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ARGUMENT OPACITY

by

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CHAPTER ONE

THE SCOPE OF GOVERNMENT

1. Basic Notions of Government

The evolution of Government-Binding Theory has largely been based on changes in the definition of government. In the various forms this theory has taken, the definition of governor has remained constant and will be adopted here. Within the terms of X'-theory, a governor is defined as any category analyzable as X°, i.e., any category which is a head. The definition of the scope of government, however, has changed over time. As defined in Chomsky (1982:165), α governs γ in (1):

(1) $[_{\beta} \ldots \gamma \ldots \alpha \ldots \gamma \ldots]$, where
   a. $\alpha = X^{\circ}$
   b. where ϕ is a maximal projection, if ϕ dominates γ then ϕ dominates α
   c. α c-commands γ

In (1) and similar structural representations below, γ is understood as being either to the right or to the left of α. Thus ϕ is a barrier to government by α of γ in any structure $\ldots\alpha\ldots[_{\phi}\ldots\gamma\ldots]$, where ϕ is a maximal projection.

This analysis depends, however, on which categories are considered to be maximal projections. The definition offered in

Chomsky (1986a:160) illustrates the problem:

> We assume a further projection [beyond X'] X" consisting of X' and a <u>specifier</u> of X'...We call X" the <u>maximal projection</u> of X...We will continue to use the conventional symbols NP, VP, AP, and PP for the maximal projections of N, V, A, and P, respectively.

From Chomsky's definition, the presence of a specifier is presumably an option at the X"-level, as he includes among the maximal projections categories (AP and PP) which do not include specifiers. The status of VP depends on whether INFL or V is taken as the head of S. S itself presents the most difficulties of all, as Exceptional-Case-Marking (ECM) structures demonstrate:

(2) Max believes [$_S$ him to be a fool]

Assuming that Case marking occurs only when a government relation obtains, the S-boundary in (2) alone does not serve as a barrier to government since the only possible source of the objective-Case marking of the pronoun is the matrix verb. In Chomsky (1982), the S-system is regarded as a projection of INFL. Under this assumption, S is not a barrier as it represents an intermediate rather than a maximal projection. In Chomsky (1986b), where COMP is taken to be the head of S', S is the maximal projection of INFL. For this reason, Chomsky terms S a "defective category."[1]

S' must in any event be a maximal projection within this

framework in order to bar government, for example, of PRO by a c-commanding verb:

(3) Bill wants $[_{S'}$ e $[_{S}$ PRO to leave]

Chomsky (1986b) claims that the pre-S position (its precise content distinguished differently within different analyses) may be subject to government from an exterior source. He attempts to solve this problem by allowing a category to serve as a barrier to government in a "relative sense." (For ease of exposition, the term "standard framework" will be used to refer only to the version of Government-Binding Theory developed in Chomsky (1982) and related work, while the term "barriers framework" will be used to refer specifically to the version presented in Chomsky (1986b).) The intuitive notion is that in a structure such as (3), S' will serve as a barrier to government of PRO by want, but will allow want to govern e. In the barriers framework, government is defined as follows:[2]

(4) α governs β iff α m-commands β and there is no γ, γ a barrier for β, such that γ excludes α.

The terms "m-command" and "exclude" are defined as in (5) and (6), where segment indicates any proper subset of α:

(5) α m-commands β iff α does not dominate β and every γ, γ a maximal projection, that dominates α dominates β.

(6) α excludes β if no segment of α dominates β.

The formalization of the concept of "barrier" is based on a number of basic concepts: "direct θ-marking," "L-marking," and "blocking category":

(7) Direct θ-Marking
A zero-level category α directly θ-marks β only if β is the complement of α in the sense of X-bar theory.

(8) L-marking
L-marking is the direct θ-marking by a lexical category.

(9) Blocking Category
γ is a blocking category for β iff γ is not L-marked and γ dominates β.

A category will then serve as a barrier to government under the definition in (10):[3]

(10) γ is a barrier for β iff (a) or (b):
a. γ is a blocking category for β, $\gamma \neq S$
b. γ immediately dominates δ, δ a blocking category for β

where the following condition is met:

(11) γ and δ are maximal projections

Thus in (3), S' is L-marked by the matrix verb and is therefore not a blocking category for any internal element not contained in a blocking category. S' then permits government of e by want. The internal S, however, is a blocking category, and while it cannot in itself function as a barrier, as stipulated in (10a), S' may inherit barrierhood from the S it contains for any element internal to the latter category. Thus in any configuration as in (12), the conditions in (13) will apply:

(12) $\ldots\alpha\ldots[_{\gamma}\ldots\epsilon\ldots[_{\delta}\ldots\beta\ldots]]$

(13) γ, a maximal projection, is a barrier
   a. for β and ϵ, if γ is not L-marked, and $\gamma \neq$ S
   b. for β, but not ϵ, if γ is L-marked and immediately dominates δ, and δ is not L-marked.

An independent barrier is provided by the "Minimality Condition," by which government is blocked wherever there is an intermediate governor. It is formulated in Chomsky (1986b) as follows:

(14) Minimality Condition
   In the configuration $\ldots\alpha\ldots[_{\gamma}\ldots\delta\ldots\beta\ldots]$, α does not govern β if γ is the immediate projection of δ excluding α.

Operation of this condition can be illustrated in the following example:

(15) Mary told John $[_{S'}[_{S}$ PRO to $[_{VP}$ behave himself]]]

Where himself = β, behave = δ, and VP = γ, no potential governor external to the complement VP can govern the reflexive in (15). Thus told cannot govern himself because of the presence of the intermediate governor (i.e., the head of a projection excluding told) behave.

2. The Category NP.

Chomsky (1986b) does not explore in detail the functioning of the barriers framework for the category NP, but it is precisely with regard to this category that much of the difficulty in determining the scope of government lies. In the standard framework, S' and NP, being maximal projections, are always opaque (i.e., constituting a barrier) while S is a non-maximal projection and therefore open (i.e., not constituting a barrier). In the barriers framework, the opacity of sentential categories varies. For ease of exposition, the structure (12) is repeated here:

(12) $\ldots\alpha\ldots[_{\gamma}\ldots\epsilon\ldots[_{\delta}\ldots\beta\ldots]]$

If S is γ in (12), it cannot be a barrier directly due to the stipulation in (10a). Thus it cannot be a barrier for both β and ϵ. S does, however, inherit barrierhood under (10b) from INFL (= δ) as the latter category is never L-marked. S is therefore a barrier for β but not ϵ in (12). Thus S is only partially opaque. S' is either wholly or partially opaque. If γ in (12) is S', it is wholly opaque

by (10b), i.e., a barrier for both β and ϵ, if it is not L-marked. If S' is L-marked, it is partially opaque, i.e., a barrier for β but not ϵ, inheriting its barrierhood from S (= δ), which in this configuration would be protected from L-marking.

