

SEMANTIC CONDITIONS ON SURFACE STRUCTURE

by

ROBERT WILSON FIENGO

B.A., Yale College
1970

SUBMITTED IN
PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE
DEGREE OF DOCTOR OF PHILOSOPHY

at the

MASSACHUSETTS INSTITUTE OF
TECHNOLOGY

September 1974

Signature of Author
Department of Foreign Literatures
and Linguistics, August 12, 1974

Certified by
Thesis Supervisor

Accepted by
Chairman, Departmental Committee
on Graduate Students



Semantic Conditions on Surface Structure
by
Robert Wilson Fiengo

Submitted to the Department of Foreign Literatures
& Linguistics on August 12, 1974, in partial fulfillment
of the requirements for the degree of Doctor of Philosophy.

ABSTRACT

In this thesis, conditions are imposed on the occurrence of phonologically null elements at the level of surface structure.

Trace is defined as the phonologically null element left by movement rules. It is argued that a single structural condition is imposed on both the relation between NP and trace and other rules of semantic interpretation. The syntactic consequences of this condition are examined. It is shown that certain transformations need not be marked as obligatory. A particular theory of the Determiner is suggested. A rule of semantic interpretation is formulated which interprets the relation between NP and trace in certain structures. This rule is shown to have implications in a theory of surface semantics.

Delta is defined as the phonologically null element with syntactic and semantic features. A rule of delta interpretation is formulated, which replaces deletion under identity in the theory assumed, and conditions on the interpretation of delta are formulated.

The syntax and semantics of Tense and Aspect are also considered.

Thesis Supervisor: Noam Chomsky
Title: Ferrari P. Ward Professor of Linguistics

Acknowledgment

It is curious that academic institutions almost always require that one person's name appear as the author of a thesis, especially given the overwhelming evidence that scholarship just doesn't work that way. This thesis is no exception to that rule, being the product of discussions with many people, some of whom contributed ideas fundamental to its structure. I think in particular of Noam Chomsky, who helped me progress, and Howard Lasnik, who kept me excited. They are part of this thesis, and Morris Halle, Paul Kiparsky, and Haj Ross are in here too. Others whose contributions can be found are Mary-Louise Kean, Gary Milsark, Dorothy Siegel, and Tom Zaslavsky, with all of whom I shared some very pleasant times.

Table of Contents

	Page
Introduction	5
Chapter 1. The Logical Structure of Tense and Aspect	7
Chapter 2. Semantic Conditions on NP-Binding	24
Chapter 3. A Structural Condition on Overrules	89
Chapter 4. Conditions on the Interpretation of Delta	110
Bibliography	132

Introduction

I assume here without further comment a theory of grammar in which transformations apply to factored strings, and I assume that the application of transformations is independent of the meanings or grammatical relations expressed in substrings of these strings. In such a theory, transformations have great generality in their application, and there is a tendency for the transformational component to generate ungrammatical strings.

This defect can be corrected either by limiting the application of transformations, or by placing conditions of well-formedness on the output of the transformational component. In Chapter 2, a semantic theory of binding is advanced, which constitutes a limitation of the second type. An element which moves from position X is said to "bind" trace at position X. A general condition on rules of semantic interpretation is developed in Chapter 3 and the theory of binding is shown to fall under this more general theory. In Chapter 4 an interpretive theory is developed which replaces deletion under identity in other systems.

Several specific constructs are developed in Chapter 1, which in many ways is introductory itself.

This thesis concerns both syntax and semantics. I have therefore used the term "grammatical" in its widest sense, meaning roughly "conforming to the principles of grammar."

The research of many people is assumed here; in particular, I assume familiarity with Bresnan (1972), Chomsky (1973), Emonds (1970), Lasnik (1972), and Wasow (1972). I wish to emphasize that I consider the rule of Property Interpretation, discussed in Chapter 2, to be quite speculative. It is my hope that the reader will find this portion of the thesis suggestive, and will tolerate the formal looseness of the constructs involved.

Chapter 1

On the Logical Structure of Tense and Aspect

As described in the Introduction, a specific proposal is developed in this thesis concerning the relationship between syntax and semantics. This first chapter serves that end in two respects. On the one hand, this chapter constitutes an investigation of the relationship between syntax and semantics in the Auxiliary system in English. It thus contributes to the general topic by focussing on what I claim to be a sub-domain of that topic. On the other hand, this chapter concerns several topics which the reader must be familiar with in order to understand the chapters that follow. Thus this chapter serves an introductory capacity. With regard to its first capacity, this chapter cannot pretend to be complete; for example, I have not touched on the much vexed problem of the perfective and imperfective senses. This issue appears orthogonal to a specific proposal which I wish to make concerning the relationship between syntax and semantics in the auxiliary system, and irrelevant to this chapter in its introductory

capacity. However, it seems to me that this chapter is sufficiently comprehensive to serve as an adequate introduction to the chapters that follow.

We will assume that time is a linear dimension. On that dimension we will postulate that there exists a constant, 0, which we will refer to as the Present.

Given these assumptions, we may consider the semantic interpretations of the elements Present Tense, Past Tense, Perfect Aspect and Progressive Aspect.

The temporal reference of expressions in the simple Present or Past tenses depends on semantic properties of the verb. Consider the following examples:

- (1)a The wall was red
- b Jones hit Smith

We wish to assert that (1)b entails that at some point (or points) prior to the present Jones hit Smith, whereas (1)a entails that there is a point prior to the present which belongs to an interval, across which the wall was red. It will be demonstrated that this difference in temporal reference is parallel to the difference in reference which is displayed by mass and count nouns.

Two apparently semantic properties of mass nouns are

that they refer to homogeneous "substances" and that they are not pluralizable in the non-type reading.

By asserting that "gold" has as its reference something homogeneous, I mean to say that while a piece of gold has parts, it does not have constituents, and furthermore that a part of a piece of gold is itself gold.

By asserting that mass nouns are not pluralizable in the non-type reading, I mean the following. Consider the semantic interpretation of the following sentence:

(2) I saw two birds yesterday

Sentence (2) is ambiguous. It may mean either that there were two physical entities, each of which is a member of the set of birds which I saw yesterday, or it may mean that I saw examples of two different types, or species, of bird. On this last reading, the number of physical entities seen is left unspecified, but must be greater than or equal to two. On the first reading, the total number of physical entities seen is equal to two; these two may belong to the same type or different types. Consider now example (3):

(3) I ate two cheeses yesterday

The NP two cheeses clearly means two types of cheese; the truth conditions of (3) are satisfied if I ate brie and

camembert yesterday, but not if I ate two pieces of brie, and none of any other type. Thus we may say that mass nouns are not pluralizable in the non-type sense; there is no non-type sense for the object in (3).

Note lastly that count nouns are not homogeneous; a part of a bird is not a bird. A bird has constituents: wings, talons, feathers, none of which is itself a bird.

Consider in this regard a nugget of gold on the surface of which there is a line drawn which encircles the nugget. We may call the two parts of the nugget which this line defines the right part and the left part. This entity may be referred to in two ways; either as "a nugget" or as "gold". "Nugget" is a count noun; "gold" is a mass noun. Consider now the right part. The right part may be referred to as "gold", but may not be referred to as "a nugget". This is as required by the theory developed here.

Thus we will say that mass nouns have the property of being non-pluralizable in the non-type sense and the property that their referents are homogeneous. We will say that count nouns are pluralizable in the non-type sense, and have non-homogeneous referents.

Consider now the following sentence:

(4) Jones hit Smith twice

Sentence (4) is ambiguous. It may mean either that there were precisely two hits by Jones on Smith, or that there were two distinct occasions on which an unspecified amount of hitting took place.

There are contexts in which these two readings may be isolated. The reading in which occasions are iterated is forced in the following sentence, which must be read without Topicalization intonation.

(5) Twice, Jones hit Smith

The reading in which the verb is iterated is forced by the following sentence:

(6) Suddenly, Jones hit Smith twice

Suddenly is an adverb which in initial position introduces sentences which refer to single occasions. Thus twice cannot be interpreted as iterating occasions; that reading is contradictory given that suddenly requires that the sentence refer to one occasion. Thus the verb must be iterated.

Consider now the following sentence:

(7) The wall was red twice

We may determine the relevant properties of the semantic

interpretation of (7) by considering the following two examples:

- (8)a Twice, the wall was red
 b *Suddenly, the wall was red twice

Note that (9) is grammatical:

- (9) Suddenly, the wall was red

We may conclude from the ungrammaticality of (8)b that the predicate be red is not iterable.

Note now that the temporal reference of a sentence whose predicate is be red is homogeneous; any sub-interval of the interval over which "X be red" holds is itself an interval over which "X be red" holds. This is not the case for a sentence such as "X hit Y." "Hit" may be broken down into two constituents, motion and contact, motion followed by contact. A sub-interval of the temporal reference of the sentence "X hit Y" may consist solely of motion without contact. Thus the temporal reference of "X hit Y" is not homogeneous.

Thus it is with some justification that we call be red a mass predicate, and hit a count predicate. It is possible that there exist other such categories, but justification has been given for the assertion that the difference in the

temporal reference in the following two examples depends on semantic properties of the predicates.

- (10)a The wall was red
 b Jones hit Smith

It should be pointed out in this connection that nominalizations of mass verbs are virtually always mass nouns. Pairs such as know - knowledge, both mass, are the rule; exceptional are pairs such as believe - belief, believe being mass and belief being count. There are, to my knowledge, no mass nouns which are the nominalizations of count verbs.

Returning to the question of the interpretation of Tense, we may note that there exist sentences such as the following, in which Present Tense is interpreted as future.

- (11)a Socrates dies tomorrow
 b I hope Socrates discusses etymology tomorrow
 c If Plato does his myth of the cave routine,
 let me know

Thus the Present and Past Tenses might be rewritten as follows:

(12) ... PRESENT TENSE ...

is rewritten as

$\exists t_1 \geq 0 \mid \dots$

(13) ... PAST TENSE ...

is rewritten as

$\exists t_1 < 0 \mid \dots$

For example, "Jones saw Smith," which is of the form ... PAST TENSE ..., is rewritten as:

$\exists t_1 < 0 \mid$ Jones see Smith. We may postulate the existence of

another rule which rewrites "..." as "... at Z." With the application of both of these rules, "Jones saw Smith" will

be rewritten as: $\exists t_1 < 0 \mid$ Jones see Smith at Z. A final

rule, which will be discussed below, will rewrite Z in this expression as t_1 , yielding the expression

$\exists t_1 < 0 \mid$ Jones see Smith at t_1 . The nature of t_1 , whether

it is a point (or points) or an interval, will be determined by whether the predicate in ... is count or mass, as

discussed above.

It should be pointed out that the temporal interpretations of Present and Past Tenses appear only to hold in indicative contexts. In counterfactual contexts, the Past Tense is apparently the carrier of a negative, not temporal,

interpretation. The counterfactual in (14) is not semantically in pluperfect time; the conditional in (15) is in the future semantically, not the past.

(14) If the Trojans had won the war, history would have been altered drastically

(15) If Aeneas left, it would be appreciated

Statements of logic, mathematics, etc., carry the Present Tense without any temporal interpretation.

(16) The square of the hypotenuse equals the sum of the squares of the other two sides

It is possible, then, that nomic, or lawlike statements, such as mathematical statements, are statements in which the Present Tense element is given not a temporal interpretation but a positive interpretation and that counterfactuals are statements in which the Past Tense element is given not a temporal interpretation but a negative interpretation. This property of tense would almost certainly be related to the fact that the Past Tense places the state of affairs with which it is associated in a distal context, whereas the Present Tense places the state of affairs with which it is associated in a proximal context. Count predicates in the Present Tense in statements which denote states of affairs

in present time, and the "historical" use of the Present Tense, which is to make more vivid events in past time, make this point:

- (17)a Mazeroski hits into left field!
- b And then, in 1914, war breaks out

Whether or not a sentence can be interpreted as a nomic, or lawlike, statement depends in part on the nature of the NP's which it contains. For example, (18)a has a nomic interpretation and (18)b does not.

- (18)a Educators teach
- b Russell and Whitehead teach

Some insight into the basis for the contrast in interpretation of (18)a and b can be gained by considering the following pair:

- (19)a Unicorns have horns
- b Those unicorns have horns

Abstracting away from the problem of whether or not there exist truth value gaps, we may say that (19)b is not true, given the normal assumptions concerning the existence of unicorns. (19)a, however, is true. (19)a and b differ in that (19)b purports to refer to particular unicorns,

whereas (19)a does not. In a system which includes truth value gaps, we may say that the NP those unicorns requires existential presupposition, that that presupposition is not satisfied, and that therefore the sentence has no truth value; whereas unicorns in (19)a does not carry existential presupposition, thus there is no existential presupposition of unicorns which can be not satisfied, and that therefore the sentence can have a truth value. Because of this contrast, then, I will assume that NP's in nomics carry no existential presuppositions.

Let us return now to sentences such as (18)b. (18)b is at least two ways ambiguous. On one reading, (18)b may refer to an instance or instances of teaching performed by Russell and Whitehead. This reading is brought out in (20).

(20) Russell and Whitehead teach whenever their
teaching assistants are ill

On another reading, a property of Russell and Whitehead is specified - that they are teachers. The sentence on this interpretation does not entail that the act of teaching has or will ever be performed by Russell and Whitehead. To take a second example, the sentence this robot eats chrome on one reading means that the robot has a certain property, the ability to eat chrome. The sentence on this reading

does not entail that the robot ever has, or will, eat chrome.

It is interesting to note that sentences with mass predicates appear not to allow this last interpretation; while (18)b is ambiguous, (21) is not.

(21) Russell and Whitehead know logic

We will return to this topic in the next chapter.

We may now investigate the behavior of the Perfect and Progressive Aspects.

We may consider the Perfect Aspect to specify a time prior to a variable. Note that the Perfect Aspect may identify a time prior to a past, present, or future time.

(22)a The king had died
 b The king has died
 c The king may have died by the time Merlin returns

The same is true for the Progressive Aspect, which we will regard as specifying an interval of time, T.

(23)a The king was dying
 b The king is dying
 c The king may be dying by the time Merlin returns

Thus we may regard the semantic interpretations of Perfect and Progressive Aspects to be roughly as follows. As I remarked above, I consider these as incomplete; it seems clear that there are other distinctions between Past Tense and Perfect Aspect than those given here, but this is orthogonal to a more general point which I wish to develop.

