_____ +NEUT +DAT -LOC
-INS -AGT]
- FACT
- IMPER
- WH-S
* PASS
+ STAT-REDUCT
* RAISE-TO-OBJ

BETWEEN

+ PREP
+ LOC
- DIR

BIG

+ V
 + ADJ
 + [_____ +NEUT -DAT -LOC -INS -AGT]
 - FACT
 - S

BODY

+ N
 + PRO
 + ATTACH
 + HUMAN
 * MASC
 + COUNT
 - PLURAL

BOOK

+ N
 + [_____ +NEUT -DAT -LOC -INS +AGT]
 - FACT
 - S
 + COMMON
 + COUNT
 * ABSTRACT
 - ANIMATE
 * OBJ-DEL
 + PREP NEUT { about
 on

BOTH

+ QUANT
 + DIST
 + N-DEL
 - ATTACH
 - [[+DEF] _____]
 - [[+SPEC] _____]
 - INTEGER
 + SHIFT

BOY

+ N
 + [_____ -NEUT -LOC -INS -AGT]
 + COMMON
 + COUNT
 + HUMAN
 + MASC

BREAK

+ V
 - ADJ
 + [_____ +NEUT -DAT -LOC]
 - FACT
 - S
 * PASS

BRIDGE

+ N
 + [_____ -NEUT -DAT -INS -AGT]
 + COMMON
 + COUNT
 - ABSTRACT
 - ANIMATE
 + PREP LOC over .

"but"

+ CONJ
 + BUT

BUTTER

+ N
 + COMMON
 - COUNT
 - ABSTRACT
 - ANIMATE

CAN

+ MODAL

CANONIZATION

+ N
 + [_____ -NEUT -LOC -INS]
 + COMMON
 + COUNT
 + ABSTRACT

CANONIZE

+ V
 - ADJ
 + [_____ -NEUT +DAT -LOC -INS +AGT]
 * PASS

CAREFUL¹

+ V
 + ADJ
 + [_____ -DAT -LOC -INS +AGT]
 - FACT
 - IMPER
 * EQUI-NP-DEL

CAREFUL²

+ V
 + ADJ
 + [_____ -DAT -LOC -INS +AGT]
 - S
 + PREP NEUT about

CAT

+ N
 + [_____ -NEUT -LOC -INS -AGT]
 + COMMON
 + COUNT
 - HUMAN
 * MASC

CERTAIN¹

+ V
 + ADJ
 + [_____ +NEUT -DAT -LOC -INS
 -AGT]
 - FACT
 - IMPER
 - WH-S
 * RAISE-TO-SUBJ

CERTAIN²

+ V
 + ADJ
 + [_____ +NEUT +DAT -LOC -INS
 -AGT]
 - FACT
 - IMPER
 - WH-S
 * GER

CHAIR

+ N
 + COMMON
 + COUNT
 - ABSTRACT
 - ANIMATE

CHAMPION

+ N
 + [_____ -DAT -INS -AGT]
 - FACT
 - S
 + COMMON
 + COUNT
 * HUMAN
 * MASC

CHANCE

+ N
 + [_____ -LOC -INS -AGT]
 - FACT
 - IMPER
 - WH-S
 * EMOT¹
 * GER
 + EQUI-NP-DEL
 + COMMON
 + COUNT
 + ABSTRACT
 + PREP NEUT of

CHIEF

+ N
 + [_____ -NEUT -LOC -INS -AGT]
 + COMMON
 + COUNT
 + HUMAN
 * MASC

CHIEF

+ CHIEF

CHILD

+ N
 + [_____ -NEUT -LOC -INS -AGT]
 + COMMON
 + COUNT
 + HUMAN
 * MASC

COME

+ V
 - ADJ
 + [_____ -NEUT -DAT -LOC
 -INS +AGT]

COMMAND¹

+ V
 - ADJ
 + [_____ +NEUT -LOC -INS +AGT]
 - FACT
 - INDIC
 - WH-S
 * PASS
 + EQUI-NP-DEL

COMMAND²

+ V
 - ADJ
 + [_____ +NEUT -DAT -LOC
 -INS +AGT]
 - FACT
 - S
 * PASS

CONFIDENT

+ V
 + ADJ
 + [_____ +NEUT +DAT -LOC -INS -AGT]
 - FACT
 - IMPER
 - WH-S
 * GER

CONSIDER¹

+ V
 - ADJ
 + [_____ -NEUT +DAT -LOC -INS -AGT]
 - FACT
 - IMPER
 - WH-S
 * PASS
 + STAT-REDUCT
 * TO-BE-DEL
 + RAISE-TO-OBJ

CONSIDER²

+ V
 - ADJ
 + [_____ +NEUT -DAT -LOC -INS +AGT]
 - FACT
 - WH-S
 * PASS
 * GER

CONTAIN

+ V
 - ADJ
 + [_____ +NEUT -DAT +LOC -INS -AGT]
 - FACT
 - S
 + LOC → SUBJ

CONTINUE

+ V
 - ADJ
 + [_____ +NEUT -DAT -LOC
 -INS +AGT]
 - FACT
 - IMPER
 - WH-S
 + AGT-INDENT
 * PASS
 * GER
 * EQUI-NP-DEL

COOK^a

+ V
 - ADJ
 + [_____ +NEUT -DAT -INS -AGT]
 - FACT
 - S
 + [[-ABSTRACT] OBJ]

COOK^b

+ V
 - ADJ
 + [_____ +NEUT -DAT +AGT]
 - FACT
 - S
 * PASS
 * OBJ-DEL
 + [[-ABSTRACT] OBJ]

COVER

+ V
 - ADJ
 + [_____ -NEUT -DAT +LOC +INS]
 - FACT
 - S
 * PASS
 + [[-ABSTRACT] OBJ]

CROSS

+ V
 - ADJ
 + [_____ -NEUT -DAT +LOC -INS +AGT]
 * PASS
 + LOC → OBJ
 [across]

DANGEROUS

+ V
 + ADJ
 + [_____ +NEUT +DAT -LOC -INS -AGT]
 - FACT
 - IMPER
 - WH-S
 * EMOT
 + AFFECT

DAUGHTER

+ N
 + [_____ -NEUT +DAT -LOC -INS -AGT]
 + COMMON
 + COUNT
 + HUMAN
 - MASC

DEAD

+ V
 + ADJ
 + [_____ -NEUT +DAT -LOC -INS -AGT]

DEATH

+ N
 + [_____ -NEUT -LOC -INS -AGT]
 + COMMON
 * COUNT
 + ABSTRACT

DEDUCE

+ V
 - ADJ
 + [_____ +NEUT +DAT -LOC
 -INS -AGT]
 - FACT
 - IMPER
 * PASS
 + STAT-REDUCT
 * RAISE-TO-OBJ

DEMAND

+ V
 - ADJ
 + [_____ +NEUT -LOC -INS +AGT]
 - FACT
 - INDIC
 - WH-S
 + AGT-IDENT
 * PASS
 * EQUI-NP-DEL
 + PREP DAT of

DEMAND

+ N
 + [_____ -LOC -INS]
 - FACT
 - INDIC
 - WH-S
 + AGT IDENT
 * EQUI-NP-DEL
 + COMMON
 + COUNT
 + ABSTRACT

DEMOLISH

+ V
 - ADJ
 + [_____ +NEUT -DAT -LOC +AGT]
 - FACT
 - S
 * PASS

DEPLORABLE

+ V
 + ADJ
 + [_____ -NEUT -LOC +INS -AGT]
 * EMOT

DEPLORE

+ V
 - ADJ
 + [_____ +NEUT +DAT -LOC -INS -AGT]
 - S
 * PASS
 * EMOT

DESTROY

+ V
 - ADJ
 + [_____ +NEUT -DAT -LOC +AGT]
 - FACT
 - S
 * PASS

DESTRUCTION

+ N
 + [_____ -DAT -LOC]
 - FACT
 - S
 + COMMON
 - COUNT
 + ABSTRACT

DIE

+ V
 - ADJ
 + [_____ -NEUT +DAT -LOC -INS -AGT]