Let us compare NP to S'. Where NP is not L-marked, as when it is in subject position, it is wholly opaque. Returning to (12), where γ is an NP L-marked by α, γ cannot in itself be a barrier, but may presumably inherit barrierhood from δ (= N') assuming that ϵ is a non-L-marking element. This situation would parallel that of S', in that NP would be a barrier for β but not ϵ. The Minimality Condition does not affect this situation since it is confined to only the immediate projection of the head.[4]

While the barriers framework accounts well for the data presented in Chomsky (1986b), primarily involving movement from sentential categories, the application of the theory with regard to the binding is problematic. Let us consider a simple case, the scope of the government of a verb in relation to the specifier of its object:

(16) John_i hit $[_{NP}\ \text{his}_{i/j}\ [_{N'}\ [_{N}\ \text{lawyer}]$

Assuming the usual Binding Principles, specifically in this case that a pronoun must be free in its governing category, the standard framework would yield the correct result: the verb does not govern the specifier of its object. Thus in (16), the governing category for <u>his</u> is the object NP. Since <u>John</u> and <u>his</u> are in different governing

categories, the indexing shown in (16) is allowed. In the barriers framework, however, the object NP is L-marked and therefore not a blocking category. While it is a barrier by inheritance from N', it may block government only of elements internal to the latter category. If the specifier in (16) is governed by the verb, and thus in the same governing category, it should be free in this category and therefore unable to bear the same index as the subject NP. The inclusion of the two NPs in question within the same governing category could be avoided presumably either by stipulation or a modification of the Binding Principles.

Neither the standard nor the barriers framework, however, can account for all cases. A problem arises for both theories with regard to predicate NPs. The distribution of permissible indexes for pronouns contained within predicate NPs differs from that found within object NPs. This is evidenced by the following contrast:

(17) a. $John_i$ saw $[_{NP}$ $his_{i/j}$ cook]
b. $John_i$ is $[_{NP}$ $his_{j/*i}$ cook]

The fact that the specifier may be coindexed with the subject in (17a) but not in (17b) suggests that these NPs are in the same governing category in latter case but not in the former. Terry Langendoen (personal communication) has pointed out the deficiency of the barriers framework with regard to predicate nominals:

There is an important difference in L-marking potential between verbs and copular elements. Specifically, the copula be does not mark predicate NPs, since predicate positions are not θ-positions. Thus the predicate NP in (17b) is a barrier to government from be, and the theory of binding predicts that his is free within NP, and therefore may be bound by John. In other words, the barriers framework gets the contrast between (17a) and (17b) exactly backwards!

On the basis of examples such as those in (17), the relevant parameter determining opacity would appear to be based on Case distinction. The precise nature of this distinction, however, is not as self-evident as it might at first appear. Traditional grammars of English assumed that predicate NPs are nominative. This view is due perhaps in part to the influence of the classical languages, in which Case distinctions are, for the most part, clearly marked. In simple cases, predicate NPs are nominative, as the following examples from Latin indicate:

(18) a. Rufus laudavit poetam cantis
Rufus [Nom] praised poet [Acc] songs [Abl]
'Rufus praised a poet with songs'

b. Rufus est poeta
Rufus [Nom] is poet [Nom]
'Rufus is a poet'

But while the assignment of nominative Case to subjects and oblique Case to objects and adjuncts is consistent, predicate NPs are not

always nominative:

(19) Video neminem ex eis esse amicum tibi
(I) see none [Acc] of them to be a friend [Acc] you
'I see that none of them is a friend of yours.'

We will assume that the underlying structure of (19) to be as in (20):

(20) Video $[_{S'}\ [_{S}\ [_{NP_1}$ neminem ex eis] esse $[_{NP_2}$ amicum] tibi]]

Here NP_1 inherits accusative Case from its head, neminem. The fact that NP_2 is in the accusative, agreeing with the subject of the infinitive, suggests that the general rule for Latin, accommodating both (18b) and (19), is that the Case of the subject is copied onto the predicate NP.

Unfortunately, the facts concerning the Case marking of predicate NPs in English is not nearly as straightforward. Although predicate NPs have been assumed to be nominative, in the only telling instance, that of predicate pronouns, the evidence is ambiguous. Pronouns appearing in predicate position are rare (usually occurring only in sentences with pleonastic or deictic subjects), and when such pronouns do appear, they are as likely to be in the objective case as in the nominative:

(21) a. It is I/me
b. This is she/her

Some evidence does come from sentential complements. Here a wh-word moved from predicate position may not be objective:

(22) I know who/*whom it is

An English analog to (19), in which the subject of the copula is objective, would lend further support to the notion that Case is copied across the copula in English. Unfortunately, these examples are so tortured and unnatural that it is difficult to be satisfied about grammaticality judgments concerning them. Nevertheless, the objective form seems to be better in such constructions:

(23) a. She wants the lawyer to be him/?he
b. I believe this to be her/?she

Fiengo (1985) suggested that examples such as (24) provide further evidence:[5]

(24) Whom do you believe him to be

Although the nominative form of the wh-phrase might be preferred by many speakers, perhaps due to a general avoidance of the objective form in all positions except post-prepositional, the acceptability of examples such as (24) suggests that Case copying might at least be an option in such constructions.

Fiengo points to other constructions, however, which pose a

more serious challenge to the Case-copying hypothesis. In these, the predicate NP may appear as the complement of a copula with a (presumably) Caseless subject:

(25) John wants [PRO to be a lawyer]

Fiengo suggests two possible solutions: (i) PRO in such examples could be Cased but ungoverned, or (ii) the predicate NP could receive Case by default. Although (i) would account for want-type predicates, it would leave the superficially similar Raising predicates, as in (26), unexplained:

(26) John [seems t to be a doctor]

Allowing NP-traces to be Cased would have the additional undesirable result of erasing the distinction between these and wh-traces. Conversely, it would be awkward to have some alternative mechanism for Case assignment to predicate NPs just to account for those in Raising predicates. Option (ii) would allow a single principle to cover all cases but would be difficult to formalize.

Another possibility might be that predicate NPs are Caseless at S-Structure. Fiengo (1985) gives evidence that in Korean and Japanese, NPs in predicate position do not bear the otherwise obligatory Case markers. The following data are from Korean:

(27) a. John-ka yolisa/*yolisa-ka ita
John-[Nom] cook-[Ø/*Nom]
'John is a cook'
b. John-ka yolisa-lil/*yolisa salaghanta
John-[Nom] cook-[Acc/*Ø] saw
'John saw a cook'

This suggests that a typology exists among languages. In languages such as Latin, the Case Filter is exceptionless. All NPs must be Cased, and if any NP occupies a position to which no Case is assigned, Case must be copied from another source. In languages such as Korean (and arguably English), there is no Case copying, and predicate NPs are simply exceptions to the Case Filter.