(24) ... PERFECT ASPECT ...

is rewritten as

$\exists t_2 < X \mid \dots$

(25) ... PROGRESSIVE ASPECT ...

is rewritten as

$\exists T \exists Y \mid \dots$

Rules (12), (13), (24), and (25) should be coalesced as follows:

(26) ... $\left(\begin{array}{c} \text{PAST TENSE} \\ \text{PRESENT TENSE} \end{array} \right)$ (PERFECT ASPECT)

(PROGRESSIVE ASPECT) ...

is rewritten as

$\left(\begin{array}{c} \exists t_1 \geq 0 \\ \exists t_1 < 0 \end{array} \right) (\exists t_2 < X) (\exists T \exists Y) \mid \dots \text{ at } Z$

Given (26), we may consider the rule which rewrites the variables X, Y, and Z.

Sentence (27) is analyzed at some level of its derivation as (28), which is of the form (29).

- (27) Sherlock had been thinking
 (28) Sherlock PAST TENSE PERFECT ASPECT
 PROGRESSIVE ASPECT think
 (29) ... FAST TENSE PERFECT ASPECT
 PROGRESSIVE ASPECT ...

Thus, by rule (26), (28) may be rewritten as (30).

- (30) $\exists t_1 < 0 \exists t_2 < X \exists T \exists Y \mid$ Sherlock think at Z

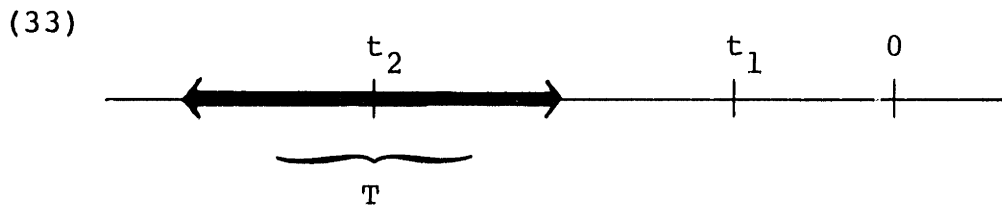
Let us now propose the rule that the value of a variable V , which I will use as a cover term for the variables X , Y , and Z above, is equal to the value of the variable t , which I will use as a cover term for t_1 , t_2 , and T , in the expression to the left of that variable V . This rule might be formalized as follows:

- (31) the structure
 $\dots Q(\dots t \dots) \underline{\quad} V \dots$
 is rewritten as
 $\dots Q(\dots t \dots) \underline{\quad} t \dots$
 where t and V are variables, and $\underline{\quad}$
 contains no $Q(\dots t \dots)$

(31) applies to (30) to yield (32):

(32) $\exists t_1 < 0 \exists t_2 < t_1 \exists T \exists t_2 \mid \text{Sherlock think at } T$

The content of (32) might be depicted as in (33):



By placing arrows at the ends of interval T , I wish to express the fact that the length of T is left unspecified, and might include t_1 or 0 .

Thus (32) seems to correctly represent the temporal designation of sentence (27).

But let us consider the claim made by rule (31). Rule (31) states that the semantic form of a class of operators is dependent upon the semantic form of operators immediately to the left.

This is exactly the form of relationship which Affix Hopping expresses.

Affix Hopping applies to (34), to yield (35), and ultimately (36):

(34) Sherlock [PAST TENSE] [#have#en] [#be#ing]
[#think#]

- (35) Sherlock [#have#PAST TENSE] [#be#en] [#think#ing]
 (36) Sherlock had been thinking

Thus there exists a congruence between the content of rule (31) and Affix Hopping.

Several possibilities are suggested by this congruence.

It is possible that the syntactic rule of Affix Hopping could be dispensed with in favor of a theory incorporating rule (31) and an account of the meaning of perfect and progressive participles. Under such a theory, perfect and progressive participles would each contain a variable, V, and could be generated freely. Only some combinations would be interpretable by rule (31).

Tensed forms could not be generated freely, however. This is so because sentences such as (37) are grammatical.

- (37) Did Dr. Lao own a medusa?

Under the standard analysis, the grammaticality of (37) can be described only if Affix Hopping follows Subject-Aux Inversion. This is the case whether do is inserted or deleted. It has been pointed out to me by Howard Lasnik that this analysis is itself problematic; if an interpretation of the cycle is assumed in which it is held that the cycle on which a rule applies is the first cycle on which

it could apply, Affix Hopping is S-cyclic, and Subject-Aux Inversion is \bar{S} -cyclic. Under this interpretation of the cycle, then, (37) cannot be generated. Thus, either this interpretation of the cycle, which is a desirable one, must be abandoned, or a different conception of Subject-Aux Inversion and/or Affix Hopping must be advanced. I will not pursue this topic here, however.

To conclude, then, it has been argued that the syntactic relation expressed by Affix Hopping is congruent to a semantic relation expressed by rule (31). Thus a dependency between lexical items which is marked at surface structure is congruent to a semantic dependency between those items.

Chapter 2

Semantic Conditions on NP-Binding

In the following chapter, a semantic condition on surface structure will be proposed. This condition will involve the structural relationship between an NP and the position from which it has moved. As was remarked in the Introduction, it is possible to limit the power of transformations in two ways; conditions can be imposed on the application of transformations, and conditions can be imposed on the output of transformations. The proposed condition is of the second type. It will be demonstrated that this semantic condition makes empirical claims concerning the operation of the syntax; for example, various ad hoc conditions marking syntactic rules as optional or obligatory will be shown to be unnecessary, given this condition. A rule of semantic interpretation will also be suggested which will involve the relation between an NP and the place from which it has moved. I consider this rule to be of a speculative nature; its formulation involves the construct "property," a construct whose definition within

linguistics is by no means clear. I consider the proposals made here to constitute modest progress toward such a definition. It is necessary first to consider the formulation of grammar under which this general theory will be constructed.

The cyclic NP-movement rules will be formalized as follows. Given a rule relating NP and X, and a structural description as in (1)a, b, the structural change will be as in (2)a, b, respectively, where the symbol "t" will be referred to as "trace."

- (1)a ... X ... NP ...
 b ... NP ... X ...
 (2)a ... NP ... t ...
 b ... t ... NP ...

It is argued in Emonds (1970) that all cyclic rules of the form (1)-(2) are structure-preserving; i.e., that X is NP. It will be assumed that this argument is sound. We will impose the condition that only rules moving NP leave trace.

We will also impose the condition that X be phonologically and semantically unspecified. We will distinguish two phonologically unspecified elements, Δ and $*$. Δ will be defined as semantically specified; it will be this

element which may be controlled, in the sense defined in Chapter 4. * will be defined as semantically unspecified. As discussed in Chapter 4, there are elements which require the presence of Δ ; with this proviso, it is generated freely. * will also be generated freely, with the proviso that some elements are subcategorized to require the presence of *.

These cases will be mentioned below. The symbol t will also be semantically unspecified. Under a formulation of grammars of this type, then, to impose the condition that X be phonologically and semantically unspecified is to impose the condition that X be * or t, given the further assumption, which we will make, that there are no other phonologically and semantically unspecified elements. As will become clear in Chapter 4, there will exist no deletion under identity in the theory of grammar developed here; deletion will be restricted to deletion of designated elements. That X may only equal * or t follows, then, from the principle of recoverability of deletion, now formulated as a principle of recoverability of deletion of designated elements.

We will say that NP in (2) "binds" t. We will impose the conditions on surface structure that * may not appear and that t must be "properly bound."

We will now begin to develop the construct "properly bound" with a discussion of the passive.

The term "passive" will refer not to a transformation but to a construction. A passive with an agent is the output of two separate transformations, NP-Postposing and NP-Preposing, as in Chomsky (1970).

Under this analysis, a deep structure such as (3) may be postulated; NP-Postposing applies to (3) to yield (4) and NP-Preposing applies to (4) to yield (5).

- (3) John was hit Fred by *
- (4) t was hit Fred by John
- (5) Fred was hit t by John

NP-Preposing may be stated roughly as (6); and NP-Postposing as (7):

- (6) X NP Y+V NP Z
 1 2 3 4 5 6
 1 5 3 4 t 6
- (7) X NP Y V Z by NP W
 1 2 3 4 5 6 7 8
 1 t 3 4 5 6 2 8

We may now consider the passive construction in greater detail.

Consider first the following example:

(8) *Alexander was conquered Egypt by Plato

(8) would be derived from a deep structure as in (9):

(9) Alexander PAST TENSE [#be#en] conquer Egypt
by Plato

We may eliminate (9) from the set of well-formed deep structures by stating that the agentive by strictly subcategorizes a * object. It may further be stated that the presence of by * is optional, as is the presence of other prepositional phrases in deep structure, e.g., for-datives. On this view, then, both (10) and (11) are well-formed deep structures.

(10) Alexander PAST TENSE [#be#en] conquer Egypt by *

(11) Alexander PAST TENSE [#be#en] conquer Egypt

(10) may be blocked at surface structure by the condition that there may be no *'s at the level of surface structure.

(10) is derived through the non-application of the rule of NP-Postposing. If NP-Postposing applies, (12) is derived:

(12) *t was conquered Egypt by Alexander

We may propose the condition on surface structure that if NP does not precede t, NP does not properly bind t. This condition will be sharpened below; structural properties will

also be seen to be relevant. Given this condition, and the condition that all traces must be properly bound, (12) is blocked.

Example (13), pointed out by Ross, raises an interesting issue with regard to this proposal.

(13) *Alexander, t was conquered Egypt by t

(13) is derived by NP-Postposing of Alexander into the by-phrase, followed by Topicalization of Alexander. Although Alexander precedes both traces, (13) is ungrammatical. Thus (13) is an apparent counterexample to the proposed theory of proper binding. It is necessary, however, to consider the relation between the two instances of t in (13). Note that the t in subject position in (13) is bound by the t in the by-phrase. But the t in subject position precedes the t in the by-phrase. Thus (13) is blocked because the t in subject position is not properly bound.

We will investigate more fully the implications of this proposal below; it is clear that this proposed property of proper binding is sufficient to result in the designation of (12) as ill-formed, since Alexander does not precede t.

Given this proposed property of proper binding, (14) is the only grammatical output of deep structure (10):

(14) Egypt was conquered t by Alexander

We may now consider the application of the analysis presented to the derivation of passive nominals. A deep structure of the following form is a relevant example:

(15) the young disrespect authority by *

NP-Postposing (and Of-Insertion) may apply to this structure to yield (16):

(16) t disrespect of authority by the young

Given the proposed property of proper binding, (16) is ill-formed, yet there exist grammatical sentences such as the following:

(17) Disrespect of authority by the young is
increasing

In order to explain the grammaticality of (17) in terms consistent with the analysis of proper binding presented thus far, examples such as the following must be considered:

(18)a Rome's destruction of Carthage
b the destruction of Carthage by Rome

If it is assumed that (18)b has as its deep structure (19), there appears to be no source for the determiner the in (18)b.

(19) NP [DET [Rome's] \bar{N} [destruction Carthage by *]]

If it is postulated that the determiner the is present in the deep structure of (18)b, the following structure would be required.

(20) NP [DET [the] DET [Rome's] \bar{N} [destruction of Carthage by *]]

However, if structures such as (20) are assumed to be syntactically well-formed, there appears to be no principled explanation for the ungrammaticality of strings such as the following:

- (21)a *the the man
 b *the John's book
 c *the Rome's destruction

In order to both provide a source for the determiner the in nominals such as (18)b and save what appears to be the syntactic generalization that only one determiner position is generated per NP, the following analysis may be appealed to.

We may first regard the underlying forms of a, the, etc., to be feature specifications of the determiner node. Under such an analysis, the deep structure of the man might be as follows:

(22) NP[DET[*] \bar{N} [man]]
+Def

A rule "spelling out" DET/+Def would relate (22) and (23).

(23) NP[DET[the] \bar{N} [man]]

Consider now the derivation of the nominal the recitation by John, which would have a deep structure as in (24):

(24) NP[DET[NP[John]] \bar{N} [recitation by *]]
+Def

NP-Postposing yields (25).

(25) NP[DET[NP[t]] \bar{N} [recitation by John]]
+Def

Determiner Spelling yields (26), the deleting t.

(26) NP[DET[the] \bar{N} [recitation by John]]

Given this analysis, we may return to the problem posed above concerning the derivation of nominals such as disrespect of authority by the young, and the binding analysis. Given the analysis of the determiner system proposed above, it is evident that there is no problem in the derivation of nominals such as the recitation by John, since the deletes t bound by John. The problem with

nominals such as disrespect of authority by the young with respect to this analysis lies in the fact that the nominal appears to have no determiner at all, hence no determiner which could delete *t* bound by the young.

There is, however, evidence that the noun disrespect carries a determiner that has no phonological shape, i.e., that the determiner of disrespect is a zero morpheme. What follows is an argument to that effect.

As has been often noted, the determiner system of mass nouns and plurals is identical. The definite determiner the can occur with both, of course, e.g., the men, the sand; but more strikingly, both mass nouns and plurals can occur with the determiner sm, sm men, sm sand, and without overt determiners, as in: men found sand in their shoes. In order to express this regularity, we may first postulate the binary feature of number \pm Individual. The intended reference of a $+$ Ind noun will be to an individual; the intended reference of a $-$ Ind noun will not be to an individual. Thus, under this analysis, the intended reference of the men is to a non-individual, and the intended reference of the sand is to a non-individual.

Given this distinction, we may set the task of describing the determiner system of the non-Individual and Individual numbers.

We may first note that both a and sm are ambiguous with respect to specificity; in the following sentences the object NP's may have intended specific or non-specific reference:

- (27)a I'm looking for an honest man
 (his name is Cochise)
 (in order to determine whether such a person could exist)
- b I'm looking for sm honest men
 (they are friends of mine)
 (can more than one be alive at one time?)
- c I'm looking for sm gold
 (I left it right there on the table)
 (what with inflation, there may not be any more on the market though)

We may call a and sm the existential determiners of the Individual and non-Individual numbers, respectively.

The determiner the is apparently specific:

- (28)a I'm looking for the honest man
 (his name is Cochise)
 ?(in order to determine whether such a person could exist)

- b I'm looking for the honest men
 (they are friends of mine)
 ?(can more than one be alive at one time?)
- c I'm looking for the gold
 (I left it right there on the table)
 ?(what with inflation, there may not be any
 more on the market though)

Consider now the interpretation of sentences containing NP's without overt determiners:

- (29)a I'm looking for honest men
 ?(they are friends of mine)
 (can more than one be alive at one time?)
- b I'm looking for gold
 ?(I left it right there on the table)
 (what with inflation, there may not be any
 more on the market though)

If, following a suggestion of Chomsky's, we regard the determiner the as the universal quantifier, and sm and a as existential, we have the following system:

	-Ind		+Ind	
	∀	∃	∀	∃
+Spec	the	sm	the	a
-Spec	1	sm	2	a

Thus, under this formulation, the definiteness associated with the +Ind derives from universal quantification of a unit class.

We may note that the, both as +Ind and -Ind, as well as sm and a, can occur in attributive contexts, where intended reference is apparently non-specific. The following is an example, where the murderer is attributive:

- (28)' I'm looking for the murderer (in order to
determine whether it was murder in this case)

Attributives are orthogonal to this investigation, however.