DIFFICULT¹

+ V
 + ADJ
 + [_____ +NEUT -DAT -LOC
 -INS -AGT]
 - FACT
 - IMPER
 - WH-S
 + EMOT
 * RAISE-OBJ-TO-SUBJ
 + AFFECT

DIFFICULT²

+ V
 + ADJ
 + [_____ -DAT -LOC -INS +AGT]
 - S
 + AFFECT
 + PREP NEUT about

DISCOVER

+ V
 - ADJ
 + [_____ +NEUT -DAT -LOC
 -INS +AGT]
 - FACT
 - IMPER
 * PASS
 + STAT-REDUCT
 * RAISE-TO-OBJ

DOG

+ N
 + [_____ -NEUT -LOC -INS -AGT]
 + COMMON
 + COUNT
 - HUMAN
 * MASC

DOUBT

+ V
 - ADJ
 + [_____ +NEUT +DAT -LOC -INS -AGT]
 - FACT
 - IMPER
 - WH-S
 * PASS
 + AFFECT

DOUBTFUL

+ V
 + ADJ
 + [_____ +NEUT +DAT -LOC -INS -AGT]
 - FACT
 - IMPER
 - WH-S
 * GER
 + PREP NEUT about

DRAIN^a

+ V
 - ADJ
 + [_____ -DAT +LOC +AGT]
 - FACT
 - S
 * PASS
 * LOC → OBJ
 [from]
 + [[-ABSTRACT] OBJ]
 + [[-ANIMATE] OBJ]

DRAIN^b

+ V
 - ADJ
 + [_____ -DAT +LOC -INS -AGT]
 - FACT
 - S

DREAM

+ V
 - ADJ
 + [_____ +NEUT +DAT -LOC -INS
 -AGT]
 - FACT
 - IMPER
 - WH-S
 * PASS
 + PREP NEUT about

EACH

+ QUANT
 + DIST
 - ATTACH
 * N-DEL
 - [_____ [+PL]]
 - [_____ [-COUNT]]
 - [[+DEF] _____]
 - [[+SPEC] _____]
 - INTEGER
 + SHIFT

EAGER

+ V
 + ADJ
 + [_____ +DAT -LOC -INS -AGT]
 - FACT
 - INDIC
 - WH-S
 + EMOT
 + EQUI-NP-DEL

EAGERNESS

+ N
 + [_____ -DAT -LOC -INS]
 - FACT
 - INDIC
 - WH-S
 + EMOT
 + EQUI-NP-DEL
 + COMMON
 - COUNT
 + ABSTRACT
 + PREP NEUT for

EARLY

- + ADV
- + TEMPORAL

EASINESS

- + N
- + [_____ -DAT -LOC -INS -AGT]
- FACT
- S
- + COMMON
- COUNT
- + ABSTRACT

EASY

- + V
- + ADJ
- + [_____ +NEUT -DAT -LOC -INS -AGT]
- FACT
- INDIC
- WH-S
- + EMOT
- * RAISE-OBJ-TO-SUBJ

EAT

- + V
- ADJ
- + [_____ +NEUT -DAT -LOC +AGT]
- FACT
- S
- * PASS
- * OBJ-DEL
- + [[-ABSTRACT] OBJ]

EITHER

- + QUANT
- + DIST
- ATTACH
- * N-DEL
- [_____ [+PL]]
- [_____ [-COUNT]]
- [[+DEF] _____]
- [[+SPEC] _____]
- INTEGER
- SHIFT

ELAPSE

- + V
- ADJ
- + [_____ +NEUT -DAT -LOC
-INS -AGT]
- FACT
- S

ELECT

- + V
- ADJ
- + [_____ +NEUT +DAT -LOC
-INS +AGT]
- FACT
- IMPER
- WH-S
- * PASS
- + STAT-REDUCT
- + TO-BE-DEL
- + RAISE-TO-OBJ

ELECTION

- + N
- + [_____ -NEUT -LOC -INS]
- + COMMON
- + COUNT
- + ABSTRACT

EMISSARY

+ N
 + [_____ -NEUT -LOC -INS]
 + COMMON
 + COUNT
 + HUMAN
 * MASC

EMPHASIZE

+ V
 - ADJ
 + [_____ +NEUT -LOC -INS +AGT]
 - S
 * PASS

EMPLOY

+ V
 - ADJ
 + [_____ -NEUT +DAT -LOC -INS +AGT]
 * PASS

EMPLOYEE

+ N
 + [_____ -NEUT -DAT -LOC -INS]
 + COMMON
 + COUNT
 + HUMAN
 * MASC

EMPLOYER

+ N
 + [_____ -NEUT -LOC -INS -AGT]
 + COMMON
 + COUNT
 + HUMAN
 * MASC

EMPLOYMENT

+ N
 + [_____ -NEUT -LOC -INS]
 + COMMON
 - COUNT
 + ABSTRACT

EMPTY^a

+ V
 - ADJ
 + [_____ -DAT +LOC +AGT]
 - FACT
 - S
 * PASS
 * LOC → OBJ
 [from]
 + [[-ABSTRACT] OBJ]
 + [[-ANIMATE] OBJ]

EMPTY^b

+ V
 - ADJ
 + [_____ -NEUT -DAT +LOC -INS
 -AGT]

ENJOY

+ V
 - ADJ
 + [_____ +NEUT +DAT -LOC -INS
 -AGT]
 - FACT
 - IMPER
 - WH-S
 * PASS
 + GER

ENTER

+ V
 - ADJ
 + [_____ -NEUT -DAT -INS +AGT]
 * PASS
 + LOC → OBJ
 [in]

ENTRANCE

+ N
 + [_____ -NEUT -DAT -INS -AGT]
 + COMMON
 + COUNT
 - ABSTRACT
 - ANIMATE

EVERY

+ QUANT
 + DIST
 + ATTACH
 - N-DEL
 - [_____ [+PL]]
 - [_____ [-COUNT]]
 - [[+DEF] _____]
 - [[+SPEC] _____]
 - INTEGER
 - SHIFT

EXPECT¹

+ V
 - ADJ
 + [_____ +NEUT -DAT -LOC -INS +AGT]
 - FACT
 - IMPER
 - WH-S
 * PASS
 + FUT-REDUCT
 * RAISE-TO-OBJ

EXPECT²

+ V
 - ADJ
 + [_____ +NEUT -LOC -INS +AGT]
 - FACT
 - INDIC
 - WH-S
 * PASS
 + EQUI-NP-DEL
 + PREP DAT of

EXPLAIN^a

+ V
 - ADJ
 + [_____ +NEUT -LOC -INS +AGT]
 - FACT
 - IMPER
 * PASS

EXPLAIN^b

+ V
 - ADJ
 + [_____ +NEUT -LOC +INS -AGT]
 - FACT
 - IMPER
 * PASS

FACT

+ N
 + [_____ -DAT -LOC -INS -AGT]
 - FACT
 - IMPER
 - WH-S
 + COMMON
 + COUNT
 + ABSTRACT

FAMILIAR

+ V
 + ADJ
 + [_____ +NEUT -LOC -INS -AGT]
 - FACT
 - S
 + PREP NEUT with

FATHER

+ N
 + [_____ -NEUT +DAT -LOC -INS -AGT]
 + COMMON
 + COUNT
 + HUMAN
 + MASC

FEEL¹

+ V
 - ADJ
 + [_____ +NEUT +DAT -LOC -INS -AGT]
 - FACT
 - IMPER
 - WH-S
 * PASS
 + STAT-REDUCT
 * RAISE-TO-OBJ

FEEL²

+ V
 - ADJ
 + [_____ +NEUT +DAT -LOC -INS -AGT]
 - FACT
 - IMPER
 - WH-S
 * PASS
 + TO-DEL
 + RAISE-TO-OBJ

FEEL³

+ V
 - ADJ
 + [_____ +NEUT -DAT -LOC +AGT]
 - FACT
 - S
 * PASS

"few/little"