3. Hornstein's Analysis

It would perhaps be useful at this point to evaluate an analysis suggested for these data in Hornstein (1984). Hornstein proposes that the coindexing restrictions on elements contained within predicate NPs could be accounted for by appealing to the i-within-i Condition (i/i-Condition) by which an NP is proscribed from bearing the same index as that of a category which contains it (examples from Chomsky 1982:212):

(28) a. *[$_i$ The friends of [$_i$ each other's] parents]]
b. *There is [$_i$ a picture of itself$_i$] on the mantlepiece
c. *[$_i$ The owner of [his$_i$ boat]]
d. *[$_i$ The friends of [their$_i$ parents]]

Thus the coindexing of a subject with an element within a predicate NP would be ungrammatical if the predicate noun bore the same index as the subject. Hornstein claims that this is the case under a general principle he terms "Copular Coindexing," by which a the subject and the complement of a copula are assigned the same index. While this might at first seem intuitively correct, such a provision does not follow from basic principles of logic. Specifically, this provision cannot rest on some common-sense notion of the copula showing equivalence or identity of reference between the elements which flank it. Fiengo (1985) points out that Copular Coindexing is suspect in this regard. Intended coreference between subject and predicate NP when the copula is negated, for example, seems counterintuitive. If, on the other hand, the predicate NP following a negated copula bears an index different from that of the subject, the coindexing in the negative sentence should differ from that in the affirmative. The negation of course has no effect.

Thus validity of Copular Coindexing would have to be based on syntactic criteria. One argument which Hornstein puts forward is based on the assumption that agreement phenomena are "signalled by coindexing." Thus in Spanish, the gender agreement which obtains between subject and predicate would show that these categories were coindexed:

(29) a. La mujer$_i$ está cansada$_i$
b. El hombre$_i$ está cansado$_i$

While Hornstein's alternative handles constructions involving simple predicate adjectives, it does not handle those containing complex ones; i.e., those in which the predicate adjective takes a complement. Let us first consider precisely how Copular Coindexing would operate in such cases. Presumably, this convention would provide that a maximal category with the feature [+N] in predicate position would be coindexed with the subject. The head adjective would of course bear the same index, but this does not represent a violation of the i/i-Condition under a revised version of the condition which would cover a similar problem encountered in relative clauses:

(30) $[_i\ [_i$ the man] [who$_i$ [t_i saw $[_i$ himself]]]]

In order to accommodate such constructions, Chomsky (1982) proposes to amend the i/i-Condition in the following manner:

(31) *$[_\gamma \ldots \delta \ldots]$, where
a. γ and δ bear the same index, and
b. δ is not the head of γ[6]

This expresses the intuitive notion that a projection bears the same index as its head. Other categories, such as specifiers and complements, within these projections, however, would be contraindexed. In the case of adjective phrases, the adjective head and its maximal projection would be allowed to share the same index.

Complex adjectival phrases containing other items which might bear an index pose a potential problem for Hornstein's analysis:

(32) a. $Juan_i$ es $[_{AP_i}$ $dedicado_i$ $[_{PP}$ de su_i esposa]]
'John is dedicated to his wife'
b. $Juan_i$ es $[_{AP_i}$ $dedicado_i$ $[_{PP}$ de $[_i$ si mismo]]]
'John is dedicated to himself'

Since the embedded pronoun in (32a) may be coindexed with the subject, and the embedded anaphor in (32b) must be coindexed with the subject, one of the two principles invoked by Hornstein (Copular Coindexing or the i/i-Condition) must be suspended in order to account for the grammaticality of these sentences. It could of course be argued that the constituent structure shown above is incorrect, and that the prepositional phrase is an independent entity within VP:

(33) a. Juan $[_{VP}$ es $[_{AP}$ dedicado] $[_{PP}$ de su esposa]]
b. Juan $[_{VP}$ es $[_{AP}$ dedicado] $[_{PP}$ de si mismo]]

Such an account seems somewhat ill-motivated in view of the fact that the PP in this case appears to be a necessary constituent of the AP. The predicate is like the English be fond of in that it may not occur without a prepositional complement:

(34) *Juan es dedicado

Again, if Copular Coindexing were operating in these cases between the

subject and the AP, the i/i-Condition is violated.

The concept of gender agreement via an automatic coindexing principle is undermined also by evidence demonstrating that such agreement often fails. In Russian, certain nouns occur only in one gender:

(35) anna vrač
Anna [fem] doctor [masc]
'Anna is a doctor'

It might be argued that the masculine form appears simply because the noun is defective, lacking the requisite morphology evidenced by other nouns:

(36) a. boris udarnik
Boris [masc] shock-worker [masc]
'Boris is a shock-worker'
b. anna udarnitsa
Anna [fem] shock-worker [fem]
'Anna is a shock-worker'

While the feminine morphology is lacking in the case of masculine invariables like vrač, even adjectives, for which the requisite morphology is available, modifying such nouns are also masculine:

(37) anna glavniy vrač
Anna head doctor
'Anna is the head doctor'

There are additional reasons for suspecting the validity of Copular Coindexing if the i/i-Condition is to be maintained. There exist structures in which an element within a predicate NP could bear the same index as a matrix subject:

(38) $John_i$ is $[_{NP_i}$ $[_{NP}$ his_i friend's] cook]

To account for such cases, Hornstein claims that "the i/i-Condition is sensitive to the syntactic depth of the coindexed element. In other words, roughly speaking, it applies only to a phrase that is both coindexed with a containing phrase and of relatively low embedding within that phrase." (Hornstein 1984:113) Syntactic depth, however, is a relative concept. Hornstein's statement suggests that specifiers, as in (38), are deeper than the analogous prepositional phrases in (28). The examples in (39) and (40), however, seem to be at the same level of acceptability (where the (a)-examples are from Chomsky 1982:212)):

(39) a. $[_{NP_i}$ the owner of his_i boat]
b. $[_{NP_i}$ his_i boat's owner]

(40) a. $[_{NP_i}$ the friends of $their_i$ parents]
b. $[_{NP_i}$ $their_i$ parents' friends][7]

Thus while the i/i-Condition does account for the oddness of some expressions, it cannot be used to explain the anomalous

properties of predicate NPs with regard to the Binding Principles.

There are of course cases in which Copular Coindexing would yield precisely the wrong indexing. Where a quantifier appears in subject or predicate position, the other NP cannot be coindexed with it:

(41) a. *[$_i$ All odd numbers] are numbers$_i$
b. *[$_i$ All numbers] are [$_i$ odd numbers]

In addition, as pointed out in Fiengo (1985), in order for Copular Coindexing to operate, morphological agreement and coindexing would have to be directly linked. It is unclear that these properties, belonging to different grammatical components, should necessarily be related at all.