With respect to the cell marked "2," the use of the in such nomics as the horse is mammalian appears to satisfy the featural requirements.

We may now consider the cell marked "1."

Paradigm (29) establishes that the NP's without overt determiners are -Spec. We may now consider whether the quantification of these NP's is universal or existential. The following two sentences are relevant:

- (30)a Books about bird songs are filed under "Music"
in that store (*but not all of them are)
b Sm books about bird songs are filed under
"Music" in that store (but not all of them are)

Sentence (30)a entails that if X is a book about bird songs in that store, X is filed under "Music." Sentence (30)b entails that there are books about bird songs in that store which are filed under "Music." The possibility is left open that there might be books about bird songs in that store which are not filed under "Music." We may conclude, then, that there exists a reading of NP's without overt determiners which corresponds to the interpretation associated with the features [-Ind / V / -Spec]. Equivalently, we may state that at the morphological level there exists a \emptyset determiner with those features.

The analysis presented is incomplete in several respects. Consider first the following pair:

- (31)a I bought books about linguistics yesterday
 b I bought sm books about linguistics yesterday

It is certainly not the case that (31)a entails that I bought every book about linguistics yesterday. On the other hand, (31)a and (31)b do not seem to be synonymous. Consider (31)a as the answer to the question "What did you do yesterday?" In that context (31)a seems to assert that books-about-linguistics-buying was my major activity yesterday. The difference between (31)a and (31)b seems parallel to the difference between the following pair, to be considered in the same context:

- (32)a I slept
 b I slept through a lecture

If the perceived contrast between (31)a and (31)b is as described, it may be maintainable that there exists a universal quantifier in the interpretation of (31)a; as has frequently been suggested, the generic and universal interpretations are closely linked. I will not, however, pursue this matter here, but rather raise it as a problem for future research.

There are contexts in which the interpretation of a non-Individual NP without overt determiner must be existential; the There-Insertion frame is such a context:

- (33) There are men on the roof

I have no explanation for the interpretation of (33). Note however that while the sentences in (34) are odd, those in (35) are not.

- (34)a Men are on the roof
 b All men are on the roof
 (35)a Men are fond of baseball
 b All men are fond of baseball

(35)a and (35)b are quite close in meaning; men in (35)a cannot be interpreted as existentially quantified. Apparently,

characteristics, such as tall, fond of baseball, etc., necessitate that the interpretation of the quantification of the subject be universal, whereas non-characteristics, such as be on the roof, require that the quantification of the subject be existential. Thus the oddness of (34)a and (34)b arises from the fact that being on the roof must be interpreted as a characteristic of men, which it is not. Under this theory, then, (34)a and (34)b are simply false. The same point holds for mass nouns, as the following sentences demonstrate:

- (36)a Snow is on the roof
 b All snow is on the roof
- (37)a Snow is white
 b All snow is white

It is apparently the case, then, that NP's without overt determiners which appear in There-Insertion frames receive existential interpretation.

This fact is apparently related to the following. In a narrative context such as There was total chaos. Men and women were running down the streets, the interpretation of men and women is existential, and quite close to that of sq men and women. Thus there are instances of existential interpretation of NP's without overt determiners in narrative contexts.

The property which There-Insertion frames and narrative contexts share is that in both instances it is felt that the topic is a state of affairs, not, for example, an NP in those sentences. In the narration above, the second sentence is in no way "about" men and women, rather it is "about" an aspect of chaos. Similarly, in a sentence such as There was snow on the roof the sentence is not "about" snow, but rather an aspect of a physical environment.

I cannot pursue the relation between the interpretation of determiners and the construct "topic" here, however. It may be necessary, given a full investigation of this relationship, to postulate that there exists a \emptyset determiner morpheme which occurs only in sentences in which there is no NP topic. More likely, however, is the possibility that there are systematic differences in the interpretation of many of the determiners in such contexts.

It is sufficient for the argument under development here, however, to present a case supporting the postulation of a zero morpheme determiner with the features [-Ind / \forall / -Spec].

Given this conclusion, we may return to the question of the relation between the proposal that t bound by X is preceded by X at surface structure and the analysis of the passive in nominals.

The problem which arose was that the nominal disrespect of authority by the young apparently has (38) as a surface structure:

(38) t disrespect of authority by the young

It has now been argued, however, that there exists a zero determiner in the non-Individual number. Disrespect is non-Individual, in particular, a mass noun. We may, then, assign the nominal in question the following deep structure:

(39) NP [DET [NP [the young]] \bar{N} [disrespect
[-Ind
V
-Spec] authority by *]]

NP-Postposing (and Of-Insertion) yields:

(40) NP [DET [NP [t]] \bar{N} [disrespect of authority
[-Ind
V
-Spec] by the young]]

Determiner Spelling yields:

(41) NP [DET [∅] \bar{N} [disrespect of authority by
the young]]

We may conclude, then, that the binding proposal makes the correct predictions concerning the behavior of NP-Preposing in sentences and nominals, given a more highly

articulated theory of the Determiner system.

We may postulate that Determiner Spelling follows the rule of NP-Preposing. Determiner Spelling, like other rules inserting words into positions, will require that that position be semantically and phonologically \emptyset , in this system * or t. This follows, as noted previously, from recoverability of deletion. Thus if NP-Preposing applies, the structural description for Determiner Spelling will not be met. If NP-Preposing does not apply, the structural description for Determiner Spelling will be met. If we postulate that all determiner positions are * in the base, we have the correct result that either Determiner Spelling or NP-Preposing will apply in all grammatical nominals.

Under the theory thus constructed, then, it follows as a consequence that NP-Preposing applies in all grammatical S-passives, but not in all grammatical NP-passives.

We may now investigate the passive construction in greater detail; in particular, we may investigate the agentless passive.

I assume, following in essentials Chomsky (class lectures, 1974), that NP-Preposing relates the following pairs:

- (42)a * seems Xerxes to be ill
 b Xerxes seems t to be ill
 (43)a * was defeated Xerxes
 b Xerxes was defeated t

As stated above, I also assume that * is generated freely, some items strictly subcategorizing *. I assume that seems is subcategorized for a * subject. Under this assumption, (44) is a well-formed deep structure:

- (44) * hit Cyrus

We must ask how it is possible to block (45)b, which would be assigned surface structure (45)a, which would derive from (44) via NP-Preposing.

- (45)a Cyrus hit t
 b *Cyrus hit

We may contrast this with the derivation of (46)c, with surface structure (46)b, from (46)a.

- (46)a * was hit Cyrus
 b Cyrus was hit t
 c Cyrus was hit

Under the assumptions given, the contrast in grammaticality between (45)b and (46)c must involve their surface structures, (45)a and (46)b, respectively.

An observation concerning the semantic interpretation of the following sentences suggests the beginning of an explanation for the noted contrast.

- (47)a Cyrus seems to be ill
- b Cyrus was considered for the job
- c Cyrus crossed the Maeander yesterday

It appears to be the case that seems to be ill and considered for the job constitute properties of Cyrus, whereas crossed the Maeander yesterday is not a property of Cyrus, in some sense of "property," a sense restricted to the theory of natural language.

Justification can be presented for this assertion by examining the semantic interpretations of these types of sentence.

Consider first sentences such as (47)c, and, in particular, the following pair:

- (48)a John eats cheese
- b John ate cheese once yesterday

As was pointed out in Chapter 1, while (48)a and (49)a share a sense, (48)b does not have (49)b as a paraphrase.

- (49)a John is a cheese-eater
- b ?John was a cheese-eater once yesterday

Sentence (48)a, in the sense which it shares with (49)a, does not entail that John ever does eat cheese. Sentence (48)b does entail that John ate cheese at some time.

The close semantic relationship between (48)a and (49)a suggests that in (48)a, eats cheese is to be interpreted as a property of John. That there is no close semantic relationship between (48)b and (49)b suggests that ate cheese once yesterday is not to be interpreted as a property of John.

Apparently it is the case that active eventive sentences, such as (48)b, are not interpreted as specifying properties of their subjects. Thus in (47)c, crossed the Maeander yesterday is in no sense the specification of a property of Cyrus. Though I have not given the necessary and sufficient conditions for interpretation of a predicate as specifying a property, I feel that the conclusion reached has some intuitive support.

Consider second sentences such as (47)b, and passive sentences in general.

Observations and arguments presented in Chomsky (1955) are of relevance here. In an analysis of verb classes, Chomsky makes the following remarks (Chomsky, 1955, §62.2, p. 293ff.):

There is also a class of verbs \underline{V}_δ that occurs with ing-phrases but not with to-phrases.

- (59) $\underline{VP}_1 \rightarrow \underline{V}_\delta \wedge \underline{NP} \langle \underline{ing} \rangle \underline{VP}_1$
 $\underline{V}_\delta = \text{see, feel, hear, watch, ...}$

Thus we have "I saw him come", "I saw him coming", etc.

\underline{V}_δ is a class of special interest because it introduces a distinction between be^{en} and the other elements of the auxiliary phrase. Alongside of (59) we also have

- (60) $\underline{VP}_1 \rightarrow \underline{V}_\delta \wedge \underline{NP} \langle \underline{ing} \rangle \underline{be}^{\wedge en} \wedge \underline{VP}_1$

giving such sentences as

- (61) I don't like to see people $\left\{ \begin{array}{l} \text{be} \\ \text{being} \end{array} \right\}$ intimidated
 (62) " " " " " " " " accused
 without evidence

But we cannot have either (63) or (64):

- (63) I don't like to see people $\left\{ \begin{array}{l} \text{be} \\ \text{being} \end{array} \right\}$ drinking
 (64) " " " " " " $\left\{ \begin{array}{l} \text{have} \\ \text{having} \end{array} \right\}$ drunk

Thus be^{en} can occur in this position, but neither be^{ing} nor have^{en} (nor, of course, [have^{en}]^{en}[be^{ing}], etc.) can occur here.

A way to avoid the necessity of treating (60) as an exception is suggested by the fact that (65) is a grammatical sentence.

- (65) I don't like to see people $\left\{ \begin{array}{l} \text{be} \\ \text{being} \end{array} \right\}$
 argumentative without cause

This is a case of (59) = $V_{\delta} \hat{NP} <ing> VP_1$, where VP_1 becomes $be \hat{adjective} \hat{PP}$. But "accused" [= $en \hat{accused}$] (or "intimidated") can also be regarded as an adjective. If it is, then (60) becomes a special case of (59), paralleling (65). This suggests that the analysis can be simplified if $be \hat{en}$ is dropped from VP_{A2} , so that a passive such as "John was accused" is treated as a special case of $be \hat{adjective}$, just like "John was sad" or "John was tired."

Chomsky notes also that (Chomsky, 1955, §62.2, p. 294):

There are other examples of a distinction between $be \hat{en}$ and the other elements of VP_{A2} that lend further support to the analysis of passives as $be \hat{adjective}$. For instance, we see that (66) and (67) are acceptable sentences, but not (68).

- | | | | | | | | | | |
|------|----|-------|----|--------|----------|-----|----|-------------|--|
| (66) | he | likes | to | attend | meetings | and | be | applauded | |
| | | | | | | | | (by his | |
| | | | | | | | | supporters) | |
| (67) | " | " | " | " | " | " | " | friendly | |
| | | | | | | | | (with the | |
| | | | | | | | | delegates) | |
| (68) | " | " | " | " | " | " | " | voting | |
| | | | | | | | | (for his | |
| | | | | | | | | friends) | |

The existence of constructional homonyms such as "John was frightened by the new methods" is problematic within a theory, which Chomsky examines, which does not include a level of transformational analysis. The discussion excerpted

above is within the context of a larger discussion of the inadequacies of such a theory. The "verbal force" of "frightened" under one interpretation is explained by deriving "John was frightened by the new methods" from a sentence in which "frighten" is a transitive verb. It is thus explained on a higher level than that of phrase structure.

Later, in a discussion which in part concerns the derived constituent structure of the passive, definitions are developed by virtue of which passives are assigned the derived constituent structure of kernel sentences such as "Bill was tired from the long trip" (cf. Chomsky, 1955, §83.2). Under the analysis of the semantic interpretation of passives which I wish to propose, the semantic interpretation of passives such as "John was accused by Bill" and "John was tired from the long trip" will be parallel as well; in both instances A ... will specify a property of John.

It should be noted that the syntactic parallelism which Chomsky discusses extends to get-passives as well; parallel to "John got arrested" and "John got Bill arrested" we have "John got mad" and "John got Bill mad."

It should further be noted that it is possible that the passive be and the copula be are identical, as against

the progressive be. Examples such as the following suggest that this is the case:

- (50)a John is the only person I know who is both
intelligent and believed to be of royal blood
b ??John is the only person I know who is both
wealthy and working long hours

The asymmetry noted between passive and progressive participles extends to the occurrence of participles in attributive position. Note that while there appears to be a semantic relation (of presupposition, in a loose sense) between (51)a and b, there is no such relation in (52)a and b.

- (51)a John saw the { murdered } man
 b The man was { dishonest }
(52)a John saw the dancing bear
 b The bear was dancing

In (52)a, it is apparently "presupposed" that the bear could dance, not that it was dancing. There are few convincing cases which suggest that there exist progressive participle attributives. A sentence such as "John heard the ticking clock" does not "presuppose" that the clock was ticking; only that the clock could tick. This is

brought out in a sentence such as "John heard the ticking clock breaking." We shall return to this topic below, in connection with the interpretation of the passive be.

It is not the case, as has often been noted, that all passive participles can occur in attributive position; often the presence of an adverb is required, for reasons which remain obscure. Thus we have "a recently killed man" but not "a killed man." The general point seems clear, however; while participles in the shape V-en can in general carry an interpretation parallel to the passive in attributive position, participles in the shape V-ing cannot in general carry an interpretation parallel to the progressive in attributive position. This constitutes, then, another respect in which passive participles and non-derived adjectives are parallel at the level of surface structure.

I will now present an argument that the surface passive VP specifies a property of the derived subject.

It is necessary first to establish some terminology.

We will say that an NP is "predicable" only if it is possible to specify a property of the intended referent of the NP. Thus an NP will be "predicable" only if it has an intended referent.

I wish to maintain that the passive VP specifies a property of the derived subject. This will entail that

the predicable sense of an NP will be forced if the NP is the derived subject of a passive sentence. In other words, if an NP can be referential, it must be referential if it is the derived subject of a passive sentence.

Consider, for example, the following contrast:

- (53)a Merlin is looking for a unicorn
 b A unicorn is being looked for by Merlin

"A unicorn" is an intentional object in (53)a; (53)a does not presuppose the existence of unicorns. In (53)b, however, the existence of unicorns is presupposed. "A unicorn" is an expression which can be used referentially, therefore it must have an intended referent in (53)b, since, by hypothesis, the passive VP specifies a property of that referent. Thus the difference in meaning noted between (53)a and (53)b is accounted for, given the proposed principle of interpretation.