+ QUANT
 - DIST
 - ATTACH
 + N-DEL
 * [_____ [+PL]]
 * [_____ [-COUNT]]
 * [[+DEF] _____]
 * [[-DEF] _____]

FIDO

+ N
 - COMMON
 - HUMAN
 + MASC

FIFTH

+ ORD

FILL^a

+ V
 - ADJ
 + [_____ -DAT +LOC +AGT]
 - FACT
 - S
 * PASS
 + LOC → OBJ, NEUT
 [into] [with]
 + [[-ABSTRACT] OBJ]
 + [[-ANIMATE] OBJ]

FILL^b

+ V
 - ADJ
 + [_____ -DAT +LOC -INS -AGT]
 - FACT
 - S
 * LOC → OBJ, NEUT
 [into] [with]
 + LOC → SUBJ

FINISH

+ V
 - ADJ
 + [_____ +NEUT -DAT -LOC -INS +AGT]
 - FACT
 - IMPER
 - WH-S
 + AGT-IDENT
 * PASS
 + GER

FIRST

+ ORD

FIVE

+ QUANT
 - DIST
 - ATTACH
 + N-DEL
 + [_____ [+PL]]
 - [_____ [-COUNT]]
 + INTEGER

FOND

+ V
 + ADJ
 + [_____ +NEUT +DAT -LOC -INS -AGT]
 - FACT
 - IMPER
 - WH-S
 + GER

FONDNESS

+ N
 + [_____ -LOC -INS -AGT]
 - FACT
 - IMPER
 - WH-S
 + GER
 + COMMON
 - COUNT
 + ABSTRACT
 + PREP NEUT for

FORCE

+ V
 - ADJ
 + [_____ +NEUT + DAT -LOC
 - FACT + AGT]
 - INDIC
 - WH-S
 * PASS
 + EQUI-NP-DEL
 + DAT → OBJ

FORGET¹

+ V
 - ADJ
 + [_____ +NEUT +DAT -LOC
 -INS -AGT]
 - FACT
 - IMPER
 + AGT-IDENT
 * PASS
 + EQUI-NP-DEL
 + AFFECT

FORGET²

+ V
 - ADJ
 + [_____ +NEUT +DAT -LOC -INS -AGT]
 - S
 * PASS
 + AFFECT
 + PREP NEUT about

FOUR

+ QUANT
 - DIST
 - ATTACH
 + N-DEL
 + [_____ [+PL]]
 - [_____ [-COUNT]]
 + INTEGER

FOURTH

+ ORD

FROM

+ PREP
 + LOC
 + DIR

FULL

+ V
 + ADJ
 + [_____ -NEUT -DAT +LOC -INS -AGT]

GENEROUS

+ V
 + ADJ
 + [_____ -LOC -INS +AGT]
 - FACT
 - S
 + PREP NEUT with

GIFT

+ N
 + [_____ -LOC -INS +AGT]
 - FACT
 - S
 + COMMON
 + COUNT
 * ABSTRACT
 + PREP AGT from

GIRL

+ N
 + [_____ -NEUT -LOC -INS -AGT]
 + COMMON
 + COUNT
 + HUMAN
 - MASC

GIVE

+ V
 - ADJ
 + [_____ +NEUT +DAT -LOC
 -INS +AGT]
 - FACT
 - S
 * PASS
 * DAT → OBJ

GO

+ V
- ADJ
+ [_____ -NEUT -DAT -INS +AGT]

GRASP¹

+ V
- ADJ
+ [_____ +NEUT -DAT -LOC +AGT]
- FACT
- S
* PASS
+ [[-ABSTRACT] OBJ]

GRASP²

+ V
- ADJ
+ [_____ +NEUT +DAT -LOC -INS -AGT]
- S
* PASS
+ [[+ABSTRACT] OBJ]

GUILTY

+ V
+ ADJ
+ [_____ +NEUT +DAT -LOC -INS -AGT]
- FACT
- IMPER
- WH-S
+ GER

HAPPEN¹

+ V
- ADJ
+ [_____ +NEUT -DAT -LOC -INS -AGT]
- FACT
- IMPER
- WH-S
* RAISE-TO-SUBJ

HAPPEN²

+ V
- ADJ
+ [_____ +NEUT -INS -AGT]
- FACT
- S

HARD

+ ADV
+ MANNER

HARD

+ V
+ ADJ
+ [_____ +NEUT -DAT -LOC
 -INS -AGT]
- FACT
- IMPER
- WH-S
+ EMOT
* RAISE-OBJ-TO-SUBJ

HAT

+ N
+ COMMON
+ COUNT
- ABSTRACT
- ANIMATE

HATE¹

+ V
- ADJ
+ [_____ +NEUT +DAT -LOC
 -INS -AGT]
- FACT
- IMPER
- WH-S
* PASS
+ EMOT
* GER
+ EQUI-NP-DEL
+ AFFECT

HATE²

+ V
 - ADJ
 + [_____ +NEUT +DAT -LOC -INS -AGT]
 - S
 * PASS
 + EXTRA
 + AFFECT

HELP

+ V
 - ADJ
 + [_____ +DAT -LOC +AGT]
 - FACT
 - IMPER
 - WH-S
 * PASS
 * TO-DEL
 + EQUI-NP-DEL

HAVE

+ V
 - ADJ
 + [_____ +NEUT +DAT -LOC -INS -AGT]
 - FACT
 - S

HERE

+ ADJ
 + LOC
 - FAR

HEAD

+ N
 + [_____ -NEUT -LOC -INS -AGT]
 + COMMON
 + COUNT
 - ABSTRACT
 - ANIMATE

HIT^a

+ V
 - ADJ
 + [_____ -NEUT -DAT +LOC +AGT]
 * PASS
 + [[-ABSTRACT] OBJ]

HEAR

+ V
 - ADJ
 + [_____ +NEUT +DAT -LOC -INS -AGT]
 - FACT
 - IMPER
 * PASS
 + TO-DEL
 * RAISE-TO-OBJ

HIT^b

+ V
 - ADJ
 + [_____ -NEUT -DAT +LOC
 +INS -AGT]
 * PASS
 + [[-ABSTRACT] OBJ]

HOPE

+ V
 - ADJ
 + [_____ +NEUT +DAT -LOC -INS -AGT]
 - FACT
 - IMPER
 - WH-S
 * PASS
 * EQUI-NP-DEL
 + PREP NEUT for

HOPE

+ N
 + [_____ -LOC -INS -AGT]
 - FACT
 - IMPER
 - WH-S
 * GER
 + COMMON
 * COUNT
 + ABSTRACT

HORSE

+ N
 + [_____ -NEUT -LOC -INS -AGT]
 + COMMON
 + COUNT
 - HUMAN

"I"