4. Georgi's Analysis

Another analysis of predicate nominals was offered in Giorgi (1987) based on the framework presented in Chomsky (1986a) (henceforth referred to as the KOL [i.e., Knowledge of Language] framework), in which binding theory is reformulated. Where E represents a given expression with index I, and α an expression within a local domain β, the indexing I and the pair (α,β) are said to be compatible with respect to binding theory (BT-compatible) under the following conditions:

(42) a. α is an anaphor and is bound in β under I

b. α is a pronominal and is free in β under I

c. α is an r-expression and is free in β under I

To these principles, the following licensing condition is added, where α is governed by a lexical category γ in the expression E with indexing I:

(43) For some β such that (i) or (ii), I is BT-compatible with (α,β):

(i) α is an r-expression and (a) if α heads its chain or (b) otherwise

(a) β = E

(b) β is the domain of the head of the chain of α

(ii) α is an anaphor or pronominal and β is the least complete functional complex (CFC) containing γ for which there is an indexing J BT-compatible with (α,β)

A governing category is a CFC (Chomsky 1986a:169):

> ...in the sense that all grammatical functions compatible with its head are realized in it -- the complements necessarily, by the projection principle, and the subject, which is optional unless required to license a predicate, by definition.

Giorgi argues that certain properties of predicate nominals show that the concept of governing category in the KOL framework is preferable to the standard-framework stipulation of NP as a governing category. She offers the following examples from Italian as evidence:

(44) a. Gianni$_i$ è il miglior giudice di suo$_i$ padre
'Gianni is the best judge of his father'
b. Gianni$_i$ è il miglior giudice di se stesso$_i$
'Gianni is the best judge of himself'
c. *Gianni$_i$ è il suo$_i$ miglior giudice
'Gianni is his best judge'
d. ?Gianni$_i$ è il proprio$_i$ miglior giudice
'Gianni is self's best judge'

Giorgi states that in the case of sentences with predicate NPs:

> The subject is not thematically autonomous with respect to the predicative NP. In fact it must constitute the external argument of the latter.

This assumes, it seems, that predicate NPs cannot be CFCs. This, however, is not necessarily the case, as (45) shows:

(45) That is [my reading of Homer]

The bracketed NP can clearly be predicative, since in the most likely interpretation of (45), my reading of Homer represents a property of the subject. This is underscored in the negative:

(46) That is not my reading of Homer

The interpretation would be odd which suggested that there is an entity my reading of Homer such that the subject was not it.

Examples more closely paralleling Giorgi's, with human subjects, are harder to come by, but not impossible. Consider (47):

(47) Bill is [his idea of an idiot]

Again, the bracketed NP appears to be a CFC, but presumably open, since Bill and his must be contraindexed. It might be argued that the NP is open because idiot could be construed as "not thematically autonomous," i.e., necessarily coindexed with Bill. This, however, would essentially be the Copular-Coindexing argument and false for the same reasons. In this particular case, the negation of (47) is sufficient to demonstrate the point:

(48) Bill is not his idea of an idiot

Thus predicate NPs appear to be open without exception, regardless of any considerations of functional completeness.

5. The Caseless Category-Principle

In section 2, it was argued that the distinction between object and predicate NPs was not merely a matter of difference in Case, but rather a dichotomy based on presence or absence of Case. In the discussion which follows, the assumption will be made that all categories are normally open and that the property of Case effects opacity. The general principle is given in (49).

(49) Cased-Category Principle (CCP)
Cased categories are barriers.

(In chapter three, it will be shown that this principle will have to be revised and that the consideration of argument status must be taken into account. We will proceed with the formulation in (49) simply to restrict attention to the level of S-Structure of sentences taken in isolation.) This provision would account for the distinction in sentences such as (50) in terms of a single principle.:

(50) a. $John_i$ is [$his_{j/*i}$ cook]
b. $John_i$ is [[$his_{i/j}$ friend's] cook]

The government of the matrix verb extends into the predicate NP in (50a) because the latter is a Caseless category, and S is therefore the governing category of the pronominal. In (50b), the least maximal NP containing the pronominal is Cased, blocking the scope of the external governor. The governing category of the pronominal in (50b) is therefore the specifier NP.

Let us consider the effects of the present analysis on the extension of government into non-nominal categories. As the evidence concerning the government into tensed clauses involves primarily facts about movement, we will set aside a discussion of these for the following chapter. In this section, the effects of the present analysis with regard to infinitival clauses will be considered.

The present analysis as developed thus far would predict that infinitive clauses are open except where they are dominated by a Cased NP. We will assume for the moment that sentential complements are not dominated by NP and that sentential categories are not Cased although this position will be modified somewhat in the course of the discussion.[8] Thus in (51a), government is permitted to extend into the infinitive clause, while in (51b) it is not:

(51) a. John tried $[_{S'}$[to leave]]
b. John thought that [[$_{NP}$[to leave]] would be foolish]

The scope of government, of course, is limited by the Minimality Condition. In a sentence such as (52), government extends to the subject of the infinitive, but not to its object:

(52) John$_i$ wants [him$_{j/*i}$ to hit him$_{i/*j}$]

This analysis yields the correct predictions concerning the referential properties of the elements involved. The subject of the infinitive is in the same governing category as the subject of the matrix S, and coindexing of the two is therefore impossible. By the Minimality Condition, government from the matrix S does not extend past the verb of the infinitive clause. The object of the infinitive may thus be coindexed with the subject of the matrix S.

The Minimality Condition also protects subjects of tensed complements from government by a source external to the complement, as

shown in (53):

(53) John thinks [$_S$,that [$_S$ he left]]

In such instances, the governor of he is presumably the AGR of the complement.

If the analysis presented above is correct, there result a number of implications, especially with regard to empty categories, and specifically the element PRO. Within the standard framework as developed by Chomsky (1982) and related work, PRO is defined as a "pronominal anaphor"; i.e., it possesses the properties of both pronominals and anaphors and is therefore subject to both principles A and B of Binding Theory. This, however, would make it both free and bound within its governing category. Since this situation is impossible, it follows that PRO has no governing category; it is ungoverned. If, however, the analysis presented here is correct, there will be many cases where an empty category which has been regarded as PRO is in a governed position. A typical position for PRO such as the subject position of an infinitive, for example, will be governed, unless a Cased-NP barrier intervenes. Thus PRO will be governed in structures such as (54):

(54) a. Max wants [$_S$,[$_S$ PRO to leave]]
b. Mary forced Mike [$_S$,[$_S$ PRO to eat sushi]]

This discrepancy between the present analysis and the standard

framework can be resolved, at least in part, by a more formal separation of the different varieties of PRO already recognized within the theory. In Chomsky (1982), two kinds of PRO are identified. When PRO has an antecedent, it is "proximate." When an antecedent is lacking, PRO is termed "obviative." Proximate PRO occurs below in (a), and obviative PRO in (b):

(55) a. John hates [PRO to err]
b. [PRO to err] is human

In this analysis, a principled distinction is made between the two types of PRO. In (55a), PRO is governed, while in (55b), it is not. Furthermore, proximate PRO (henceforth simply PRO), now within the same governing category as its antecedent, will be regarded as a simple anaphor, while obviative PRO (henceforth ARB, i.e., having arbitrary reference) may be regarded as a pronoun. In cases of Extraposition, the extraposed clause will be in an ungoverned position, i.e., outside of VP. If such a clause contains an empty-category subject, it must be ARB:

(56) $[_S$ It $[_{VP}$ is impossible] [ARB to figure this out]]

It is important to note here that in the present analysis, PRO must still be distinguished from overt categories by the absence in the former of Case. It is this provision which will excluded cases such as (57):

(57) John hit PRO

(ARB is excluded as a possibility because the position in question is governed.) The provision that PRO be Caseless is just the minimal one. Results such as (58), for example, would not be excluded:

(58) It was arrested PRO

Such cases might be excluded on the grounds of the absence of a possible antecedent, or by an additional provision requiring that PRO not be L-marked.