We may now consider the class of idiomatic expressions.

As is well known, the idioms take advantage of, pay heed to, and keep tabs on allow an "inside" passive:

- (54)a Advantage was taken of Mycroft
 b Heed was paid to the Hydra
 c Tabs were kept on Telemachus

As the following sentences demonstrate, advantage, heed, and tabs are predicable:

- (55) a The men took $\left\{ \begin{array}{l} \text{great} \\ \text{unfair} \\ \text{insufficient} \end{array} \right\}$ advantage of Mycroft
- b Hercules paid $\left\{ \begin{array}{l} \text{great} \\ \text{insufficient} \\ \text{careful} \end{array} \right\}$ heed to the Hydra
- c They kept $\left\{ \begin{array}{l} \text{close} \\ \text{careful} \end{array} \right\}$ tabs on Telemachus

Thus the fact that advantage, heed, and tabs can be fronted is as would be predicted by the hypothesis under consideration.

We may now consider idioms such as kick the bucket.

The string kick the bucket has two senses, one derived compositionally from the meanings of kick and the bucket, the other being idiomatic, not compositional, and roughly equivalent to the meaning of die. In the idiomatic sense of kick the bucket, the bucket has no intended referent. Thus it follows from the hypothesis that the passive VP specifies a property of the derived subject that the sentence the bucket was kicked by John can only carry the non-idiomatic sense, since only in that sense is the bucket a referential expression. Note further that in the idiomatic sense of kick the bucket, no attributive adjectives may occur on bucket. By the proposed theory, then, (56)a and (56)b cannot carry the idiomatic sense, since the bucket in the

idiomatic sense is not predicable.

- (56)a The bucket was kicked by John
 b John kicked the oaken bucket

Other VP idioms which behave identically to kick the bucket are hit the spot, shoot the bull, shoot the breeze, fill the bill, shake a leg, blow the whistle, make the grade, take the rap, make the most of, strike it rich, hit the skids, hit the bottom of the barrel, toe the line, lead the way, hold the fort, give a damn, chew the rag, etc.

There are other VP's which might also be called idiomatic, in that the NP requires a particular V, or the V a particular NP. This class includes take advantage of, pay heed to, and keep tabs on, as well as pop the question, put the point across, make inroads, and perhaps a few others. The behavior of these is consistent with the proposed hypothesis; the question, the point, and inroads are predicable:

- (57)a She popped the first question
 b The question was popped too early
- (58)a She put her point across
 b The point was put across well
- (59)a She made great inroads toward a solution
 b Inroads were made toward a solution

There exist a few apparent counterexamples to the analysis of VP idioms presented to which we may now turn.

It has been pointed out to me by Ross that there does exist an adjective, proverbial, which can occur in attributive position in VP idioms. The following has its idiomatic sense:

(60) John kicked the proverbial bucket

Solace can be gained from the fact that (60) carries only the idiomatic sense; and that (61) is odd:

(61) ?John saw the proverbial bucket

I have no explanation for the unusual behavior of this adjective.

A second apparent counterexample is the VP idiom break the ice. While the ice apparently may be fronted, no attributive adjectives may occur with it:

(62)a The ice was broken

b John broke the slippery ice

(62)b has only a non-idiomatic sense; (62)a has an idiomatic sense. It is likely, however, that (62)a is not derived by NP-Preposing. Note first that in (63)a, the narrative use of the present is forced, whereas in (63)b it is not.

- (63)a The goblet is broken by Fred
 b The goblet is broken

This contrast may be accounted for by postulating the existence of a lexical item broken, which is an adjective. Under such an account, the derivation of (63)b is parallel to that of (64):

- (64) The goblet is expensive

Note now that (65)a does not appear to carry an idiomatic sense, whereas (65)b does, and that in (65)b the narrative use of the present is not forced:

- (65)a The ice $\left\{ \begin{array}{l} \text{was} \\ \text{is} \end{array} \right\}$ broken by Fred's behavior
 b The ice is broken

While the judgments are delicate, we may tentatively propose that the ice be broken is itself an S idiom of the form NP be A. A second idiom which appears to behave in this fashion is bury the hatchet.

We have now examined the interpretations of sentences such as John eats cheese, contrasted with John ate cheese yesterday, and the passive. We have presented arguments which make plausible the suggestion that in one sense of John eats cheese, eats cheese can be interpreted as a property of John, whereas ate cheese yesterday cannot, and

that the passive VP specifies a property of the referent of the derived subject. We will now consider sentences such as Cyrus seems to be ill. When such sentences have been investigated, this long digression, which began with the problem of characterizing Cyrus hit t as ungrammatical, will be completed.

We will now argue that in a string of the form (66), seems t to VP specifies a property of NP.

(66) NP seems t to VP

The behavior of S idioms is relevant to this claim.

Consider first the following pair, which contrast in that (67)b may carry an idiomatic interpretation, whereas (67)a may not:

(67)a The cat seems t to have gotten your tongue

b The cat seems t to be out of the bag

This contrast may be accounted for on the following grounds. While the cat in neither idiom allows attributive adjectives, the cat in the cat is out of the bag does appear to have an intended referent. A rough paraphrase of this metaphorical idiom might be the story is known, and the cat, through the medium of the metaphor, may be said to have a referent similar to the story. It is much less evident

what the intended referent of the cat would be in the idiom the cat got X's tongue. Thus the contrast between (67)a and (67)b is accounted for if seems t to VP is interpreted as a property of the derived subject. The logic of this is exactly parallel to that of the VP idioms.

These contrasting idioms display behavior consonant with this account in the following examples:

- (68)a The cat's got your tongue, doesn't it?
 b The cat's out of the bag, isn't it?

As in the case of (67)a and b, (68)b may carry an idiomatic interpretation, whereas (68)a may not. This follows from the contention that the cat in the cat's got X's tongue has no intended referent in the idiomatic sense of that expression. The pronoun in the tag must be interpreted as in the relation of intended coreference with the subject; thus the subject must have a referent. Therefore, by the proposed hypothesis, (68)a only carries a non-idiomatic sense. The possibility of an idiomatic reading for (68)b is expected, given the possibility of an idiomatic sense for (67)b, given the proposed hypothesis that seems t to VP specifies a property of its subject. Other S idioms which behave like the cat's out of the bag are the jig is up and perhaps the shit hit the fan. The idiom X's ass is grass behaves like the cat's got X's tongue.

We may conclude this digression with the tentative proposal that a string of the form seems t to VP specifies a property of the subject; this proposal seems to give a precise account of the behavior of S idioms.

We may now give a preliminary formulation of the principle underlying the above observations.

- (69) in the structure
 ... NP ... α [... t ...] ... ,
 where NP binds t,
 α is interpreted as specifying a property
 of the intended referent of NP

It has been suggested that this rule, which we will call Property Interpretation, correctly characterizes the interpretations of the outputs of NP-Preposing. A variety of cases have been given in which the idiomatic sense of an expression is precluded by (69).

We will now consider the application of Property Interpretation in a final case, and then return to the problem of the syntax of the passive. We will then demonstrate the relevance of Property Interpretation to that problem.

In the following sentence, a contrast is expressed between Baskerville and Caslon:

(70) Baskerville is inspired, while Caslon
seems to be inspired

The word while in this use forces a contrast; note that (71)
is ungrammatical:

(71) *Baskerville is inspired, while Caslon
is inspired

Ignoring irrelevant details, the deep structure of (70) is
(72):

(72) Baskerville is inspired, while * seems
Caslon to be inspired

It is apparent that no contrast between Baskerville and
Caslon can be established at that level. Consider now the
surface structure of (70), (73):

(73) Baskerville is inspired, while Caslon
seems t to be inspired

Property Interpretation applies, interpreting seems t to be
inspired as a property of Caslon; thus the contrast can be
characterized as a contrast between the properties inspired
and seems t to be inspired. To conclude, an analysis of the
meaning of (70) which seems to have strong intuitive support
follows naturally if it is assumed that there is a rule,

Property Interpretation, which applies at surface structure.

Let us recapitulate.

The above digression began when it was noted that (74)a and (74)b exhibit a contrast in grammaticality:

- (74)a *Cyrus hit
 b Cyrus was hit

(74)a and (74)b have the surface structures (75)a and (75)b, respectively:

- (75)a Cyrus hit t
 b Cyrus was hit t

(75)a and (75)b meet the structural description of Property Interpretation. It was argued above that active eventive VP's do not specify properties of the referents of their subjects, whereas passive VP's do. (74)a is ruled out, therefore, as uninterpretable by Property Interpretation.

The theory of traces which we have proposed may be characterized in the following way.

The condition that if NP binds t, NP precedes t is in effect a well-formedness condition on surface structures. It has been demonstrated that in the case of the passive construction, it is not necessary to mark the rule of NP-Preposing as obligatory in sentences and optional in

nominals, given that well-formedness condition. We have also presented a theory interpreting structural configurations in which trace occurs. Thus the construct trace has implications of an empirical sort both in syntax and semantics under the theory presented here. These implications will be further investigated below.

It should be noted that the theory of binding which we have developed is consistent with a formulation of grammars under which the movement of any element, not necessarily NP, leaves trace. Only NP's have referents, thus only NP's are relevant to Property Interpretation. It will be demonstrated that the structural properties of the well-formedness condition are of a quite general character, being relevant to the reflexive, reciprocal, and other relations, not merely to trace and Property Interpretation.

We may now conclude a longer digression, which involved the agentless passive.

In this discussion of the agentless passive, we must lastly consider deep structures of the form (76):

(76) The Greeks PAST TENSE [#be#en] defeat
 the Trojans

From this deep structure, (77) can be derived.

(77) *The Greeks were defeated the Trojans

The ungrammaticality of (77) can be explained in the following way. It has been argued that in (78), defeated t by the Greeks is interpreted as a property of The Trojans.

(78) The Trojans were defeated t by the Greeks

We may now ask a separate question: how is the word were interpreted in (78)?

Having argued that defeated t by the Greeks is semantically interpreted as a property, it is plausible to suggest that the word were in (78) is interpreted as the copula. Such an interpretation would suggest that it is not accidental that the copula and the passive auxiliary bear the same shape.

Under this proposal, were, the passive auxiliary, will be interpreted as the copula when in a structure such as (78), since given the rule of Property Interpretation, the passive VP is interpreted as specifying a property of the referent of the subject. A copula by definition will stand between an NP and a property.

However, Property Interpretation is inapplicable in (77), for the simple reason that (77) does not contain trace. The phrase defeated the Trojans cannot be interpreted as specifying a property of the referent of

The Greeks by that principle. Thus the passive auxiliary were does not receive an interpretation via the application of this rule. If the passive auxiliary is only interpreted as the copula, there is not level of structure that such an interpretation can be assigned to (77). Thus (77) is ruled out since were receives no interpretation.

Under the analysis of agentless passives developed here, it has been postulated that there is no by-phrase in deep structure. The by-phrase can be generated optionally in deep structure; a restriction may need to be stated to the effect that the by-phrase may occur only when [#be#en] is present. Thus (79) is ungrammatical for the same reason that (80) is.

(79) *John hit t by Fred

(80) *John hit t

This concludes the investigation of the passive construction.

* * * * *

We may now consider a construction which has been given little attention. The following are examples:

- (81)a The book reads easily/well
- b Clay tablets decipher with difficulty
- c Pine saws well
- d Clay shapes well
- e This pipe smokes nicely
- f Cheap bread dices unevenly
- g Wool rugs clean well
- h A person who isn't self-conscious photographs well
- i Bread refrigerates poorly
- j Math theses type slowly
- k Mistakes erase poorly
- l The gears on his bicycle shift poorly
- m Good wood waxes well
- n Children's toys assemble with difficulty
- o Cheap basketballs dribble poorly
- p Transformations order neatly
- q Foreign cars sell (well)
- r A thick beard shaves with difficulty
- s Some tennis balls serve better than others
- t Dark paint covers poorly
- u Newsprint binds poorly
- v The bicycle steers well
- w Granite lifts with difficulty
- x Problems solve with difficulty
- y Eggs poach (well)
- z Example sentences construct with difficulty

This construction, which we will call the "middle," has the following properties:

- a. The surface subject obeys selectional restrictions which the verb, in other contexts, imposes on its object.
- b. While the verb is subcategorized to require an object, there are no objects in surface structure.
- c. The verb is count, although the interpretation of the sentence seems non-eventive.
- d. The presence of an adverb is required in some cases.

We may account for properties (a) and (b) by positing that the sentences of (81) are derived by NP-Preposing. Under such an analysis, (82) has (83) as a deep structure, and (84) as a surface structure:

- (82) The book reads well
 (83) * reads the book well
 (84) The book reads t well

Note that (84) meets the structural description of Property Interpretation. The application of Property Interpretation in the middle serves to explain the fact that the middle has properties (c) and (d).

We may first consider property (d). Adverbs have an intriguing distribution in the middle. Those predicates which require an adverb in the middle also require an adverb when they stand as participles in attributive position. There are very few exceptions to this rule. The relevant data follow:

- (85)a *The book reads
 *a read book
 a frequently read book
- b ?Clay tablets decipher
 ?a deciphered tablet
 a recently deciphered tablet
- c ?Pine saws
 ?a sawed piece of pine
 a well sawed piece of pine
- d ?Clay shapes
 ?sm shaped clay
 sm nicely shaped clay
- e *This pipe smokes
 *a smoked pipe
 a frequently smoked pipe
- f Cheap bread slices
 sm sliced bread
 sm evenly sliced bread

- g *Rugs clean
 *a cleaned rug
 a well cleaned rug
- h *People photograph
 *a photographed person
 a frequently photographed person
- i Bread refrigerates
 sm refrigerated bread
 sm well refrigerated bread
- j *Math theses type
 ??a typed math thesis
 a well typed math thesis
- k Mistakes erase
 erased mistakes
 poorly erased mistakes
- l *The gears shift
 *a shifted gear
 the most frequently shifted gears
- m Good wood waxes
 waxed wood
 carefully waxed wood
- n ?Children's toys assemble
 ?an assembled toy
 a carefully assembled toy

- o *Basketballs dribble
 *a dribbled basketball
 a frequently dribbled basketball
- p Transformations order
 an ordered transformation
 a well ordered transformation
- q Cars sell
 a sold car
 a frequently sold car
- r *Thick beards shave
 *a shaved beard
 a carefully shaved beard
- s *Tennis balls serve
 *a served tennis ball
 a well served tennis ball
- t *Dark paint covers
 *sm covered dark paint
 sm well covered dark paint
- u Newsprint binds
 bound newsprint
 well bound newsprint
- v ?The bicycle steers
 ?a steered bicycle
 an easily steered bicycle

- w *Granite lifts
 *sm lifted granite
 ?laboriously lifted granite
- x *Problems solve
 ??sm solved problems
 sm infrequently solved problems
- y Eggs poach
 poached eggs
 well poached eggs
- z *Example sentences construct
 *a constructed example sentence
 a well constructed example sentence

If Property Interpretation applies in the middle construction, the fact that in some middle sentences an adverb is required can be explained on the ground that some verbs require adverbial modification in order to be interpreted as specifying a property, a requirement which is manifest in the data just presented. The presence of the copula in the passive apparently removes this requirement; "example sentences construct" is ungrammatical, while "example sentences were constructed" is grammatical. Since I have no theory which will predict whether a particular verb will require adverbial modification when interpreted as a property, the difference in behavior between the middle

and the passive in this regard remains unexplained.