+ ART
 + DEF
 - DEM
 - GEN
 + COUNT
 + I
 - II
 - III
 - PL

IGNORANCE

+ N
 + [_____ -LOC -INS -AGT]
 - S
 + COMMON
 - COUNT
 + ABSTRACT
 + AFFECT

IGNORE

+ V
 - ADJ
 + [_____ +NEUT -DAT -LOC
 -INS +AGT]
 - S
 * PASS
 + AFFECT

IMAGINE

+ V
 - ADJ
 + [_____ +NEUT +DAT -LOC
 -INS -AGT]
 - FACT
 - IMPER
 - WH-S
 * PASS
 * GER
 + STAT-REDUCT
 * RAISE-TO-OBJ

IMPORTANT

+ V
 + ADJ
 + [_____ -NEUT -LOC +INS -AGT]
 * EMOT

IMPRISON

- + V
- ADJ
- + [_____ -NEUT +DAT +AGT]
- * PASS

IMPRISONMENT

- + N
- + [_____ -NEUT]
- + COMMON
- COUNT
- + ABSTRACT

IN

- + PREP
- + LOC
- DIR

INNER

- + CHIEF

INFORM

- + V
- ADJ
- + [_____ +NEUT +DAT -LOC -INS +AGT]
- FACT
- IMPER
- WH-S
- * PASS
- + DAT → OBJ
- + PREP NEUT of

INQUIRE

- + V
- ADJ
- + [_____ +NEUT -LOC -INS +AGT]
- FACT
- INDIC
- IMPER
- * PASS
- + PREP DAT of

INSIST¹

- + V
- ADJ
- + [_____ +NEUT -DAT -LOC
-INS +AGT]
- FACT
- INDIC
- WH-S
- * PASS
- * GER
- + PREP NEUT on

INSIST²

- + V
- ADJ
- + [_____ +NEUT -DAT -LOC
-INS +AGT]
- FACT
- IMPER
- WH-S
- * PASS

INSISTENCE

- + N
- + [_____ -DAT -LOC -INS]
- FACT
- WH-S
- * GER
- + COMMON
- COUNT
- + ABSTRACT
- + PREP NEUT on

INSULT

+ V
 - ADJ
 + [_____ -NEUT +DAT -LOC -INS +AGT]
 * PASS

INSULT

+ N
 + [_____ -NEUT -LOC -INS +AGT]
 + COMMON
 + COUNT
 + ABSTRACT
 + PREP AGT from

INTEND

+ V
 - ADJ
 + [_____ +NEUT +DAT -LOC -INS -AGT]
 - FACT
 - INDIC
 - WH-S
 * PASS
 * EMOT
 * GER
 + EQUI-NP-DEL

INTENTION

+ N
 + [_____ -LOC -INS -AGT]
 - FACT
 - INDIC
 - WH-S
 * EMOT
 + EQUI-NP-DEL
 + COMMON
 + COUNT
 + ABSTRACT

INTEREST

+ N
 + [_____ -LOC -INS -AGT]
 - FACT
 - IMPER
 - WH-S
 + GER
 + COMMON
 - COUNT
 + ABSTRACT
 + PREP NEUT in

INTERESTED

+ V
 + ADJ
 + [_____ +NEUT +DAT -LOC
 -INS -AGT]
 - FACT
 - IMPER
 + GER
 + PREP NEUT in

INTIMATE

+ V
 - ADJ
 + [_____ +NEUT -LOC -INS +AGT]
 - FACT
 - IMPER
 * PASS

INTO

+ PREP
 + LOC
 + DIR

LAST

+ ORD

LATE

+ ADV
+ TEMPORAL

LAUGH

+ V
- ADJ
+ [_____ -DAT -LOC -INS +AGT]
- FACT
- S
* PASS
+ PREP NEUT at

LEARN¹

+ V
- ADJ
+ [_____ -DAT -LOC -INS +AGT]
- FACT
- IMPER
+ AGT-IDENT
* PASS
* EQUI-NP-DEL

LEARN²

+ V
- ADJ
+ [_____ +NEUT +DAT -LOC -INS -AGT]
- FACT
- IMPER
* PASS

LEG

+ N
+ [_____ -NEUT -LOC -INS -AGT]
+ COMMON
+ COUNT
- ABSTRACT
- ANIMATE

LET

+ V
- ADJ
+ [_____ +NEUT +DAT -LOC
-INS +AGT]
- FACT
- INDIC
- WH-S
+ TO-DEL
+ EQUI-NP-DEL
+ DAT → OBJ

LETHAL

+ V
+ ADJ
+ [_____ -NEUT -LOC +INS -AGT]

LIKE¹

+ V
- ADJ
+ [_____ +NEUT +DAT -LOC
-INS -AGT]
- FACT
- IMPER
- WH-S
* PASS
+ EMOT
* GER
+ EQUI-NP-DEL

LIKE²

+ V
 - ADJ
 + [_____ +NEUT +DAT -LOC -INS -AGT]
 - S
 * PASS
 + EXTRA

LIKELY

+ V
 + ADJ
 + [_____ +NEUT -DAT -LOC -INS -AGT]
 - FACT
 - IMPER
 - WH-S
 * RAISE-TO-SUBJ

LISTEN

+ V
 - ADJ
 + [_____ +NEUT -DAT -LOC +AGT]
 - FACT
 - S
 * PASS
 + PREP NEUT to

LOOK

+ V
 - ADJ
 + [_____ +NEUT -DAT -LOC +AGT]
 - FACT
 - S
 * PASS
 + PREP NEUT at

LOWER

+ CHIEF

MAIN

+ CHIEF

MAKE¹

+ V
 - ADJ
 + [_____ +NEUT -DAT +AGT]
 - FACT
 - S
 * PASS

MAKE²

+ V
 - ADJ
 + [_____ +NEUT +DAT -LOC +AGT]
 - FACT
 - INDIC
 - WH-S
 * PASS
 + TO-DEL
 + EQUI-NP-DEL
 + DAT → OBJ

MARE

+ N
 + [_____ -NEUT -LOC -INS -AGT]
 + COMMON
 + COUNT
 - HUMAN
 - MASC

MARK^a

+ V
 - ADJ
 + [_____ -NEUT -DAT +LOC +AGT]
 * PASS
 + LOC → OBJ
 [on]

MARK^b

+ V
 - ADJ
 + [_____ -NEUT -DAT +LOC +INS -AGT]
 * PASS
 + LOC → OBJ
 [on]

MARY

+ N
 - COMMON
 + HUMAN
 - MASC

MAY

+ MODAL

MILK

+ N
 + COMMON
 - COUNT
 - ABSTRACT
 - ANIMATE

MOTHER

+ N
 + [_____ -NEUT +DAT -LOC -INS -AGT]
 + COMMON
 + COUNT
 + HUMAN
 - MASC

MOVE

+ V
 - ADJ
 + [_____ +NEUT -DAT]
 - FACT
 - S
 * PASS

"much/many"

+ QUANT
 - DIST
 - ATTACH
 + N-DEL
 * [_____ [+PL]]
 * [_____ [-COUNT]]
 * [[+DEF] _____]
 * [[-DEF] _____]

MURDER

+ V
 - ADJ
 + [_____ -NEUT +DAT -LOC +AGT]
 * PASS

MURDER

+ N
 + [_____ -NEUT -LOC]
 + COMMON
 + COUNT
 + ABSTRACT

MUST

+ MODAL

NEAR

+ PREP
+ LOC
- DIR

NEXT

+ ORD

NOISY^a

+ V
+ ADJ
+ [_____ -NEUT -DAT -LOC -INS +AGT]

NOISY^b

+ V
+ ADJ
+ [_____ -NEUT -DAT +LOC -INS -AGT]

NOW

+ ADV
+ TEMPORAL
- FAR

OFTEN

+ ADV
+ FREQ

OLD

+ V
+ ADJ
+ [_____ +NEUT -DAT -LOC -INS -AGT]
- FACT
- S

OLD

+ CHIEF

ON

+ PREP
+ LOC
- DIR

ONE

+ QUANT
- DIST
- ATTACH
+ N-DEL
- [_____ [+PL]]
- [_____ [-COUNT]]
- INTEGER

ONE

+ N
+ PRO
+ ATTACH
+ HUMAN
* MASC
+ COUNT
- PLURAL

ONE

+ N
+ PRO
- ATTACH
* HUMAN
* MASC
+ COUNT
* PLURAL

ONTO

+ PREP
+ LOC
+ DIR

OPEN

+ V
- ADJ
+ [_____ +NEUT -DAT -LOC]
- FACT
- S
* PASS
+ [[-ABSTRACT] OBJ]
+ [[-ANIMATE] OBJ]

"or"