A similar analysis of PRO results from the analysis of empty categories presented in Bouchard (1984). There he points out that PRO possesses all the referential properties of anaphors, while ARB does not. Bouchard lists four properties specifically which necessarily hold of the antecedent-anaphor relationship, but not necessarily of the antecedent-pronoun relationship. The antecedent-anaphor relationship is structurally determined, obligatory, unique, and local.

With regard to the first property, the present analysis can predict the presence of either PRO or ARB based on whether or not the infinitive is contained within a Cased NP. The empty-category subject of the infinitive in (59a) is governed from the matrix S and is therefore PRO. In (59b), the infinitive is within the Cased subject NP of the complement. The empty-category subject of this infinitive is ARB:

(59) a. John tried [PRO to leave]
b. John thought [that [ARB to leave] would be foolish]

This seems intuitively correct, as (a) can be interpreted as meaning only that John tried to leave, while in (b) the understood subject of the infinitive could be John or someone else. A test might be devised, as Bouchard suggests, involving reflexives. Where the interpretation is PRO, only a personal reflexive is possible. Where the interpretation is ARB, either a personal or an indefinite reflexive could appear. The examples in (60) show the distinction:

(60) a. John tried ($[_{S'}$) $[_{S}$ PRO to starve himself/*oneself]($]$)
b. John thought that $[_{S'}$that $[_{S}$ [ARB to starve himself/oneself] would be foolish]]

The predictions made by the present analysis and that of Bouchard yield the same results in examples such as these, but for different reasons. Bouchard allows S'-deletion in cases such as (60a), with independent mechanisms to prevent Case assignment to the subject of the infinitive. The present analysis presents a simpler solution in that S'-deletion in cases such as (60a) is not necessary to allow the subject of the infinitive to be governed, and no additional principles need be invoked in order to block Case assignment. The present analysis is thus able to distinguish PRO and ARB while maintaining the standard formulation of S'-deletion.[9]

The obligatory nature of the antecedent-anaphor relationship, as opposed to that between an antecedent and a pronoun, is demonstrated in (61) and (62):

(61) a. She$_i$ fed herself$_i$
b. *Herself was hungry

(62) a. She$_i$ believed she$_i$ was happy
b. She$_i$ was happy

PRO and ARB, respectively, evidence the same distinction:

(63) a. She tried [PRO to feed herself/*oneself]
b. [ARB to feed herself/oneself] was easy

The antecedent-anaphor relationship must also be local, but this requirement does not hold of the relationship between a pronoun and its antecedent:

(64) a. *She believed herself was happy
b. She$_i$ believed she$_i$ was happy

Here the identification of PRO as an anaphor is somewhat more controversial, as it has been claimed (Chomsky 1982) that PRO is subject to long-distance control. Thus sentences such as that in (65) have been used to argue that control extends from the matrix S to the subject of the embedded infinitive:

(65) He thought that [e to feed himself] would be difficult

Using the test suggested above, it may be argued that even in what appear to be clear-cut cases of control, the empty category involved is ARB not PRO:

(66) He thought that [e to feed himself/oneself] would be difficult

Even disregarding such evidence, we could still consider the subject of the infinitive to be ARB. While the easiest reading of (65) is with he and himself coindexed, it is not the only reading:

(67) Max told Harry that $Bill_i$ was planning [e to feed $himself_i$], but Harry thinks that [e feeding $himself_i$] would be difficult

The preferred reading of (65), with he and himself as coindexed, is perhaps due to a tendency to seek out the closest antecedent possible. The fact that such judgments can so easily be swayed by context, as in (67), demonstrates that the empty category in question cannot be an anaphor. In the case of the anaphor PRO in the straightforward examples such as those in (68), no degree of contextualization can encourage any reading other than that in which the subject of the infinitive and the matrix subject or object are coindexed:

(68) a. John wants [PRO to tell us]
b. Alice persuaded Max [PRO to come along]

Finally, an anaphor cannot bear the index of more than one antecedent, whereas the antecedent of a pronoun is not necessarily unique:

(69) a. He_i told her_j that $they_{i+j}$ were happy
b. *He_i told her_j about $themselves_{i+j}$

(70) a. He_i told her_j that [ARB_{i+j} to like only themselves] was no vice
b. *He_i told her_j [PRO_{i+j} to like only $themselves_{i+j}$]

6. The Problem with Gerunds

Gerunds provide another useful test for the analysis proposed here. There are in English a number of participial constructions which are superficially similar, but which exhibit very different syntactic properties. Consider the examples in (71):

(71) a. I disliked John's singing the school song
b. I disliked John singing the school song
c. I saw John singing the school song

As argued in Chomsky (1970), the participle in (a) must be analyzed as containing a true predicate, thus differentiating it from ing-constructions which are nominalizations:

(72) I disliked John's singing of the school song

(72) differs from (71a) in that the participle in (72) may be modified by a PP in the same manner as a head noun:

(73) I disliked John's mockery of the school song

In addition, the nominal construction in (72) may take an article and is subject to adjectival modification:

(74) I disliked the unenthusiastic singing of the school song

Nevertheless, it has been convincingly argued by Horn (1975) that the construction in (71a) is an NP with an embedded predicate. Evidence for the categorial status of constructions such as that in (71a) (henceforth referred to as "Poss-ing"-constructions) comes from a number of distributional facts. Poss-ing complements differ from sentential complements, for example, in that the former, like NP's may undergo Clefting:

(75) a. It was John's singing of the school song that I disliked
b. *It was that John sang the school song that I disliked
c. *It was for John to sing the school song that I disliked

The same distribution is evidenced with Topicalization:[10]

(76) a. John's singing of the school song I disliked
b. *That John sang the school song I believed
c. *For John to sing the school song I preferred

In addition, Poss-ing subjects undergo Subject-Auxiliary Inversion, while sentential subjects do not:

(77) a. Did John's singing of the school song annoy you
b. *Was that John sang the school song appropriate
c. *Would for John to sing the school song be an affront to the swimming team