The interpretations of the following examples, which seem related to the middle, are relevant:

- (86)a That book read itself
- b Clay tablets decipher themselves
- c Pine saws itself
- d Clay shapes itself
- e This pipe smoked itself
- f Cheap bread slices itself
- g Rugs clean themselves
- h People photograph themselves
- i ?Bread refrigerates itself
- j The math thesis typed itself
- k Mistakes erase themselves
- l The gears shift themselves
- m Good wood waxes itself
- n Those toys assembled themselves
- o Basketballs dribble themselves
- p Transformations order themselves
- q That car sold itself
- r Thick beards shave themselves
- s These tennis balls serve themselves
- t ?The dark paint covers itself
- u Newsprint binds itself

- v This bicycle steers itself
- w Granite lifts itself
- x These problems solved themselves
- y Eggs poach themselves
- z These example sentences constructed themselves

The sentences above all share two properties. The first is that, unlike the middle, they may carry eventive interpretation. The second is that they are interpreted as meaning that the process being referred to is easy, rapid, and in some sense positively valued.

Consider now the set of adverbs which can occur in the type of structure exemplified in (81). The adverbs in that construction seem to specify that the process named is easy or difficult, rapid or slow, positively valued or not. Thus the adverbs in (81) seem to cover a semantic field, of which the interpretation of (86) is the unmarked value.

We may tentatively conclude that the selection of adverbs in the middle and the interpretation of this related construction is due to a condition different from that which requires the presence of adverbs in some middle and attributive cases since the range of adverbs which can modify attributives is not restricted to those which specify ease, rapidity, or positive valuation. The general problem of

how these restrictions are to be stated remains unsolved and seems tangential to the topic under consideration here.

We must now consider property (c) of middles, and in particular, the fact that sentences such as "That car sold itself" can be given eventive interpretation whereas middles cannot. It has been noted that if Property Interpretation applies to the middle, the distribution of adverbs in the middle follows naturally. The fact that adverbs are not required in sentences of the form "That car sold itself" will follow from the fact that such sentences do not meet the structural description of Property Interpretation. Property (c) of the middle apparently also follows from the fact that Property Interpretation applies to it.

It was remarked in Chapter 1 that in a sentence such as "Russell and Whitehead teach" there is an interpretation similar to that of "Russell and Whitehead are teachers." This interpretation is non-eventive; it was noted that under this interpretation it is not entailed that an act of teaching by Russell or Whitehead has ever or will ever occur. It seems that the predicate in "Russell and Whitehead teach" is interpreted as a property of Russell and Whitehead. It is exactly this type of interpretation which characterizes the middle. A sentence such as "Penguin eggs poach" does not depend for its truth value on whether a penguin egg has

ever or will ever be poached. Thus the application of Property Interpretation to the middle apparently accounts for the non-eventive interpretation of the middle; this non-eventive interpretation of a count verb appears to be the interpretation of a count verb as specifying a property. It was noted in Chapter 1 that mass predicates do not allow this interpretation. It is interesting to note that mass predicates are not allowed in the middle; "Dean believes easily" is ungrammatical.

To conclude this discussion of the middle, it seems that properties (c) and (d) of the middle follow from the fact that Property Interpretation applies to that construction.

We will conclude this discussion of Property Interpretation by considering the interpretation of raising structures more closely. We may begin this investigation with the following pair of sentences:

- (87)a The rocks just began to hit the walls
 b The walls just began to be hit by the rocks

There is a contrast in the semantic interpretations of these two sentences. In order to bring out this contrast, note first the ambiguity of (88):

- (88) The men began to leave

On one reading, (88) specifies an intentional act engaged in by each of the men. On this reading, the men is analyzed as the deep structure subject of begin. Begin, in the sense which specifies the initiation of an intentional act, selects as its subject higher animates - those entities which can initiate intentional acts. Therefore neither (87)a nor (87)b carries this sense.

Note in particular, now, that in the intentional initiation sense of (88) it is the case that if man_x belongs to the set "the men," then it is the case that man_x began to leave, in the intentional initiation sense of begin.

On the other reading of (88), which is related to a syntactic derivation in which the men is not the underlying subject of begin, it is entailed that given the set of men, a small number of the men had left by a particular time. Under this reading, it is not the case for man_x belonging to the set "the men" that man_x began to leave in this sense. (88) entails merely that given the set of men, some had left and some had not and the number which had left was small in comparison to the total number of men.

Given this ambiguity, and in particular this last reading, we may return to the contrast in meaning between (87)a and (87)b.

The contrast should now be clear. Both (87)a and (87)b carry only the second reading; they contrast in that (87)a means that the number of rocks which hit the walls at the time specified by PAST TENSE was small in comparison to the total number of rocks, and (87)b means that the number of walls which were hit by the rocks at the time specified by PAST TENSE was small in comparison to the total number of walls. In (87)a, all of the walls may have been hit, while (87)b precludes this possibility. In (87)b, all of the rocks may have hit the walls, while (87)a precludes this possibility. Thus a sentence such as (89) is not contradictory:

(89) The rocks are ceasing to hit the walls,
 while the walls are beginning to be hit
 by the rocks.

Similar examples can be constructed using seem; note, in particular, that while (90)a is contradictory, (90)b is not:

(90)a ?It seems that John has hit Fred, but it doesn't
 seems that Fred has been hit by John
 b John seems to have hit Fred, but Fred doesn't
 seem to have been hit by John

The surface structure of (90)b, given in (91), meets the structural description of Property Interpretation, which yields an intuitively plausible interpretation for (90)b. In (91), many irrelevant details are ignored:

- (91) John _{VP} [seems t to have hit Fred] but Fred
 doesn't _{VP} [seem t to have been hit t by John]

The VP seems t to have hit Fred specifies a subjective evaluation of the likelihood of having hit Fred as a property of John and the VP seem t to have been hit t by John specifies a subjective evaluation of the likelihood of having been hit by John as a property of Fred.

The fact that (90)b is not contradictory and the contrast in meaning between (87)a and (87)b argue strongly that a principle of semantic interpretation of the subject-predicate relation applies after the application of transformations. The postulation of the rule of Property Interpretation, applying at the level of surface structure, is a first approximation to such a principle.

We may conclude this quite speculative discussion of Property Interpretation by considering in some detail the set of predicates that stand in raising frames.

These predicates appear to fall into two classes. One class consists of predicates which specify a subjective

evaluation of the degree of likelihood that some state of affairs has, had, or will have of being realized. The other class specifies the change of completion of a state of affairs with respect to some time. There may be systematic subclassifications of these classes, and it is possible that other classes should be postulated. It seems reasonable, however, to classify the raising frame predicates as follows:

(92)	<u>likelihood</u>	<u>completion</u>
	seem	cease
	certain	commence
	sure	continue
	likely	keep on
	unlikely	start
	bound	stop
	appear	wind up
	prove	about
	set	going
	fail	end up
	promise	begin
	threaten	proceed
	liable	start out
	apt	turn out
	happen	
	tend	
	chance	

We may now note a rather interesting fact: most of the degree of completion predicates occur in surface transitive-intransitive pairs. Thus, in the frames (93)a and (93)b we may place the verbs cease, commence, continue, start, stop, wind up, and begin.

- (93)a The director V the play
 b The play V

These verbs belong to a much larger class of verbs which occur as both transitives and intransitives at surface structure. The following is an incomplete, but probably representative, list of these:

(94)

spill	diminish	fade	form	simmer
soften	smoothen	break	tighten	sharpen
sit	redden	increase	loosen	separate
stand	whiten	lessen	mellow	scatter
lean	blacken	disperse	merge	ripen
lie	begin	ease	moisten	revive
tilt	stop	liven up	change	unite
stir	cease	decrease	flatten	reunite
dissolve	wind up	inflate	freshen	vibrate
melt	commence	?embolden	awaken	retreat
spread	end	interlock	warm	advance
shatter	accumulate	mix	(un)tangle	resume
blow up	improve	?intermix	(un)button	reduce
cool	bend	reverse	unlock	overturn
circulate	alter	jangle	transfer	turn
freeze	blow	lessen	toughen	develop
gather	bleed	level	thicken	fry
issue	burn	topple	?telescope	bake
twist	congeal	lighten	swing	boil
cheapen	corrode	brighten	spin	cook
devaluate	split	stiffen	start	steep
disintegrate		steepen	thaw	broil
metamorphize		divide	bang	roast

It should be observed that these verbs, with few exceptions, specify changes in what are intuitively felt to be inherent properties. Under the term "inherent property" we mean to include such notions as color, weight, size, texture, composition, constituency, shape, density, and perhaps a few others. A precise definition of the construct "inherent property" depends, of course, on a definition of the construct "property" within a theory of semantics within natural language, a definition which does not now exist.

Suppose, for a moment, that there existed such a definition, and predicates such as begin, redden, melt, etc., were characterized by that definition as specifying property changes, and predicates such as hit, think, steal, etc., and believe, know, want, etc., were not.

Suppose further that Property Interpretation was reformulated in such a way that α could be interpreted either as a property or change in property of the referent of the NP which binds trace in α .

In such a theory, a sentence such as (95)a could be derived by NP-Preposing. (95)a would be assigned deep structure (95)b and surface structure (95)c:

- (95)a The ice melted
 b * melted the ice
 c The ice melted t

Property Interpretation, reformulated, would interpret melted as a change of property of the referent of the ice, but the following examples would be uninterpretable:

(96) *John {knew
hit} t

(97) *John believed t to be crazy

For the reasons given, however, this theory cannot yet be formulated.

The predicates under discussion fall under several rather interesting generalizations which deserve comment here.

Note first that the predicates in (94) are all mass predicates. As the reader can verify for himself, they are all homogeneous, and, when they are substituted into the frame in (98), ungrammaticality results, demonstrating that they cannot be iterated.

(98) Suddenly, NP V (NP) twice

Secondly, these predicates appear to be the only mass predicates which allow Progressive Aspect. The distribution of Progressive Aspect appears not to depend on whether a predicate is mass or count, but rather on whether the predicate can select locatives. A predicate allows Progressive Aspect if and only if it allows locatives.

For example, know, like, and be fat do not allow Progressive Aspect, and the following are ungrammatical:

- (99)a *Eliot knew the poem in the garden
- b *Shaw liked Shakespeare in London
- c *Orson was fat in the Mercury

In some instance, adverbs which appear to be locatives are in fact temporal adverbs. Consider, for example, the following case:

- (100) My car was rusty in Chicago

Contrast (100) with (101):

- (101) The Hancock Building was rusty in Chicago

The contrast between (100) and (101) can be explained if the phrase in Chicago is interpreted as a temporal adverb, which can be paraphrased in this context as "when it was in Chicago." The strangeness of (101) would, under such an analysis, depend on the fact that interpretation of in Chicago as a temporal adverb, which is required under the proposed analysis, yields the implicature that the Hancock Building was in some other location at a different time, an implicature which is contrary to the assumed immobility of the Hancock Building. When one considers the possibility

that the Hancock Building could be moved, the strangeness of (101) disappears.

As has frequently been remarked, the predicates in (94) are interpreted causatively when in transitive frames. Thus it would appear that there are several semantic properties which all of these verbs share.

We will now return to a topic raised at the beginning of this chapter - the construct "proper binding."

* * * * *

At the beginning of this chapter, the condition was imposed on surface structure that NP's must properly bind their traces. A preliminary definition of proper binding was formulated which said that NP must precede its trace or the trace is not properly bound. It was demonstrated that this condition may be used to explain the fact that NP-Preposing is obligatory in sentential passives and optional in nominal passives, given a particular theory of the Determiner system. We will conclude this chapter by examining the relation between this condition and the other rules which move NP.

We will first consider the rule of wh-Movement. It is clear that in all cases a moved wh-element precedes its

trace. Chomsky (1973) proposes a rule assigning an interpretation to the wh-phrase. I reproduce his comments here; the proposed rule of Property Interpretation and the rule which Chomsky proposes will both operate at surface structure.

Consider next the rules for interpreting a wh-phrase in a +WH COMP. There are several cases, depending on the choice of wh-phrase. (Perhaps the cases can be combined, but this will not concern us here.) Thus [whether+WH] will be interpreted as "is it the case that" (as in NP wondered whether it would rain). The NPs who and what are interpreted in accordance with (248):

(248) The phrase [_{α} [wh,NP]+WH] ... PRO ...] is interpreted with PRO a variable bound by the node [wh,NP] and ... the semantic interpretation determined by the derivation of α

As Chomsky suggests in a footnote, PRO is the trace left by WH-Movement. By (248), I wonder who John saw would mean "I wonder for which X, John saw someone X." Thus wh-Movement is consistent with the proper binding proposal.

Consider second the rule of Heavy-NP Shift. Under the proposed formulation of grammar, it might be suggested that Heavy-NP Shift relates the following:

- (102)a He gave a book about calligraphy to John
 b He gave t to John a book about calligraphy

The fact that (102)b is grammatical presents an apparent difficulty for the proper binding analysis. We are forced, then, to remove (102) from the set of surface structures by adding the condition that only transformations leave trace; it is clear that Heavy-NP Shift is not a transformation. However the rule is to be stated, a condition on length is required, as can be seen in the following paradigm. The longer the last word in these examples is, the greater the acceptability.

- (103) I found in the dictionary
 the word {flaucinaucinibilipilification
 veeblefetzer
 amah

But such a condition cannot be stated as a Boolean condition on analyzability. Thus Heavy-NP Shift is not a transformation.

Consider thirdly the cases of To-Dative and For-Dative. These rules might be formulated as in (104), (105), or (106).

- (104) X NP P NP Y
 1 2 3 4 5
 1 4 \emptyset 2 5

(105) X NP NP P NP Y
 1 2 3 4 5 6
 1 5 3 \emptyset t 6

(106) X NP P NP NP Y
 1 2 3 4 5 6
 1 t \emptyset 4 2 6

The proposal that NP must precede its trace at the level of surface structure is falsified if it can be demonstrated that (106) is the correct formulation of these rules; I know of no argument that it is. (104) and (105) are consistent with the proper binding analysis.