+ CONJ
+ OR

ORDER

+ V
- ADJ
+ [_____ +NEUT -LOC -INS +AGT]
- FACT
- INDIC
- WH-S
+ DAT-IDENT
* PASS
+ EQUI-NP-DEL

ORDER

+ N
+ [_____ -LOC -INS]
- FACT
- INDIC
- WH-S
+ DAT-IDENT
* EQUI-NP-DEL
+ COMMON
+ COUNT
+ ABSTRACT

OUT OF

+ PREP
+ LOC
+ DIR

OUTER

+ CHIEF

OWN

+ V
- ADJ
+ [_____ +NEUT +DAT -LOC
 -INS -AGT]
- FACT
- S
* PASS
+ [[-ABSTRACT] OBJ]

PASS¹

+ V
- ADJ
+ [_____ +NEUT -LOC +AGT]
- FACT
- S
* PASS
* DAT→OBJ
+ [[-ABSTRACT] OBJ]

PASS²

+ V
- ADJ
+ [_____ -NEUT -DAT -INS +AGT]
* PASS
* LOC→OBJ
 [by]
+ [[-ABSTRACT] OBJ]

RESENTMENT

+ N
 + [____ -LOC -INS -AGT]
 - S
 + COMMON
 - COUNT
 + ABSTRACT
 + AFFECT
 + PREP NEUT at

RESIDE

+ V
 - ADJ
 + [____ -NEUT -DAT +LOC -INS +AGT]

RUMOR

+ V
 + [____ +NEUT -DAT -LOC -INS +AGT]
 + S
 - IMPER
 - WH-S
 + PASS

RUN

+ V
 - ADJ
 + [____ -NEUT -DAT -INS +AGT]

SAY

+ V
 - ADJ
 + [____ +NEUT -LOC -INS +AGT]
 - FACT
 - IMPER
 - WH-S
 * PASS
 + STAT-REDUCT
 * RAISE-TO-OBJ

SCARE^a

+ V
 - ADJ
 + [____ -NEUT +DAT -LOC +AGT]
 * PASS

SCARE^b

+ V
 - ADJ
 + [____ -NEUT +DAT -LOC
 +INS -AGT]
 * PASS
 * EMOT

SECOND

+ ORD

SEE

+ V
 - ADJ
 + [____ +NEUT +DAT -LOC
 -INS -AGT]
 - FACT
 - IMPER
 * PASS
 + TO-DEL
 * RAISE-TO-OBJ

SEEM

+ V
 - ADJ
 + [____ +NEUT -LOC -INS -AGT]
 - FACT
 - IMPER
 - WH-S
 * RAISE-TO-SUBJ

SEND

+ V
 - ADJ
 + [_____ +NEUT -INS +AGT]
 - FACT
 - S
 * PASS
 * DAT → OBJ

SEVERAL

+ QUANT
 - DIST
 - ATTACH
 + N-DEL
 - [_____ [-COUNT]]
 + [_____ [+PL]]
 - [[-SPEC] _____]
 - INTEGER
 - SHIFT

SHALL

+ MODAL

SHOW^a

+ V
 - ADJ
 + [_____ +NEUT -LOC -INS +AGT]
 - FACT
 - IMPER
 * PASS
 + STAT-REDUCT
 * RAISE-TO-OBJ
 * DAT → OBJ

SHOW^b

+ V
 - ADJ
 + [_____ +NEUT -LOC +INS -AGT]
 - FACT
 - IMPER
 * PASS
 + STAT-REDUCT
 * RAISE-TO-OBJ
 + DAT → OBJ

SICK¹

+ V
 + ADJ
 + [_____ -NEUT -DAT -LOC
 -INS +AGT]

SICK²

+ V
 + ADJ
 + [_____ -NEUT +DAT -LOC
 -INS -AGT]

SICK³

+ V
 + ADJ
 + [_____ +NEUT +DAT -LOC
 -INS -AGT]
 - FACT
 - IMPER
 - WH-S
 + GER
 + AFFECT

SIGNIFICANT

+ V
 + ADJ
 + [____ -NEUT -LOC +INS -AGT]
 * EMOT

"SJC"

+ MODAL

SLEEPY

+ V
 + ADJ
 + [____ -NEUT +DAT -LOC -INS -AGT]

SMEAR

+ V
 - ADJ
 + [____ +NEUT -DAT +LOC +AGT]
 - FACT
 - S
 * PASS
 * LOC → OBJ, NEUT
 [on] [with]
 + [[-ABSTRACT] OBJ]
 + [[-ANIMATE] OBJ]

"some"

+ ART
 - DEF
 + DEM
 - WH
 * SPEC
 * COUNT

SON

+ N
 + [____ -NEUT +DAT -LOC
 -INS -AGT]
 + COMMON
 + COUNT
 + HUMAN
 + MASC

SOON

+ ADV
 + TEMPORAL

STALLION

+ N
 + [____ -NEUT -LOC -INS -AGT]
 + COMMON
 + COUNT
 - HUMAN
 + MASC

STATUE

+ N
 + [____ -NEUT +DAT -LOC
 -INS +AGT]
 + COMMON
 + COUNT
 - ABSTRACT
 - ANIMATE
 * OBJ-DEL

STICK

+ N
 + COMMON
 + COUNT
 - ABSTRACT
 - ANIMATE

STOP

+ V
 - ADJ
 + [_____ +NEUT -DAT -LOC]
 - FACT
 - IMPER
 - WH-S
 * PASS
 + GER
 + AFFECT

STORY

+ N
 + [_____ +NEUT -DAT -LOC -INS +AGT]
 - FACT
 - IMPER
 + GER
 + COMMON
 + COUNT
 + ABSTRACT
 * OBJ-DEL
 + PREP NEUT about

SUFFICE

+ V
 - ADJ
 + [_____ -NEUT -DAT -LOC +INS -AGT]
 * EMOT

SUGGEST¹

+ V
 - ADJ
 + [_____ +NEUT -LOC -INS +AGT]
 - FACT
 - INDIC
 - WH-S
 * PASS
 * GER

SUGGEST²

+ V
 - ADJ
 + [_____ +NEUT -LOC +INS -AGT]
 - FACT
 - IMPER
 - WH-S
 * PASS

SUGGESTION

+ N
 + [_____ -LOC -INS]
 - FACT
 - INDIC
 - IMPER
 * GER
 + COMMON
 + COUNT
 + ABSTRACT
 + PREP NEUT for

SUPPOSE

+ V
 - ADJ
 + [_____ +NEUT +DAT -LOC
 -INS -AGT]
 - FACT
 - IMPER
 - WH-S
 * PASS
 + STAT-REDUCT
 * RAISE-TO-OBJ

SURE¹

+ V
 + ADJ
 + [_____ +NEUT -DAT -LOC -INS -AGT]
 - FACT
 - IMPER
 - WH-S
 + RAISE-TO-SUBJ

TELL²

+ V
 - ADJ
 + [_____ +NEUT +DAT -LOC
 -INS +AGT]
 - S
 * PASS
 + PREP NEUT about

SURE²

+ V
 + ADJ
 + [_____ +NEUT +DAT -LOC -INS -AGT]
 - FACT
 - IMPER
 - WH-S
 * GER

"that"

+ ART
 + DEF
 + DEM
 - WH
 + FAR
 * N-DEL
 * COUNT
 - I
 - II
 + III

TABLE

+ N
 + COMMON
 + COUNT
 - ABSTRACT
 - ANIMATE

"the"

+ ART
 + DEF
 - DEM
 - GEN
 * COUNT
 - I
 - II
 + III

TELL¹

+ V
 - ADJ
 + [_____ +NEUT +DAT -LOC -INS +AGT]
 - FACT
 - WH-S
 * PASS
 * EQUI-NP-DEL

THEN

- + ADV
- + TEMPORAL
- + FAR

THERE

- + ADV
- + LOC
- + FAR

THING

- + N
- + PRO
- + ATTACH
- HUMAN
- * COUNT
- PLURAL

THINK¹

- + V
- ADJ
- + [_____ +NEUT +DAT -LOC -INS -AGT]
- FACT
- IMPER
- WH-S
- * PASS
- + STAT-REDUCT
- * TO-BE-DEL
- * RAISE-TO-OBJ