Poss-ing constructions are further differentiated from other sentential categories by the fact that conjoined Poss-ing subjects, like conjoined NP's, are plural, while conjoined sentential subjects are not:

(78) a. Mary's playing the piano and John's singing were/*was very entertaining
b. That Mary should play the piano and that John should sing was/*were totally unexpected
c. For Mary to play the piano and for John to sing was/*were preferred by all

A distinction between Poss-ing constructions and other sentential categories is also shown in the case of Extraposition. In sentences with sentential subjects, Extraposition is optional:

(79) a. That John liked the school song was obvious
b. It was obvious that John liked the school song

(80) a. For John to sing the school song was important

b. It was important for John to sing the school song

Extraposition is impossible for Poss-ing subjects, just as it is for subject NPs:

(81) a. John's cooperation was necessary
b. *It was necessary John's cooperation

(82) a. John's singing of the school song was necessary
b. *It was necessary John's singing of the school song

It then seems to be the case that Poss-ing constructions may be regarded as NPs based on their syntactic behavior. This leaves open the question as to the analysis of the other constructions presented in (71):

(83) a. I disliked John singing the school song
b. I saw John singing the school song

Although the structures in (83) differ, we will refer for the time being to all ing-constructions in which the subject appears in the in objective rather than the possessive form as "Acc-ing" (i.e., accusative -ing) constructions. Using those syntactic tests which demonstrated that Poss-ing constructions behave like NPs, we find that Acc-ing constructions exhibit the same properties as those of sentential categories. Thus Poss-ing constructions (the (a)-examples

below) can be shown to differ from Acc-ing constructions (the (b)-examples below) with regard to Clefting (84), Topicalization (85), Subject-Auxiliary Inversion (86), and agreement facts (87):[11]

(84) a. It was John's singing the school song that I disliked
b. ?It was John singing the school song that I disliked

(85) a. John's singing the school song I disliked
b. *John singing the school song I disliked

(86) a. Did John's singing the school song annoy you
b. *Did John singing the school song annoy you

(87) a. Mary's playing the piano and John's singing were/*was totally unexpected.
b. Mary playing the piano and John singing was/*were totally unexpected[12]

Extraposition does not seem to provide any evidence bearing on the status of Acc-ing constructions as these may appear in neither subject nor complement position:

(88) a. *John singing the school song was necessary
b. *It was necessary John singing the school song

Although the sentences in (83) appear to have the same structure, Acc-ing constructions following perception verbs are quite

different from the others. We will refer to the latter as Perception-Verb Complements (PVCs). An interesting property which distinguishes Poss-ing and Acc-ing complements from PVCs is the ability of the former constructions to take non-overt subjects. Following the analysis presented in section 5, we should be able to predict on the basis of the structure involved whether PRO or ARB will appear as the subject of an ing-construction. Consider the structure in (89):

(89) $\alpha \ldots [_{\beta} \ldots \gamma$, where
a. α is a Case assigner, and
b. γ is an empty subject at D-Structure

When β = NP, the category β will be Cased and according to the present analysis closed. γ will in this case be ungoverned and therefore ARB. This should be true of Poss-ing constructions if these are NPs as argued above. If $\beta \neq$ NP, as we are assuming for Acc-ing constructions, β will not receive Case and thus be open. α will govern the subject of β, and this subject will be PRO. We are left, however, with the problem of determining whether a particular ing-construction with an empty subject is a Poss-ing or an Acc-ing. As Horn (1975) points out, there are certain verbs that are subcategorized only for Poss-ing complements, as shown in (90):

(90) a. No one defended [Bill's/*Bill chewing gum at work]
b. Lois denounced [the faculty's/*the faculty soliciting money from the students]
c. We protested [their/*them sending Washoe to Mars]

d. The coach criticized [my/*me drinking beer before the game]

The complements in (90) may of course appear with empty subjects. Horn noted that in such cases, the subject of the complement can be only ARB:

(91) a. No one defended [ARB/*PRO chewing gum at work]
b. Lois denounced [ARB/*PRO soliciting money from students]
c. We protested [ARB/*PRO sending Washoe to Mars]
d. The coach criticized [ARB/*PRO drinking beer before the game]

The predictions for Acc-ing complements would be precisely the opposite. The test, however, is somewhat more difficult as there do not seem to be verbs which are subcategorized exclusively for Acc-ing complements. Rather for all those verbs which may take Acc-ing complements, Poss-ing complements are also possible:

(92) a. We imagined [John's/John singing the school song]
b. The doctors visualized [the patient's/the patient playing the piano]

The present analysis would predict that an empty subject in either of these complements could be PRO or ARB. This too was noted by Horn:

(93) a. We imagined [ARB singing the school song] as being fun for some people

b. We imagined [PRO singing the school song] but were afraid to try

(94) a. The doctors visualized [ARB playing the piano] as being good therapy

b. The doctors visualized [PRO playing the piano] but didn't know how

In order to confirm the foregoing analysis of these examples, we need further evidence that the complements in the (a)-examples above are Poss-ing, while those in the (b)-examples are Acc-ing. Such evidence comes from structures resulting from movement operations, which is the subject of the next chapter.

NOTES

1. The difficulty in this has been pointed out by Terry Langendoen (personal communication):

> If COMP is the head of S' and S is a maximal projection of some category, then (2) is simply a counterexample to the theory of government, if <u>believes</u> governs <u>him</u> in (2). The conclusion to be drawn is that for (2) to be consistent with government theory, with government defined as in (1), S is not a maximal projection, and hence S, not COMP, is the head of S'.

While this is true, the proposal would introduce an innovation in that a phrasal category would be a head. If we return to Chomsky's earlier proposal, that both S and S' represent projections of INFL, S would represent INFL'. This poses other problems since S, with its subject position, would be exceptional as an intermediate projection. If we assume, as does Chomsky, that the subject of S represents that category's SPEC, this position should not be present at the X'-level. I do not believe that there is a solution to this problem within Chomsky's framework other than the stipulation he offers.

2. The formulations presented here are the same in content as those in Chomsky (1986b:9-15). In that work, Chomsky uses the category labels IP [= INFL"] and CP [= COMP"] for S and S' respectively. For ease of exposition, the latter symbols are retained here. In the interest of clearer exposition, I have taken Terry Langendoen's suggestion and switched the order of the subparts in (10). Chomsky's original formulation is:

> γ is a barrier for β iff (a) or (b):
> a. γ immediately dominates δ, δ a BC for β;
> b. γ is a BC for β, $\gamma \neq$ IP.

3. The discussion here is concerned only with the scope of government. Within the barriers framework, the attempt is made to reduce the issues the standard framework was concerned with, most notably movement and binding, to this single parameter.