Consider fourthly the rule of There-Insertion. Two operations are involved in a derivation relating (107)a and (107)b.

(107)a A man was in the garden
 b There was a man in the garden

One operation is the movement of NP to the right; the other operation is the insertion of the element there, which deletes the trace left by the movement of NP. Milsark (1974) notes that there is reason to believe that there are two distinct rules moving NP to the right. Note that there exist sentences such as (108); (109)a and (109)b are ungrammatical.

since the question as to whether there is a referential expression will not arise.

We may conclude by observing that Topicalization moves NP to the left, which is in line with the proper binding analysis.

A general observation should be made concerning the proper binding analysis.

First, note that the proper binding analysis is consistent with the proposal that (112)b derives from (112)a; only traces left by NP must be properly bound, and each is a quantifier.

- (112)a We forced each of the men to leave
 b We forced t the men to each leave

The theory proposed entails, then, that there could not exist a rule similar to Quantifier Movement but which moved NP's.

In the next chapter, it will be demonstrated that the form of the structural condition on surface structure which the proper binding analysis imposes follows from a more general theory of interpretation.

Chapter 3

A Structural Condition on the Overrules

In Chapter 2, it was proposed that trace is properly bound only if NP binding trace precedes trace at surface structure. A requirement was imposed that all traces bound by NP must be properly bound by NP.

There exist other NP elements besides NP traces which must be related by rule to NP's. I refer to the reciprocal element, the reflexive element, and whatever element or elements are related to NP by Equi-NP Deletion and Object Deletion.

Before demonstrating the relevance of these rules to the proper binding analysis, a few terminological conventions must be established. In the preceding paragraph, the rules Equi-NP Deletion and Object Deletion were referred to. For reasons which will become clear, however, I will assume that the phenomena which these rules describe should be described not by rules of syntactic deletion, but rather by rules of semantic interpretation. Thus, to avoid possible confusion, I will refer to these rules as Subject Interpretation and

Object Interpretation. Following Jackendoff (1972) and Fiengo and Lasnik (1973), I will assume that the reciprocal and reflexive elements are linked to their antecedents by rules of semantic interpretation. Subject Interpretation, Object Interpretation, Reflexive Interpretation, and Reciprocal Interpretation will be referred to as "overrules." We will say that the element or elements which are interpreted by Subject Interpretation and Object Interpretation, the reflexive element, and the reciprocal element are all elements which must be "overruled"; i.e., an overrule must apply to them, relating them to other NP's, which we will call "overrulers." Thus overrules may be said to establish relationships between overrulers and the overruled.

It will be argued in this chapter that the relation between NP and its trace at surface structure obeys the same structural conditions as do the overrules. It will be argued, in other words, that Proper Binding is an overrule.

We will first consider the rule of Reciprocal Interpretation.

Consider first the following examples:

- (1) *Each other hit the men
- (2) The men hit each other

The contrast in (1)-(2) suggests the following condition:

- (3) The overruler of each other must precede each other.

Condition (3) is immediately falsified by the following sentences, which are grammatical:

- (4)a Pictures of each other as criminals amused the candidates
- b The destruction of each other's cities never occurred to the warring factions
- c Distrust of each other's motives became known to the parties

It might be suggested that the condition given in (3) could be maintained under an analysis in which Subject Interpretation relates the element SELF and the candidates in (5). (We will discuss the nature of the element SELF below.)

- (5) SELF pictures of each other as criminals amused the candidates

Under such an analysis each other would be overruled by SELF, which precedes each other, and (4)a would then not constitute a counterexample to the condition given in (5).

It is, however, impossible to maintain the position that

Subject Interpretation can overrule elements inside of these nominals.

To see this, consider the following contrast:

- (6)a John desires to destroy the city
- b John desires the destruction of the city

Sentences (6)a and (6)b differ semantically as well as syntactically. If someone other than John destroys the city, John's desire, as expressed by (6)a, is not satisfied, but as expressed by (6)b, it is satisfied. A parallel observation holds for the following:

- (7)a John planned to destroy the city
- b John planned the destruction of the city

In both (6)b and (7)b exactly the correct semantic prediction is made if there is no element being overruled in the subject of the nominal: that the sentence carries no information as to the subject of destruction. It might be replied that (7)b is ambiguous; that under one reading the agent is John (this reading would be related to a structure in which SFLF appears as the subject of destruction), and that under another reading the subject is unspecified. Several replies can be made to this proposal, the most forceful reply being that the proposal allows two structures to be related to the reading

in which John is subject of destruction, since John also belongs to the set of possible subjects which the unspecified subject reading will allow. Thus the analysis carries no weight.

This general rebuttal carries just as much weight when applied to the sentences in (4). In (4)a, pictures of each other could be anyone's pictures; in (4)b, the agent of destruction could be anyone; it could be anyone's distrust in (4)c.

It appears necessary to admit, therefore, that there exist cases in which the overruler of each other follows each other.

Thus condition (3) must be amended in such a way as to distinguish (1) and (4)a-c.

If, following Lasnik (1974), we define command on cyclic nodes instead of on S alone, we may propose condition (8), since NP is a cyclic node, and the NP each other in (4)a-c is dominated by NP.

- (8) The overruler of each other must precede each other or asymmetrically command each other.

Condition (8) will block interpretation of each other in example (1), while allowing interpretation of the sentences in (4).

We may now consider cases in which the potential overruler precedes but does not command each other.

The following is an example:

(9) *A friend of the men knew each other

There are at least two possible explanations for the ungrammaticality of (9).

The first is that (9) violates the A-over-A Condition, if the A-over-A Condition is formulated as stating that if a rule is stated in such a way that it may apply either to a containing or contained node A, the containing node A must be selected. Under that analysis, (9) would be ungrammatical for the same reason that (10) is.

(10) *A friend knew each other

Another possible explanation would be that condition (8) should be reformulated as (11):

(11) The overruler of each other must precede and command each other or asymmetrically command each other.

To choose between these two alternatives it is necessary to consider cases in which the overruler of each other

precedes but does not command each other, where the over-ruler is not embedded in NP.

The following is apparently an example, where each other cannot be overruled by the women.

- (12) *John believes $_S$ [$_S$ [the women to be intelligent]
and $_S$ [each other to be stupid]]

In (12), the women precedes but does not command each other, and the women is not embedded within NP. (12), however, does not necessitate the adoption of (11); (12) can be analyzed as related by semantic interpretation to (13):

- (13) *John believes the women to be intelligent and
John believes each other to be stupid

(12) could also be analyzed as having a deep structure identical, in the relevant respects, to its surface structure. Under either analysis, it appears that there is no plausible semantic interpretation which could be constructed from a derivation in which the women overrules each other; i.e., there is no reciprocal relationship which can be constructed (cf. Fiengo and Lasnik (1973) for relevant discussion).

I know of no cases, then, which force the adoption of (11) if the A-over-A Condition is taken as a condition on rules of semantic interpretation in the formulation I have

given. I will, then, leave the question as unresolved, and assume that (8) states the necessary conditions for the overrule Reciprocal Interpretation.

I will leave it to the reader to demonstrate to himself that the overrule Reflexive Interpretation obeys the same necessary conditions as does Reciprocal Interpretation.

We will now turn to the overrule Subject Interpretation.

It will be assumed here that Subject Interpretation overrules the element SELF, the phonologically null reflexive element. The element SELF, like the phonologically realized reflexive element, must be overruled. It should be noted that SELF and the phonologically realized reflexive element appear to be in complementary distribution:

- (14)a *John hit SELF
 b John hit himself
- (15)a John wants SELF to leave
 b *John wants himself to leave
- (16)a SELF hitting Fred was mean of John
 b *Himself's hitting Fred was mean of John
- (17)a *John believes SELF to be crazy
 b John believes himself to be crazy

As is well known, the overruler of SELF can either precede or follow SELF:

- (18)a John wanted SELF to leave
 b SELF being known as a socialist harmed John
 c *SELF to enroll himself would be to admit that
 John isn't yet a Renaissance person

In both (18)a and (18)b, John asymmetrically commands SELF.
 In (18)c, John follows and does not command SELF; the example
 is ungrammatical, as would be predicted.

Consider now the following sentence, from Postal and
 Ross (1971):

- (19) Getting herself arrested on purpose is
 hard for me to imagine Betsy being willing
 to consider

As is discussed in Lasnik and Fiengo (1974), Postal and Ross
 present this sentence as evidence for the Tough-Movement
 analysis, since, they claim, under a Tough-Deletion analysis
 a new rule of subject deletion would have to be proposed,
 since the subject of getting herself arrested on purpose is
 not in a position where the normal rule of Equi would be
 expected to apply.

Akmajian (1972) observed that just the sort of subject
 deletion which would be required under a Tough-Deletion
 analysis is independently required in sentences in which any

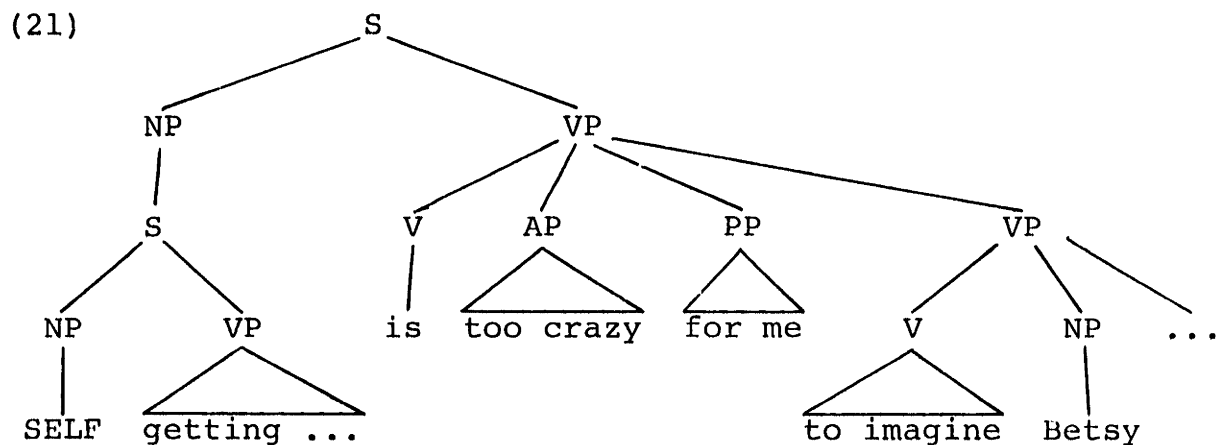
movement analysis is impossible. Akmajian presents the following examples:

- (20) Getting herself arrested on purpose is
 {too crazy
 {just crazy enough} for me to imagine
 Betsy being willing to consider

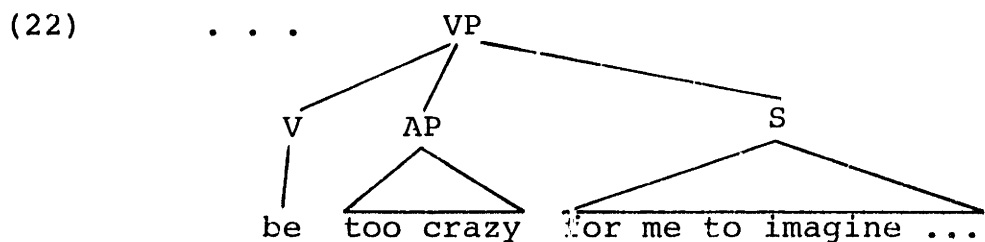
There is, however, no reason to believe that the rule applying in (20) is anything other than the rule of Subject Interpretation, or else Equi-NP Deletion, in the framework of Postal and Ross.

If Subject Interpretation applies in (20), and if Subject Interpretation is an overrule, and if (8) specifies the necessary structural relations which must hold between any overruler and overruled element, then Betsy in (20) must asymmetrically command the subject of getting, since Betsy does not precede the subject of getting.

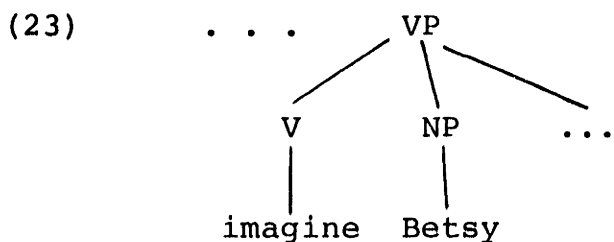
The following analysis of (20), ignoring irrelevant details, would be consistent with this claim:

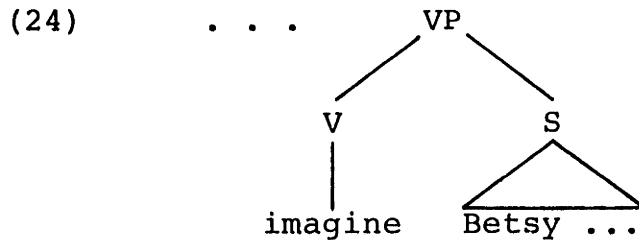


Several arguments are presented in Lasnik and Fiengo (1974) that in sentences such as (20), the complement of too is a VP. Thus there is good reason to believe that the following is not the structure of (20):



What must be demonstrated is that the VP complement has a structure as in (23) and not as in (24):





Thus it must be demonstrated that Betsy is the object of imagine in (20).

Consider, along this line, the following pair:

(25) John saw the hunters chasing Bill

(26) John saw Bill being chased by the hunters

Sentences (25) and (26) differ with respect to their entailments. (25) entails that John saw the hunters and does not entail that John saw Bill. (26) entails that John saw Bill and does not entail that John saw the hunters. This case is in all relevant respects parallel to the following pair:

(27) John persuaded the doctor to examine Bill

(28) John persuaded Bill to be examined by the doctor

These contrasts in entailment, together with the ungrammaticality of (29) and (30), lead, under familiar assumptions, to an analysis in which see and persuade take deep structure NP objects.

- (29)a *John saw tabs being kept on Fred
 b *John saw there ensuing a riot
- (30)a *John persuaded tabs to be kept on Fred
 b *John persuaded there to ensue a riot

Consider now the following pair:

- (31) John imagined the hunters chasing Bill
 (32) John imagined Bill being chased by the hunters

As in (25) and (26), (31) entails that John imagined the hunters but does not entail that John imagined Bill, and (32) entails that John imagined Bill and does not entail that John imagined the hunters. Note further that the following are in general ungrammatical:

- (33)a *John imagined tabs being kept on Bill
 b ??John imagined there being a man in the garden

The syntax of the complements of verbs such as see and imagine is poorly understood, and any conclusion on the topic can only be tentative, but it seems reasonable to conclude that the hunters and Bill in (31) and (32), respectively, are the deep structure objects of imagine.