THINK²

- + V
- ADJ
- + [_____ -DAT -LOC -INS +AGT]
- S
- + PREP NEUT about

THINK³

- + V
- ADJ
- + [_____ +NEUT -DAT -LOC
-INS +AGT]
- FACT
- IMPER
- WH-S
- * PASS
- + GER

THIRD

- + ORD

"this"

- + ART
- + DEF
- + DEM
- WH
- FAR
- * N-DEL
- * COUNT
- I
- II
- + III

THREE

- + QUANT
- DIST
- ATTACH
- + N-DEL
- + [_____ [+PL]]
- [_____ [-COUNT]]
- + INTEGER

TIME

+ N
 + PRO
 + ATTACH
 - HUMAN
 + COUNT
 * PLURAL

TIRED¹

+ V
 + ADJ
 + [_____ -NEUT +DAT -LOC -INS -AGT]

TIRED²

+ V
 + ADJ
 + [_____ +NEUT +DAT -LOC -INS -AGT]
 - FACT
 - IMPER
 - WH-S
 + GER

"TNS"

* PAST

TO

+ PREP
 + LOC
 + DIR

TRAGIC

+ V
 + ADJ
 + [_____ -NEUT -LOC +INS -AGT]
 * EMOT
 + AFFECT

TRY

+ V
 - ADJ
 + [_____ +NEUT -DAT -LOC
 -INS +AGT]
 - FACT
 - INDIC
 - WH-S
 + AGT-IDENT
 * PASS
 * GER
 + EQUI-NP-DEL

TWO

+ QUANT
 - DIST
 - ATTACH
 + N-DEL
 + [_____ [+PL]]
 - [_____ [-COUNT]]
 + INTEGER

UNLIKELY

+ V
 + ADJ
 + [_____ +NEUT -DAT -LOC
 -INS -AGT]
 - FACT
 - IMPER
 - WH-S
 * RAISE-TO-SUBJ
 + AFFECT

UNDERSTAND

+ V
 - ADJ
 + [_____ +DAT -LOC -INS -AGT]
 - FACT
 - IMPER
 * PASS
 + STAT-REDUCT
 * RAISE-TO-OBJ

UPPER

+ CHIEF

URGE

+ V
 - ADJ
 + [_____ +NEUT -LOC -INS +AGT]
 - FACT
 - INDIC
 - WH-S
 + DAT-IDENT
 * PASS
 * EQUI-NP-DEL

VERY

+ ADV
 + DEG

WANT

+ V
 - ADJ
 + [_____ +NEUT +DAT -LOC -INS -AGT]
 - FACT
 - INDIC
 - WH-S
 * PASS
 + EMOT
 + EQUI-NP-DEL

¹
WARN

+ V
 - ADJ
 + [_____ +NEUT -LOC -INS +AGT]
 - FACT
 - WH-S
 - AGT-IDENT
 * PASS
 * EQUI-NP-DEL

WARN²

+ V
 - ADJ
 + [_____ +NEUT +DAT -LOC
 -INS +AGT]
 - S
 * PASS
 + PREP NEUT about

"we"

+ ART
 + DEF
 - DEM
 - GEN
 + COUNT
 + I
 * II
 * III
 + PL

WELL

+ ADV
 + MANNER

"what"

+ ART
 - DEF
 + DEM
 + WH
 * COUNT

"whether"

+ CONJ
 + OR
 + WH

WILL

+ MODAL

"you"

+ ART
+ DEF
- DEM
- GEN
+ COUNT
- I
+ II
- III
- PL

"you"

+ ART
+ DEF
- DEM
- GEN
+ COUNT
- I
+ II
* III
+ PL

III. THE SECOND LEXICAL LOOKUP

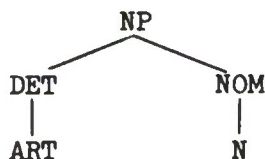
A. Discussion

The present grammar utilizes a second lexical insertion procedure which follows the last rule of the transformational component. The function of the second insertion process is to attach phonological matrices to clusters of semantic-syntactic features that have resulted from operations of the transformational component. Such an operation is not unique to this grammar; the suggestion of some such operation has been made informally many times before. In particular, Fillmore proposed that pronouns were to be viewed as feature clusters whose phonological realizations were not interestingly related and therefore ought to be inserted following the transformational operations (cf. Fillmore, 1966d).

Typical of the operations for which the second lexical insertion process is useful is the set of rules that produce the surface pronouns in this grammar. The pronouns, as can be seen in the section on Pronominalization, are never inserted in their surface forms in the first pass through the lexicon.

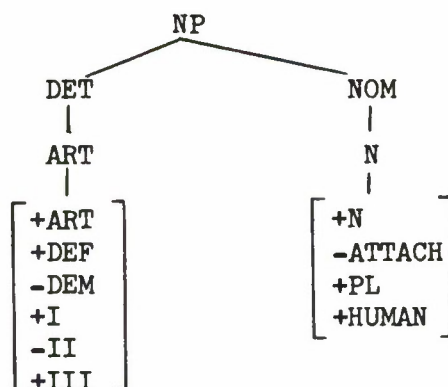
A non-anaphoric definite pronoun is derived from a full noun phrase expanded by the PS-rules as (36).

(36)



To this tree the first lexical insertion procedure can attach the definite article the and the PRO-noun one, with the following features as one possibility assigned by the first lexical lookup (but with no phonological matrices):

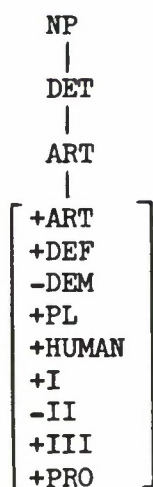
(37)



At this point neither of the two constituents of the NP above has accompanying phonological specifications. In addition, the cluster of features that is dominated by N is identical to the cluster of features that result from the N reduction rules that form a part of the derivation of anaphoric pronominalization (cf. PRO section).

Feature-copying rules (also in PRO section) copy the features +PL, +HUMAN from the N onto the ART; the Deletion of Noun Node rule (PRO section) deletes the N altogether, adding +PRO to the ART, leaving the structure (38):

(38)

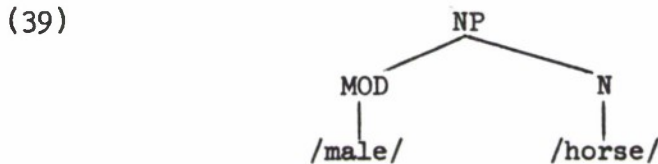


There is still no phonological specification associated with this complex symbol.

Finally the string of which this NP is a part emerges from the transformational component, but the phonological rules cannot yet apply because there are sentence constituents that are still

without phonological specifications. At this point the second lexical lookup applies. In the case of the tree in (38) we will be attached. If +ACCUS had been added by the objective case-marking rule (see PRO), the form would be us; addition of the feature +GENIT would give our or ours, though, in fact, these genitive forms have not been included in the sample second lexicon because of the problems in keeping the two feature specifications distinct (see discussion in GEN).

The second lexical lookup is utilized in the present grammar to attach phonological matrices to already existing feature complexes. The operation as it is presently viewed does not permit deletion of nodes or addition of nodes. For example, in a recent paper J. Gruber (1967c) proposed insertion possibilities that would allow a tree expanded as the following:



to be replaced by a single lexical item, namely, stallion. Such an operation would account for the absence of such NP's as male stallion, male steer, male tom-cat and male gander. The tree above (39) differs in a rather profound way from the kind of tree that Gruber's grammar would generate, but the principle is the same. The present grammar disallows such power in the second lexical lookup.