4. NP would be wholly opaque if the Minimality Condition were modified so as to make any projection the conditioning environment. Chomsky (1986b:42-45) considers this possibility, only to reject it on the basis of evidence offered by Torrego (1985):

(i) [De qué pintor]$_i$ me has dicho que van a exponer [$_{NP}$ varios dibujos] t_i]
'By what painter did you tell me that they are going to exhibit several drawings'

(ii) *[De qué pintor]$_i$ me preguntaste si van a exponer [$_{NP}$ varios dibujos t_i]
'By which painter did you ask me whether they are going to exhibit several drawings'

(iii) [De cual ediciones]$_i$ no sabes si hay [$_{NP}$ traducción francesa t_i
'Of which of these editions don't you know whether there is a French translation'

In (iii) the trace is properly governed by the noun traducción, of which it is the object and therefore contained within N'. In (i) and (ii), the trace is in subject (i.e., specifier) position. In (i), antecedent government licenses the trace, while in (ii) government by the antecedent is blocked by the wh-Island. This demonstrates that the trace in each case must be governable by an element external to the bracketed NP.

5. Terry Langendoen (personal communication) points out the following contrast:

(i) John would love [PRO to be her/*she]

(ii) Who/*Whom would John [PRO love to be t]

It is Langendoen's judgment that (i) should be starred. While the sentence is admittedly very unnatural, I would prefer a question mark. I fully agree with the judgment in (ii). It could be the case that English in fact follows something akin to the "strong" pronoun rule of French:

(iii) C'est moi/*me/*je
'It's me'

(iv) Jean me/*moi/*je connait
'Mary knows me'

We would then posit a rule for English which would insert the strong pronoun, sometimes homophonous with the objective Case.

6. The representation presented here is adapted from Chomsky (1982), where a number of possibilities are offered. The rule is first given as:

(i) *[$_\gamma$...δ...], where γ and δ bear the same index

In order deal with the relative clause cases, condition (ii) is added:

(ii) unless δ is coindexed with the head of γ

Although Chomsky does not discuss the implications for his original examples, this amendment would allow precisely those structures he wishes to exclude, as the full indexing of (28a) shows:

(iii) $[_{NP_i}$ the friends$_i$ of $[_i$ each other's] parents]

Chomsky's main concern is formulating principle which will exclude Agr from being an accessible subject in sentences such as.

(iv) They think [that $[_{NP}$ [pictures] of [each other]] Agr will be there]]

To deal with such structures, Chomsky's final amendment of the i/i-Condition is as follows:

(v) $*[\ldots\alpha_i\ldots[_{\beta_i}\ldots\gamma_i\ldots]\ldots\alpha_i\ldots]$, where α_i appears either to the left or the right of the embedded configuration, and γ_i is not the head of β_i

Assuming that Agr and its adjacent subject NP are always coindexed, if the NP and Agr of (iv) correspond to the β_i and α_i of (v), then the sentence will be starred if any element other than pictures (i.e., the head of NP) represents γ_i.

Since the present discussion is focussed on the i/i-Condition itself, rather than on accessible SUBJECTs, only the internal bracketed expression in (v) is utilized in the formulation presented in (31).

7. There is a difficulty with the i/i in that the acceptability of certain i/i-structures seems dependent upon the choice of head noun. The apparent logical circularity of (39), for example, may very well be due to the meaning of the head noun, owner. If owner and his are coindexed, the expression seems redundant. Similarly the relationships referred to in (40) might normally seem to be mutually exclusive. Certain contexts might in fact allow readings for these sentences. In (39), for example the relationship between his and boat might be one other than ownership. In (40), it could be the case that the parents' friends are their own children. With regard to the other supposedly ungrammatical structures quoted in (28), (a) seems not impossible, and (b) is perhaps odd for pragmatic reasons, but not entirely unimaginable. The semantic oddness can in fact be factored out if the relationships involved do not suggest any apparent redundancy or contradiction:

(i) $[_{NP_i}$ the owner of her$_i$ apartment]

(ii) $[_{NP_i}$ his$_i$ dorm's housemaster]

8. Sentential subjects are not mentioned here because a discussion of their position, as presented in chapter two, would take us too far afield.

9. The retention of S' in all but the classic S'-deletion cases is motivated also by the fact that otherwise PRO would be able to appear in every Cased position:

(i) Bill hit PRO
(ii) PRO left
(iii) We talked about PRO

10. Topicalized that-clauses are problematic. They seem to improve with longer and more complex matrix clauses or when they move from multiply embedded complement positions:

(i) *That John was late she said

(ii) ?That the money is missing he has already admitted

(iii) That Paul is innocent it is impossible for anyone to believe

Terry Langendoen (personal communication) offers the following, he believes, from John Donne:

(iv) That Judas hanged himself from an oak tree, there can be no certainty

There may be some principle of balance of elements at work here. In any event, Poss-ing complements seem generally more acceptable when topicalized than that-clauses do.

11. Terry Langendoen (personal communication) finds (84b) acceptable. Although my original starring of the sentence may have been too severe, I still find the first sentence the better of the two. The sentence deteriorates further, I believe, if a pronoun is substituted, but I have no explanation to offer for this:

(i) ??It was him singing the school song that I disliked

12. Some may find Acc-ing subjects generally unacceptable. To the extent (87b) is grammatical at all, it can only be, I believe, with the singular verb.

CHAPTER TWO

BARRIERS TO MOVEMENT

1. Movement and the CCP

In the previous chapter, it was demonstrated that a broad range of facts concerning government could be accounted for if it were assumed that categories are generally open and that there is a single parameter, Case, which determines opacity with regard to the scope of government. The argument would receive added support if it were determined that this same principle accounts for movement phenomena as well. This has, however, not been commonly assumed, as Chomsky (1986b:1) indicates:

> A natural speculation would be that the same categories are barriers in the two cases [government and movement]. As is well known, however, government is a stricter and "more local" relation.

It will be argued in this chapter that the distinction between government barriers and movement barriers is only apparent, and that a redefinition of the notion of barrier will allow a single category type to serve as a barrier to both government and movement.

2. Movement from NP

Let us return to the analysis of barriers to government presented in the previous chapter. In a sentence such as (1a), government of the specifier of the bracketed NP by the verb is blocked because that category is Cased. The bracketed category in (1b), however, is not Cased and is therefore open:

(1) a. John saw [his cook]
b. John is [his cook]

If the specifier position in the predicate NP in (1b) is properly governed, and the category which contains it is open, we would expect that a wh-trace could appear in this position, but not in the specifier position in (1a). Such movement, however, is proscribed in both cases:

(2) a. *Whose did John see [t cook]
b. *Whose is John [t cook]

A possible solution to this difficulty might be to invoke the Subjacency Condition. Thus the sentences in (2) would be ungrammatical because the trace is separated from its antecedent by two bounding nodes, NP and S. While such movement is proscribed in both cases in English, as shown in (2), it is permitted from predicate NPs in Modern Greek, as shown in (3):

(3) a. *pianú évlepe o jánis [t májira]
whose see the John [t cook]
'Whose cook did John see'
b. pianú íne o jánis [t májiras]
whose is the John [t cook]
'Whose cook is John'