Given this conclusion, we have support for the posited structure of the complement VP in (21). Given (21) as the

structure of (20), we may conclude that from the point of view of the structural relation of SELF and its overruler, the application of Subject Interpretation is unremarkable.

It appears, then, that we may generalize (8) to (34):

- (34) If O_1 overrules O_2 , O_1 either precedes O_2 ,
or asymmetrically commands O_2 .

(34) specifies necessary, though not, of course, sufficient, conditions on the structural relation between an overruler and its overruled element. For further conditions on the overrules, see Chomsky (1973), Fiengo and Lasnik (1973), and Jackendoff (1972).

Turning now to Object Interpretation, which we will tentatively assume interprets SELF as an overruled element, we see that condition (34) is not violated:

- (35)a Lisa is pretty to look at SELF
b John is too stupid to talk to SELF
c Karen is easy to please SELF
- (36)a *SELF is pretty to look at Lisa
b *SELF is too stupid to talk to John
c *SELF is easy to please Karen

Given (34) as a condition on overrules, we propose that Proper Binding is an overrule, and that trace bound by NP is

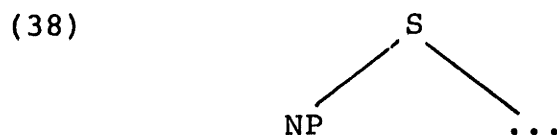
an element that must be overruled by Proper Binding. It follows as a consequence that (37)a is uninterpretable for the same reason that (37)b is.

- (37)a *Each other hit the men
 b *t was hit John by Fred

Note, now, that there appear to be no grammatical sentences in English which are assigned a structure in which trace precedes, but does not command, the NP which binds it. Such cases would arise through movement to the right out of sentences or NP's.

In many, if not all such cases, movement is blocked by general conditions. We will conclude this chapter with a consideration of the interaction of movement of NP out of NP or S and general conditions on grammar.

Consider first the case of movement of NP out of sentences, and, in particular, out of the string ... in (38):

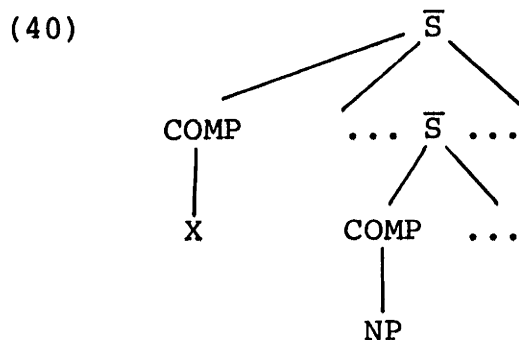


In relation to (38) consider Chomsky's (1973) "specified subject condition," given here as (39):

- (39) in a structure of the form
 [... X ... [Z - WYV] ...]
 no rule can relate X and Y if Z is the
 subject of WYV and is not controlled by X

(39) entails that movement of Y to position X is disallowed, unless X controls Z. In the formulation of grammar outlined in this thesis, movement of NP can only delete * or t. But * and t are not possible overrulers (or "controllers," in Chomsky's terminology). Therefore, if Y moved to X, X could not be a "controller" of Z. It follows, therefore, that if NP is extracted from structure (38), NP is not in the string ... of (38).

Consider next extraction of NP from COMP, in particular with respect to structure (40):



Chomsky (1973) imposes the following condition:

- (41) in a structure of the form
 [... X ... [Z - WYV] ...]
 no rule can relate X and Y if Y is in COMP
 and X is not in COMP

Assuming the correctness of (41), NP can only move into position X in (40). Thus, for this subset of cases, the fact that NP cannot follow and asymmetrically command trace follows from the fact that in English COMP is the initial element of \bar{S} .

Consider now movement of NP out of subject position. Movement of this type occurs in the following sentence:

- (42) Northern pileated woodpeckers seem t to be
 on the wane in the state of Vermont

Note now that while there exist sentences such as (43), there exists no movement rule in English which would relate (44)a and (44)b:

- (43) He proved _S[flickers to be woodpeckers] for Bill
 (44)a He proved _S[flickers to be woodpeckers] for *
 b *He proved _S[t to be woodpeckers] for flickers

Note further that the NP in the final prepositional phrase in the following examples cannot overrule the subject

of the complement sentence:

- (45)a John decided S [SELF to disagree] for Edward
 b Richard proved S [himself to be honest] for John
 c The senators proved S [each other to be honest]
 for the congressmen

It appears, then, that if such a rule as that illustrated in (44) existed, the output would be ill-formed, since there appears to be a general condition prohibiting the application of overrules in such structures. I will not attempt to formulate that condition here, however.

Consider now the following contrast:

- (46)a Who do you believe is the wisest
 b *Who do you believe that is the wisest

We must first establish what the surface structures of the examples in (46) are.

In (46)a, the rule of Complementizer Deletion has applied. In a theory of grammar as formulated here, there are no rules of deletion under identity. However, deletion of designated elements is allowed; Complementizer Deletion will be such a rule. This rule will replace the complementizer that by the null element \emptyset . We will also assume that wh-Movement is

successive cyclic, following Chomsky (1973). Thus (47)a and (47)b are the surface structures of (46)a and (46)b, respectively.

- (47)a Who do you believe \bar{S} [_{COMP}[t \emptyset] t is the wisest]
 b *Who do you believe \bar{S} [_{COMP}[t that] t is the wisest]

Note now the following contrasts:

- (48)a *The men want very much for $\left\{ \begin{array}{l} \text{themselves} \\ \text{each other} \end{array} \right\}$ to leave
 b The men want very much for pictures of $\left\{ \begin{array}{l} \text{themselves} \\ \text{each other} \end{array} \right\}$ to be on sale by tomorrow
- (49)a *The men want very much for SELF to leave
 b The men want very much \emptyset SELF to leave

Lasnik (personal communication) has suggested the following condition to account for these contrasts:

- (50) no rule may involve X and Y in the structure
 ... X ... COMP Y ... ,
 where COMP is filled

Condition (50) may be taken as a condition on the overrules; note in particular that in (47)b, the trace which is the subject of the complement will not be properly bound, given condition (50). (Cf. Bresnan (1972) and Fiengo and

Lasnik (1973) for discussion of related matters.)

We will now consider cases of extraction of NP from NP. Such extraction will, of course, be blocked in some cases by the A-over-A Condition. As noted above, I am taking the A-over-A Condition to be a condition on ambiguity of rule application; if the structural description of a rule is only satisfied by a contained node, a rule may apply to that node without violating the condition.

In the cases of wh-Movement, Reciprocal Interpretation, and Object Interpretation given in the following sentences, the A-over-A Condition is not violated; each of these rules mentions a specific element: wh, each other, and SELF, respectively:

- (51)a Who did John see a picture of t
 b The men saw pictures of each other
 c John will be easy to find a picture of SELF

The only rules of extraction which mention specific elements are wh-Movement, Topicalization, and Clefting. I assume that Topicalization mentions emphatic stress, and that Clefting does also.

The fact that Clefting and Topicalization are leftward movement rules will, I expect, receive a functional explanation.

We may conclude this discussion by noting that many types of rules which would yield structures in which NP follows and asymmetrically commands its trace are prohibited by general conditions. These general conditions have been seen not to be peculiar to the rule of Proper Binding; rather Proper Binding obeys the same conditions as the other overrules.

Chapter 4

Conditions on the Interpretation of Delta

In this chapter, we will consider the interpretation of delta (Δ) at the level of surface structure. As outlined in Chapter 2, delta will be defined as a phonologically null element, with syntactic and semantic features. We will say that delta is controlled if a rule of semantic interpretation relates the semantic features of delta, with the semantic features of some other element, the requirement being that they be identical. With some qualifications, which are discussed at the end of this chapter, the element delta is generated freely. We may say that the insertion of the phonological features of lexical items is optional; deltas will be those lexical items to which the insertion of phonological features has not applied.

We will now formulate conditions on the interpretation of delta.

First some terminology must be established. We will designate by the symbol "I" any string containing one or more deltas and no phonologically realized elements; I may

contain \emptyset or t . The string I will be the string controlled by the rule of Delta Interpretation. Given some constituent α , which contains I , there may be strings of elements to the left or right of I which do not contain delta. We will designate these strings as "L" and "R", respectively.

Thus in its most general form Delta Interpretation might be stated as follows:

- (1) given the structure
- $$\dots X \dots \alpha [(L)I(R)] \dots$$
- X controls I

It is clear, however, that the rule of Delta Interpretation is not realized in its most general form in English.

Consider first the following example.

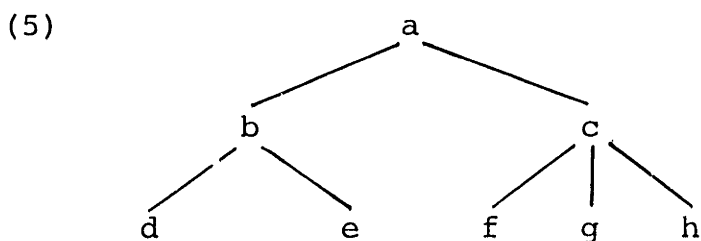
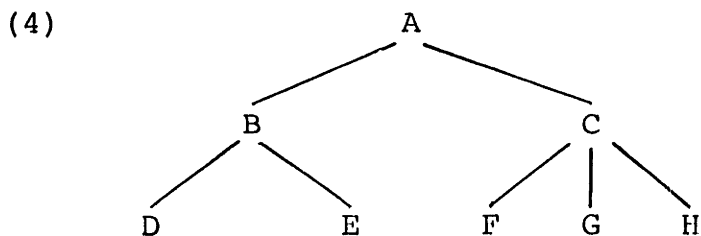
- (2) Jones hit Smith and Δ was hit by Brown

Jones must be interpreted as the subject of was hit by Brown; Smith cannot be so interpreted. The ungrammaticality of the following establishes the point:

- (3) *Jones hit the men and Δ were hit by Brown

These observations suggest that the condition be imposed on Delta Interpretation that if X controls I, X is parallel

to I. The following diagrams will serve to illustrate what is meant by the relation is parallel to:



If, in (4) and (5), A and a both = α , where α is restricted to the cyclic nodes NP, S, and \bar{S} , then each majuscule in (4) is parallel only to its minuscule in (5).

Given this informal explication of the relation is parallel to, (1) can be reformulated as (6):

- (6) given the structure
 $\dots X \dots \alpha [(L)I(R)] \dots$
 X controls I
 where (i) X is parallel to I

Condition (i) serves to rule out as uninterpretable control of Δ by Smith in (2) and by the men in (3).

We now note that there exist cases in which I, though parallel to X, cannot be controlled by X. The following is such a case:

- (7) *Philosophers loathe bibliomancy, and mystics
prefer Δ .

The NP bibliomancy in (7), though parallel to Δ , cannot control Δ .

In order to formalize a condition prohibiting examples such as (7), it is necessary to appeal to several theoretical constructs.

First, given a node M, we will designate by +m the head of M, and by -m the daughters of M which are not the head of M. Thus, in the case of a VP, the VP = M, the V = +m and an NP object of V = -m.

There are constituents which do not have heads, in any intuitive sense of that term. The constituent S has that property. In the case of S, then, each of its daughters is M, in the terminology proposed.

Given this terminology, we propose the following condition:

- (8) If I contains -m of M, I contains +m of M.

This condition rules out (7); I contains NP, which is a complement (-m) of VP (M), but does not contain V, which is +m of VP (M). Similarly, (9) is uninterpretable, given condition (8).

- (9) *Rome's destruction of Carthage and the
Hun's destruction Δ

Note now that P is +m of the node PP, whereas DET is -m of the node NP. Given this fact, condition (8) will rule out as uninterpretable DET in I unless \bar{N} , which is +m of NP, is in I. Condition (8) will allow, however, P in I even if NP, which is -m of PP, is not in I. The following examples support this:

- (10)a *He sold the Amati to Sherlock and

Δ Δ Δ pipe to Mycroft

- b He sold the Amati to Sherlock and

Δ Δ the pipe to Mycroft

- (11)a He sold the Amati to Sherlock yesterday and

Δ Δ Δ Δ Δ Mycroft the day before

- b He sold the Amati to Sherlock yesterday and

Δ Δ Δ Δ to Mycroft the day before

Consider now the contrast between (12)a and (12)b, and the contrast between (13)a and (13)b.

- (12)a John knows Smith, and he knows Harris
 b John knows Smith, and he Δ Harris
- (13)a John knows Smith, and Brown knows him
 b John knows Smith, and Brown Δ him

Sentences (12)b and (13)b are ungrammatical unless stress is placed on the pronouns. Note that in (12)b, he cannot be interpreted as coreferential with John, and in (13)b him cannot be interpreted as coreferential with Smith. Note further that if he in (12)a is given stress, he cannot be interpreted as coreferential with John, and if him in (13)a is given stress, him cannot be interpreted as coreferential with Smith. Apparently, then, if a pronoun is stressed, it cannot be interpreted as coreferential to an NP parallel to it. We will, then, add the condition that L and R must contain stress. Given this condition, the interpretation of pronouns in (12)b and (13)b as not coreferential with their parallel NP's will follow naturally.

Delta Interpretation will now be formulated as follows:

(14) given the structure

... X ... $_{\alpha}$ [(\acute{L}) I (\acute{R})] ...

X controls I

where (i) X is parallel to I

(ii) if I contains -m of M, I contains +m of M

We will now turn our attention to the internal structure of L and R. There seems to be a fair amount of idiolectal variation in this area; the judgments given here appear to be those of a fairly restrictive idiolect. Alterations of the principles adduced to accomodate a less restrictive idiolect are trivial.

Consider first the following examples:

- (15)a *John gave a book to Fred, and
 Max Δ a wallet to Harry
- b *John saw a play yesterday, and
 Bill Δ an opera the day before
- c *Holmes considered Moriarty repugnant, and
 Moriarty Δ Holmes meddlesome
- d *Yesterday John attended a play with Fred, and
 the day before Δ Δ a concert with Harry

The examples in (15) suggest that the condition be imposed that if L contains one and only one constituent, then R contains one and only one constituent. The symbol " C_1^1 " will stand for "one and only one constituent"; the symbol " C_1 " will stand for "one constituent or more"; the symbol " C_1^2 " will stand for "one constituent or two constituents"; etc. Given this notation, we propose the following condition:

(16) If $L = C_1^1$, $R = C_1^1$.

The following sentences demonstrate that (16) is too restrictive:

(17)a Either Russell did it, or Frege

b Russell did it, not Frege

c Russell did it, and Frege

Given that the examples in (17) are grammatical, (16) will be amended to (18):

(18) If $L = C_1^1$, $R = C_0^1$.

It should be noted that some speakers find (17)c less acceptable than (17)a or (17)b. I have no explanation for this.

We will now investigate the interaction of the Auxiliary system with the conditions so far adduced.