A comparable operation would be the incorporation of Past Tense in the case of irregular verbs in English. An affix movement rule assigns the Past Tense Affix as the right daughter of a Chomsky-adjoined V node like the tree below:



The node Past, under certain circumstances, would allow the attachment of the Past Tense Affix [t], [d] or [ɪd]. The present constraint on the power of the second lexical lookup would not allow the tree above to be changed as would have to be the case if the lower V were an irregular verb; e.g. run, steal.... To allow the tree above to be changed so that run + Past could be given the phonological matrices of /rɒn/ would make the exclusion of stallion

ad hoc. It is difficult to see what possible limits there might be if such attachment were permitted.

The question of whether the second lexical lookup should require non-distinctness or strict identity is a serious one. In favor of the strict identity condition is the fact that many transformationally introduced features appear to be clear instances of "marked" features, where the opposite value would never appear on any item--e.g. +REFL, +ACCUS, +GENITIVE, and all the prepositional features +OF, +WITH, etc. It would seem quite unnatural to have to introduce -REFL etc. on all deep structure items of the category on which the transformationally introduced feature could potentially appear. On the other hand, where the same phonological form corresponds to several syntactic feature matrices which have a distinctive subset of features in common, it seems wasteful to have to provide multiple entries in the second lexicon. Such is the case, for example, with we, which must include [+I, +PL] as well as the other features common to nominative personal pronouns, but is indifferent to [\pm II], [\pm III].

Both of these generalizations can be captured if the requirement for second lexical lookup is the following:

- (41) The phonological matrix P associated with complex symbol L in the second lexicon is assigned to the terminal complex symbol S in a given surface structure tree if the features of L are a subset of the features of S.

That is, if L contains $+F_1$, S must contain $+F_1$; if L contains $-F_2$, S must contain $-F_2$; but S may contain some features not mentioned in L. This inclusion condition appears to capture the desirable properties of both strict identity and non-distinctness.

Finally, the kinds of items for which the present grammar utilizes the second lexical lookup are the following.⁽¹⁾

-
- (1) In the sample lexicon that follows the features marked with an asterisk could have been omitted in accordance with (40) but they have been retained in the interests of readability.

- 1) Determiners;
- 2) Pronouns--both independent and relative;
- 3) Negative adverbials, particles, quantifiers and determiners;
- 4) Prepositions;
- 5) Conjunctions;
- 6) Quantifiers resulting from conjunction reduction.

In the sample Second Lexicon which follows representative entries for items (1-4) are given.

B. Sample Entries for Second Lexicon

Pronouns and DeterminersI

+ ART
 + PRO
 + DEF
 - DEM
 - GENERIC
 - WH
 - ATTACH
 + N-DEL
 + I
 - II
 - III
 + COUNT
 - PL
 + HUM

HE

+ ART
 + PRO
 + DEF
 - DEM
 - GENERIC
 - WH
 - ATTACH
 + N-DEL
 - I
 - II
 + III
 + COUNT
 - PL
 + HUM
 + MASC

ME

+ ART
 + PRO
 + DEF
 - DEM
 - GENERIC
 - WH
 - ATTACH
 + N-DEL
 + I
 - II
 - III
 + COUNT
 - PL
 + HUM
 + ACCUS

HIM

+ ART
 + PRO
 + DEF
 - DEM
 - GENERIC
 - WH
 - ATTACH
 + N-DEL
 - I
 - II
 + III
 + COUNT
 - PL
 + HUM
 + MASC
 + ACCUS

HIM

+ ART
 + PRO
 + REFLEX
 - DEM
 - GENERIC
 - WH
 + ATTACH
 + N-DEL
 - I
 - II
 + III
 + COUNT
 - PL
 + HUM
 + MASC
 + ACCUS

HER

+ ART
 + PRO
 + DEF
 - DEM
 - GENERIC
 - WH
 - ATTACH
 + N-DEL
 - I
 - II
 + III
 + COUNT
 - PL
 + HUM
 - MASC
 + ACCUS

SHE

+ ART
 + PRO
 + DEF
 - DEM
 - GENERIC
 - WH
 - ATTACH
 + N-DEL
 - I
 - II
 + III
 + COUNT
 - PL
 + HUM
 - MASC

HER

+ ART
 + PRO
 + REFLEX
 + DEF
 - DEM
 - GENERIC
 - WH
 + ATTACH
 + N-DEL
 - I
 - II
 + III
 + COUNT
 - PL
 + HUM
 - MASC
 + ACCUS

IT

+ ART
 + PRO
 + DEF
 - DEM
 - GENERIC
 - WH
 - ATTACH
 + N-DEL
 - I
 - II
 + III
 * COUNT
 - PL
 - HUM
 + [NP [_____]]
 * ACCUS

IT

+ ART
 + PRO
 + REFLEX
 + DEF
 - DEM
 - GENERIC
 - WH
 + ATTACH
 + N-DEL
 - I
 - II
 + III
 * COUNT
 - PL
 - HUM
 + ACCUS

WE

+ ART
 * PRO
 + DEF
 - DEM
 - GENERIC
 - WH
 - ATTACH
 + N-DEL
 + I
 * II
 * III
 + PL
 + HUM

US

+ ART
 * PRO
 + DEF
 - DEM
 - GENERIC
 - WH
 - ATTACH
 + N-DEL
 + I
 * II
 * III
 + PL
 + HUM
 + ACCUS

YOU

+ ART
 * PRO
 + DEF
 - DEM
 - GENERIC
 - WH
 - ATTACH
 + N-DEL
 - I
 + II
 * III
 + COUNT
 * PL
 + HUM
 * ACCUS

THEM

+ ART
 + PRO
 + DEF
 - DEM
 - GENERIC
 - WH
 - ATTACH
 + N-DEL
 - I
 - II
 + III
 + PL
 * HUM
 * MASC
 + [NP [_____]]
 + ACCUS

THEY

+ ART
 + PRO
 + DEF
 - DEM
 - GENERIC
 - WH
 - ATTACH
 + N-DEL
 - I
 - II
 + III
 + PL
 * HUM
 * MASC
 + [NP [_____]]

THEM

+ ART
 + PRO
 + REFLEX
 + DEF
 - DEM
 - GENERIC
 - WH
 + ATTACH
 + N-DEL
 - I
 - II
 + III
 + PL
 + ACCUS

SELF

- + PRO
- + COUNT
- PL
- + REFLEX
- + ATTACH

SELVES

- + PRO
- + PL
- + REFLEX
- + ATTACH

A

- + ART
- PRO
- DEF
- DEM
- GENERIC
- * SPEC
- WH
- ATTACH
- + N-DEL
- I
- II
- + III
- + COUNT
- PL
- INDET

SOME (sm)

- + ART
- PRO
- DEF
- DEM
- GENERIC
- * SPEC
- WH
- ATTACH
- + N-DEL
- I
- II
- + III
- { - COUNT }
- { + PL }
- INDET

SOME

- + ART
- + PRO
- DEF
- DEM
- GENERIC
- * SPEC
- WH
- ATTACH
- + N-DEL
- I
- II
- + III
- { - COUNT }
- { + PL }
- INDET

SOME

+ ART
- PRO
- DEF
+ DEM
- GENERIC
* SPEC
- WH
+ ATTACH
- N-DEL
- I
- II
+ III
* COUNT
* PL

ONE

+ ART
+ PRO
- DEF
- DEM
- GENERIC
* SPEC
- WH
- ATTACH
+ N-DEL
- I
- II
+ III
+ COUNT
- PL
- INDET

NO

+ ART
- PRO
- DEF
- DEM
- GENERIC
- SPEC
- WH
- ATTACH
+ N-DEL
- I
- II
+ III
* COUNT
* PL
+ INDET
+ NEG

NO

+ ART
- PRO
- DEF
+ DEM
- GENERIC
- SPEC
- WH
+ ATTACH
- N-DEL
- I
- II
+ III
* COUNT
* PL
+ INDET
+ NEG

ANY

+ ART
 * PRO
 - DEF
 - DEM
 - GENERIC
 - SPEC
 - WH
 - ATTACH
 + N-DEL
 - I
 - II
 + III
 * COUNT
 * PL
 + INDET
 - NEG

NONE

+ ART
 + PRO
 - DEF
 - DEM
 - GENERIC
 - SPEC
 - WH
 - ATTACH
 + N-DEL
 - I
 - II
 + III
 * COUNT
 * PL
 + INDET
 + NEG

ANY

+ ART
 - PRO
 - DEF
 + DEM
 - GENERIC
 - SPEC
 - WH
 + ATTACH
 - N-DEL
 - I
 - II
 + III
 * COUNT
 * PL
 + INDET
 - NEG

THE

+ ART
 - PRO
 + DEF
 - DEM
 - GENERIC
 - WH
 - ATTACH
 + N-DEL
 - I
 - II
 + III
 * COUNT
 * PL
 + [____ N]

THIS

+ ART
* PRO
+ DEF
+ DEM
- GENERIC
- WH
- ATTACH
* N-DEL
- I
- II
+ III
* COUNT
- PL
- FAR

THAT

+ ART
* PRO
+ DEF
+ DEM
- GENERIC
- WH
- ATTACH
* N-DEL
- I
- II
+ III
* COUNT
- PL
+ FAR

THESE

+ ART
* PRO
+ DEF
+ DEM
- GENERIC
- WH
- ATTACH
* N-DEL
- I
- II
+ III
+ PL
- FAR

THOSE

+ ART
* PRO
+ DEF
+ DEM
- GENERIC
- WH
- ATTACH
* N-DEL
- I
- II
+ III
+ PL
+ FAR

THAT

+ ART
 + PRO
 + DEF
 - DEM
 - GENERIC
 - WH
 - ATTACH
 + N-DEL
 - I
 - II
 + III
 - COUNT
 - HUM
 - [NP [_____]]

WHICH

+ ART
 * PRO
 + DEF
 + DEM
 - GENERIC
 + WH
 - ATTACH
 * N-DEL
 - I
 - II
 + III
 * COUNT
 * PL
 * HUM

THOSE

+ ART
 + PRO
 + DEF
 - DEM
 - GENERIC
 - WH
 - ATTACH
 + N-DEL
 - I
 - II
 + III
 + PL
 - HUM
 - [NP [_____]]

WHAT

+ ART
 - PRO
 - DEF
 + DEM
 - GENERIC
 - SPEC
 + WH
 + ATTACH
 - N-DEL
 - I
 - II
 + III
 * COUNT
 * PL

Relative Pronouns

WHO

+ ART
 + PRO
 - DEF
 - DEM
 - GENERIC
 + SPEC
 + WH
 + REL
 - ATTACH
 + N-DEL
 - I
 - II
 + III
 + COUNT
 * PL
 + HUM

WHICH

+ ART
 + PRO
 - DEF
 - DEM
 - GENERIC
 + SPEC
 + WH
 + REL
 - ATTACH
 + N-DEL
 - I
 - II
 + III
 * COUNT
 * PL
 - HUM

WHOM

+ ART
 + PRO
 - DEF
 - DEM
 - GENERIC
 + SPEC
 + WH
 + REL
 - ATTACH
 + N-DEL
 - I
 - II
 + III
 + COUNT
 * PL
 + HUM
 + ACCUS

THAT

+ ART
 + PRO
 - DEF
 - DEM
 - GENERIC
 + SPEC
 + WH
 + REL
 - ATTACH
 + N-DEL
 - I
 - II
 + III
 * COUNT
 * PL
 * HUM
 + THAT

Adverbials and Negatives

TOO

- + ADV
- + TOO
- SPEC

EITHER

- + ADV
- + TOO
- SPEC
- + INDET
- NEG

NEITHER

- + ADV
- + TOO
- SPEC
- + INDET
- + NEG

SOMETIMES

- + ADV
- + TEMPORAL
- DEF
- * SPEC
- INDET

EVER

- + ADV
- + TEMPORAL
- DEF
- SPEC
- + INDET
- NEG

NEVER

- + ADV
- + TEMPORAL
- DEF
- SPEC
- + INDET
- + NEG

HARDLY

- + NEG
- COMPLETE

NOT

- + NEG
- + COMPLETE

N'T

- + NEG
- + CNTR

Prepositions

ABOUT

+ PREP
 + NEUT
 + PREP NEUT about

TO

+ PREP
 + NEUT
 + PREP NEUT to

AT

+ PREP
 + NEUT
 + PREP NEUT at

UPON

+ PREP
 + NEUT
 + PREP NEUT upon

FOR

+ PREP
 + NEUT
 + PREP NEUT for

WITH

+ PREP
 + NEUT
 + PREP NEUT with

IN

+ PREP
 + NEUT
 + PREP NEUT in

OF

+ PREP
 + DAT
 + PREP DAT of

OF

+ PREP
 + NEUT
 + PREP NEUT of

TO

+ PREP
 + DAT
 + PREP DAT to

ON

+ PREP
 + NEUT
 + PREP NEUT on

AT

+ PREP
 + INS
 + PREP INS at

WITH

- + PREP
- + INS
- + PREP INS with

BY

- + PREP
- + AGT
- + PREP AGT by

FROM

- + PREP
- + AGT
- + PREP AGT from

OF

- + PREP
- + of

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- IBM: International Business Machines Corporation, Thomas J. Watson Research Center, Yorktown Heights, N.Y.
- LRP: Linguistics Research Project, Principal Investigator: F.W. Householder, Jr., Indiana University, Bloomington.
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Addendum

The addendum to the Bibliography contains several titles inadvertently omitted from the original list as well as several which came to our attention quite late in the preparation of the grammar. As a result we were not able to take full advantage of the latter in the presentation of the problems to which they are relevant.

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DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author) University of California Los Angeles, California		2a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED	
		2b. GROUP N/A	
3. REPORT TITLE INTEGRATION OF TRANSFORMATIONAL THEORIES ON ENGLISH SYNTAX			
4. DESCRIPTIVE NOTES (Type of report and inclusive dates) None			
5. AUTHOR(S) (First name, middle initial, last name) Robert P. Stockwell Paul Schachter Barbara Hall Partee			
6. REPORT DATE October 1968		7a. TOTAL NO. OF PAGES 532	7b. NO. OF REFS
8a. CONTRACT OR GRANT NO. AF 19(628)-6007		9a. ORIGINATOR'S REPORT NUMBER(S) ESD-TR-68-419, Vol. II	
b. PROJECT NO.		9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)	
c.			
d.			
10. DISTRIBUTION STATEMENT This document has been approved for public release and sale; its distribution is unlimited.			
11. SUPPLEMENTARY NOTES		12. SPONSORING MILITARY ACTIVITY Command Systems Division, Electronic Systems Division, Air Force Systems Command, USAF, L G Hanscom Field, Bedford, Mass. 01730	
13. ABSTRACT Integration of Transformational Theories on English Syntax This study attempts to bring together most of the information about the transformational analysis of the grammar of English that was available up through the summer of 1968, and to integrate it into a single coherent format. The format chosen is that of C. Fillmore (the "Deep Case" hypothesis) combined with the "Lexicalist" hypothesis of N. Chomsky. The areas of close investigation were the determiner system; pronominalization; negation; conjunction; relativization; complementation and nominalization; the systems of interrogative, passive, imperative, and cleft sentences; the genitive; the lexicon; and the ordering of rules for these areas of the grammar.			

14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
English Syntax Transformational Grammar Case Grammar Deep Case Hypothesis Lexicalist Hypothesis Determiners Pronominalization Negation Conjunction Relativization Complementation Nominalization Interrogative Imperative Genitive Cleft Passive Lexicon Case Placement						