Consider first sentence (19):

(19) Jones is collecting rare books, and
Smith Δ studying calligraphy

The verb studying is the head (+m) of the VP in the second conjunct of (19). Thus if Δ were in VP, Δ would be -m. But by condition (ii) of Delta Interpretation, if I contains -m

of M (M = VP in this case), I contains +m of M. Sentence (19) is grammatical, and I does not contain +m of M. Therefore Δ is not in VP in (19).

Note now the following contrast:

- (20)a Jones may have been crying, and
Smith Δ have been trying to stop him
- b *Jones may have been crying, and
Smith Δ Δ been trying to stop him

The contrast in (20) lends support to an analysis of the Auxiliary system along the lines of that proposed by Emonds (1970). Under such an analysis, ignoring details irrelevant to the point here, the grammar of English contains the following phrase structure rules:

- (21) S \rightarrow NP AUX VP
AUX \rightarrow T(MODAL)
VP \rightarrow (PERFECT ASPECT) (PROGRESSIVE ASPECT) V(NP)...

For reasons that do not concern us here, it is proposed that if AUX does not contain MODAL, and VP contains PERFECT ASPECT or PROGRESSIVE ASPECT, the leftmost of these in VP moves into AUX position. Under such an analysis, then, Δ in (19) is in AUX. Given condition (ii) in conjunction with this analysis the contrast between (20)a and (20)b is

correctly characterized; the rightmost Δ in (20)b will be analyzed as in VP, and, since trying, which is the head of the VP, is not in I, the example is ruled out as uninterpretable. No condition blocks (20)a, however.

Consider now the following two surface structures:

- (22)a John _{AUX}[has]_{VP}[been studying art]
 b John _{AUX}[has]_{VP}[been being overlooked]

Condition (ii), in conjunction with the analysis of the Auxiliary system presented, predicts that the examples in (23) are grammatical, and that the examples in (24) are not grammatical:

- (23)a John has been studying art, and
 Fred Δ been collecting books
 b John has been being overlooked, and
 Max Δ been being neglected
 (24)a ?John has been studying art, and
 Fred Δ Δ collecting books
 b ?John has been being overlooked, and
 Fred Δ Δ being neglected

I believe that the examples in (24) are less acceptable than those in (23), but these judgments are delicate, and little can be concluded with certainty. It should be noted

that the facts adduced concerning the Auxiliary system are consistent with the condition given in (18).

Consider now the following contrast:

- (25)a *John hit Fred and Max did Δ Harry
 b John hit Fred and Max did Δ Δ , too

The contrast in (25) suggests that a distinction must be drawn between those nodes which elements in α are strictly subcategorized for, and those nodes which elements in α are not strictly subcategorized for. We will call these latter elements "peripheral" (P).

The following condition will characterize the contrast in (25) correctly:

- (26) If $L = C_2$, $R = P_0$.

Condition (26) will block interpretation of examples such as the following:

- (27)a *John gave a book to Fred, and
 Max did Δ a wallet to Harry
 b *Yesterday John hit Fred, and
 the day before Max Δ Harry
 c *Max drove to Paris, and
 Fred drove Δ London

We will add conditions (18) and (26) to Delta Interpretation:

(28) given the structure

... X ... $_{\alpha} [(\acute{L})I(\acute{R})]$...

X controls I

where (i) X is parallel to I

(ii) if I contains -m of M, I contains +m of M

(iii) if $L = C_1^1$, $R = C_0^1$

if $L = C_2$, $R = P_0$

Condition (iii) also prohibits examples such as (29), where α is \bar{S} .

(29) *Holmes deduced that Bartholomew smokes latakia,
and that Thaddeus Δ trichinopoly

Condition (iii) cannot, however, characterize the following contrast:

(30)a *Holmes deduced that Bartholomew smokes latakia,
and that Thaddeus $\Delta \Delta$, too
b Holmes deduced that Bartholomew smokes latakia,
and Thaddeus $\Delta \Delta$, too

Note that (31) is grammatical:

(31) Holmes deduced that Bartholomew smokes latakia,
and that Thaddeus does $\Delta \Delta$, too

It appears that the condition must be stated that if L contains COMP, L contains AUX. This condition would hopefully follow from a more general theory. There exist selectional dependencies between COMP and AUX, for example, but I have been unable to establish that selection plays a more general role in Delta Interpretation. I consider these data as unexplained, therefore.

Consider now the following example, which is not ruled out by any of the conditions proposed thus far:

(32) *Ís Moran hónest, or wás Δ disréputable?

(32) contrasts with (33):

(33) Ís Moran hónest, or wás Moran disréputable?

Pursuing this, consider the following contrast:

(34)a *Today John called from Michigan and
yesterday Δ drove from Indiana
b John arrived at dawn and
 Δ quickly went to sleep

Note that Δ in (34)a must follow yesterday; as pointed out to me by Lasnik, (35) is ungrammatical:

(35) *John yesterday drove from Indiana

We will assume that yesterday in (34)a and was in (32) are both in COMP. COMP is $-m$ of \bar{S} . As remarked above, the string NP AUX VP is M M M of S. S is $+m$ of \bar{S} . Given this, the following condition can be stated:

- (36) If I and R contain M_1 of $+m$ of α ,
 L = M_0 of $+m$ of α .

(36) rules out (34)a and (32), while allowing (34)b.

Consider now the contrast between (37) and (38):

- (37) *John gave a book to Fred and
 Max Δ Δ to Harry
- (38) On Sunday John gave a book to Fred and
 on Monday Δ Δ Δ to Harry

Note that in both (37) and (38) both I and R contain $-m$ of VP. In (37), L = M of S; in (38), L = $-m$ of \bar{S} . The following condition correctly characterizes the contrast, where β is any node.

- (39) If I and R contain $-m_1$ of β ,
 L = $-m_0$ of α .

This last condition may be too restrictive for many idiolects; not all speakers reject examples such as (37). I tentatively include it here, however, in the reformulation of Delta Interpretation:

(40) given the structure

... X ... α [(L)I(R)] ...

X controls I

where (i) X is parallel to I

(ii) if I contains $-m$ of M, I contains $+m$ of M

(iii) if $L = C_1^1$, $R = C_0^1$ and

if $L = C_1$, $R = P_0$

(iv) if I and R contain M_1 of $+m$ of α ,

$L = M_0$ of $+m$ of α , and

if I and R contain $-m_1$ of β ,

$L = -m_0$ of α

I will conclude this investigation of Delta Interpretation at this point, though it is surely incomplete. It seems to me, however, that many of the more central conditions have been formulated.

I will turn now to examine cases in which delta must appear.

Consider first the following data:

(41)a Baskerville was a genius and

Caslon wasn't a genius

b Baskerville was a genius and

Caslon wasn't Δ

- (42) a Either Baskerville was a genius or
Caslon was a genius
- b Either Baskerville was a genius or
Caslon was Δ
- (43) a *Baskerville corresponded with Franklin and
so did Caslon correspond with Franklin
- b Baskerville corresponded with Franklin and
so did Caslon Δ
- (44) a *Baskerville wasn't known for his tact and
neither was Caslon known for his tact
- b Baskerville wasn't known for his tact and
neither was Caslon Δ

Consider now the following examples, in which the VP in the second conjunct is distinct from the VP in the first conjunct:

- (45) a Baskerville was a genius and
Caslon had the brains of an aphid
- b Either Baskerville was a genius or
Caslon was a fool
- c *Baskerville corresponded with Franklin and
so did Caslon misuse serifs
- d *Baskerville wasn't known for his tact and
neither was Caslon considered a man about town

The generalization emerges that if a conjunction requires non-distinct VP's in the conjuncts, the second VP is delta.

Consider now the following examples:

(46)a *Baskerville knew Franklin, $\left. \begin{array}{l} \text{not to mention} \\ \text{not} \\ \text{as well as} \end{array} \right\}$

Chaucer knew Caxton

b Baskerville knew Franklin, $\left. \begin{array}{l} \text{not to mention} \\ \text{not} \\ \text{as well as} \end{array} \right\}$

Chaucer Δ Caxton

(47)a Baskerville knew Franklin, and

Chaucer knew Caxton

b Baskerville knew Franklin, and

Chaucer Δ Caxton

(48)a Either Baskerville knew Franklin, or

Chaucer knew Caxton

b Either Baskerville knew Franklin, or

Chaucer Δ Caxton

The examples above manifest the same behavior as the following examples:

- (49) a *Baskerville knew Franklin, $\left\{ \begin{array}{l} \text{not to mention} \\ \text{not} \\ \text{as well as} \end{array} \right\}$
 Chaucer loathed Caxton
- b Baskerville knew Franklin, and
 Chaucer loathed Caxton
- c Either Baskerville knew Franklin, or
 Chaucer loathed Caxton

The conjunctions not, not to mention, and as well as can also occur in structures such as the following:

- (50) Caslon was being ostracized, $\left\{ \begin{array}{l} \text{not to mention} \\ \text{not} \\ \text{as well as} \end{array} \right\}$
 Δ Δ being praised

Again, if any phonologically realized elements, either distinct or non-distinct from Caslon was, are placed in the position of the delta elements, the string is ungrammatical.

We may now consider how these facts might be stated.

It is clear, first of all, that the conjunctions and so and and neither require non-distinct derived VP's; (51) is grammatical, though the deep structure VP's are distinct:

- (51) Dylan was arrested and so was Frank

If selectional restrictions are stated cyclically, we may simply state that and so selects non-distinct VP's in the sentences it conjoins.

In the case of not, etc., we may state that these conjunctions select non-distinct NP's and/or V's and non-distinct AUX's.

In both of these cases, then, there are positions in the second conjunct in which only delta may appear.

Let us impose the following condition:

- (52) If only element E may appear in position P,
E = Δ .

It appears that (52) may be generalized.

First, consider the following paradigm:

- (53)a John lost his way
b *John lost Bill's way

Only his may appear as the determiner of way in (53). His and John are necessarily coreferential; i.e., his is overruled by John.

Second, consider the following:

- (54)a Arrighi's calligraphy is beautiful to
look at SELF
b *Arrighi's calligraphy is beautiful to look at it
c *Arrighi's calligraphy is beautiful to
look at Tagliente's

In (54), SELF must appear in the complement of beautiful; SELF is an overruled element. Thus we may generalize (52) to (55):

- (55) If only element E may appear in position P,
E is an overruled element.

There are several other cases covered by (55):

- (56)a Palatino outdid himself
b *Palatino outdid Arrighi's self

Only him may appear as the determiner of self in (56)a, and as required it is an overruled element. (I assume here that him in (56) is a possessive, as in Helke (1971).)

The behavior of tag-questions is in line with principle (55); the NP in tags must be pronominal, the VP must be Δ :

- (57)a *Arrighi was talented, wasn't Arrighi Δ
b *Arrighi was talented, wasn't he talented

The auxiliary element in the tag-question of course cannot be overruled, since it is not parallel to the auxiliary element in the matrix. Auxiliaries left in parallel positions must be delta:

- (58)a *Palatino must have used a pencil,
 mustn't he have
- b *Palatino has been very successful,
 hasn't he been

The sole counterexample to (55) that I am aware of is the complementizer in some sentences. Only for and that can occur in complementizer position in the following sentences:

- (59)a I want very much for the work to be finished
- b That John came was surprising

It has been hypothesized that there exists a rule of Complementizer Deletion, replacing complementizer by \emptyset . Since there is no reason to maintain that COMP ever dominates delta, there is no reason to maintain that COMP can be overruled. Therefore (55) will be amended to (60):

- (60) If only element E may appear in position P,
 E is an overruled element, if E can be an
 overruled element.

We will conclude this discussion with a few general comments.

First, I believe that there is no necessity within the system proposed here to move elements in order to create conjoined structures.

Second, the reader will have noticed that I have stated Delta Interpretation in such a way that I is always to the right of X, its controller. It might be suggested that (61) is a case in which I is to the left of X.

(61) The man who did yesterday will climb Mount
 Tutte-Grothendieck again tomorrow

The interpretation of the VP in the relative clause in (61) is, however, as free as that of the VP in the following sentence:

(62) The man did yesterday

Delta Interpretation correctly makes no prediction concerning the interpretation of the VP in (62); similarly, if I always is to the right of X, the correct prediction is made concerning the interpretation of the VP in (61). This structural requirement is consistent, then, with that of the other overrules.

Bibliography

- Akmajian, A. (1972) "Getting Tough," Linguistic Inquiry III, 373-377.
- Anderson, S.R. and P. Kiparsky, eds. (1973) A Festschrift for Morris Halle, Holt, Rinehart & Winston, New York.
- Bresnan, J. (1972) Theory of Complementation in English Syntax, unpublished Ph.D. dissertation, MIT, Cambridge, Massachusetts.
- Chomsky, N. (1955) The Logical Structure of Linguistic Theory, mimeographed, MIT Library, Cambridge, Massachusetts.
- Chomsky, N. (1957) Syntactic Structures, Mouton & Co., The Hague.
- Chomsky, N. (1965) Aspects of the Theory of Syntax, MIT Press, Cambridge, Massachusetts.

- Chomsky, N. (1971) "Deep Structure, Surface Structure, and Semantic Interpretation," in D.D. Steinberg and L.A. Jakobovits, eds. (1971).
- Chomsky, N. (1973) "Conditions on Transformations," in S.R. Anderson and P. Kiparsky, eds. (1973).
- Emonds, J. (1970) Root and Structure-Preserving Transformations, unpublished Ph.D. dissertation, MIT, Cambridge, Massachusetts.
- Fiengo, R. and H. Lasnik (1973) "The Logical Structure of Reciprocal Sentences in English," Foundations of Language, 447-468.
- Helke, M. (1971) The Grammar of English Reflexives, unpublished Ph.D. dissertation, MIT, Cambridge, Massachusetts.
- Jackendoff, R.S. (1972) Semantic Interpretation in Generative Grammar, MIT Press, Cambridge, Massachusetts.
- Lasnik, H. (1972) Analyses of Negation in English, unpublished Ph.D. dissertation, MIT, Cambridge, Massachusetts.
- Lasnik, H. (1974) "Remarks on Coreference," unpublished ditto, University of Connecticut, Storrs, Connecticut.

- Lasnik, H. and R. Fiengo (1974) "Complement Object Deletion,"
forthcoming in Linguistic Inquiry V.
- Milsark, G. (1974) Existential Sentences in English,
unpublished Ph.D. dissertation, MIT, Cambridge,
Massachusetts.
- Postal, P. and J.R. Ross (1973) "Tough Movement Sí, Tough
Deletion No!" Linguistic Inquiry II, 544-546.
- Steinberg, D.D. and L.A. Jakobovits, eds. (1971) Semantics,
Cambridge University Press, Cambridge.
- Wasow, T. (1972) Anaphoric Relations in English, unpublished
Ph.D. dissertation, MIT, Cambridge, Massachusetts.