Whatever the principle is which accounts for the difference in grammaticality between (3a) and (3b), it presumably cannot be Subjacency, but an account of this data might be formulated with recourse to the ECP. Let us suppose that "possessive" pronouns within NP may be of two types. One type is quasi-adjectival in nature, and in fact in those languages where the requisite morphology is available, agreement may obtain between the specifier and the head. The Latin suus is representative of this type. A second type is invariable in form. Here we will assume that pronouns of this latter type possess their features, including Case, inherently. An example of this latter type is the Latin eius. (Here we are considering only the morphological and syntactic properties of these elements, not the referential distinctions involved.):

(4) Alexander moriens anulum suum dederat Perdiccae
Alexander dying ring [Acc. masc. sg.] his [Acc. masc. sg.] had given Perdiccas
'Alexander, dying, had given his (own) ring to Perdiccas'

(5) Perdiccas acceperat eius anulum
Perdiccas had received his [Gen. sg.] ring [Acc. masc. sg.]
'Perdiccas had received his [= Alexander's] ring'

It is likely that a solution lies in a formulation of proper government which would distinguish the suus from the eius-type elements. Let us assume that the eius-type possessives represent a form of Case assignment by the head noun, while the suus-type possessives represent Case copying. Since SPEC-head agreement for certain features is necessary for independent reasons, it is reasonable to assume that possessives of the suus-type appear in specifier position, while those of the eius-type do not. If we further assume, as seems natural, that Case assignment by a head to a complement is necessarily a subspecies of proper government, while the latter is not. Such a treatment to the suus-type possessives would parallel the analysis in which features are copied from INFl to the subject NPs of clauses. It is therefore possible to make the general provision that specifiers are never properly governed internal to their category, and account for a variety of ECP violations at both the level of S and NP.[1] Modern Greek, unlike Latin, evidences only the eius-type (Modern Greek pianú 'whose'). The analysis of the English whose is more problematic. Case is not copied from the noun as it is with suus, although there is no reason to expect that the copying of features will be identical from one language to another. There is independent evidence, however, that genitive-Case assignment is fundamentally different in Latin. There are certain verbs, for

example, which take genitive-NP complements:

(6) a. Humanae infirmatis memini
human [Gen] weakness [Gen] remember
'I remember human weakness'

b. Oblivisci temporur meorum
forget interests [Gen] my [Gen]
'to disregard my own interests

This suggests that in Latin genitive Case can be assigned under government, just as accusative Case is assigned. English may differ from Latin in this respect in that for a possessive such as my, Case is assigned positionally, i.e., to specifier position in an NP, not under government. If this analysis is correct, we would expect that the trace left by the English whose not to be properly governed since it occupies the specifier position, while the eius-type is properly governed. Allowing for this, the movement of pianú will never represent an ECP violation. Movement will be blocked, however, when pianú is contained within a Cased NP, under the CCP.

3. Lexical vs. Sentential Categories

Let us now turn to the question of how the CCP affects movement from various kinds of sentential categories. As demonstrated in the previous chapter, Poss-ing constructions pattern like NPs and are subject to the CCP, at least as far as the scope of government is concerned. In contrast, the properties of simple infinitives and Acc-ing constructions differ from those of NPs, and it was assumed that

these distinctions signal that these categories are inherently different from NPs and therefore immune to CCP effects. Ideally, it should be possible to capture these differences in terms of the system of categorial features familiar from X'-theory. While the assignment of features to lexical categories is fairly straightforward, the proper features for sentential categories are far from obvious. The question to be dealt with is: to what extent must sentential categories be differentiated from lexical categories? It could be the case that a sentential category has exactly the same distribution as that of a lexical category. Poss-ing constructions and NPs evidence precisely such a shared distribution. These features, of course, need be defined only in so far as syntactic rules external to the category are concerned. Thus in the case of Poss-ing constructions, the only relevant concern is that in terms of those operations which affect the entire category, these constructions behave exactly like NPs and may therefore share the same lexical features. It should therefore be the case that all verbs which subcategorize for Poss-ing constructions would, all else being equal, also subcategorize for NPs and vice-versa, while other sentential categories would be excluded. Such a verb is denounce:

(7) We denounced his using clichés / his use of clichés / *him using clichés / *that he uses clichés / *him to use clichés

On the other hand, there are verbs such as implement and sell which, while transitive, do not take a Poss-ing complement:

(8) a. Jane implemented her plans for the future
b. *Jane implemented her planning for the future

(9) a. I sold John's gift
b. *I sold John's giving

These are only apparent exceptions, however, since subcategorization frames contain more than just syntactic features. The unacceptability of the (b)-examples in (8) and (9) is due to the semantic rather the syntactic properties of the complements. Since verbs may contain within their subcategorization frames semantic features which cut across syntactic categories, it is possible to account for the selectional differences in the verbs in (8) and (9) without specifying additional syntactic features. Thus the lexical entries for the verbs implement and sell would specify that these verbs may not take abstract complements, whether Poss-ing or NP:

(10) a. Jane implemented her *love / *truth / *beauty
b. I sold John's *generosity / *loneliness / *moral turpitude

With such semantic considerations factored out, it is possible to regard NPs and Poss-ing constructions as both having the features [+N,-V].

4. Stowell's Analysis

The most extensive discussion of the categorial features of sentential categories was offered by Stowell (1981). Stowell argues with regard to the subcategorization frames of verbs that there is "a strong parallelism of behavior" between NP and S' (the examples below are adapted from Stowell):

(11) a. Jim reported [the disappearance] to the police
b. The prisoner requested [an early release]
c. Does Janice know [the rules of the game]

(12) a. Jim reported to the police [that his brother had disappeared]
b. The prisoner requested [to be released]
c. Does Janice know [how to play the game]

Stowell's system does not allow for disjunctive subcategorization; i.e., the possible complements of a given head must form a natural class. Thus if NP and S' are found in the same subcategorization frames, they must share the same features: [+N,-V]. Since the distinction among sentential categories must be made in some way, Stowell proposes that infinitive clauses and tensed clauses share the same feature, [+tense], and in this way are differentiated from NP, which is [-tense]. Gerunds are unspecified for this feature. (The term "gerund" will be used below to refer to both Acc-ing and Poss-ing constructions.) Tensed clauses are differentiated from infinitive clauses by the presence of the feature [±Past] in the former. It is

this feature, claims Stowell, which assigns nominative to the subject of a finite clause. The following classification of sentential categories results:

(13)	Tensed clauses	[+N, -V, +Tense, ± Past]
	to-Infinitives	[+N, -V, +Tense, -----]
	Gerunds	[+N, -V, ----- -----]
	NPs	[+N, -V, -Tense, -----]

(The term "to-Infinitive" refers to infinitives without subject and complementizer.)

Stowell's analysis is problematic for a number of reasons. First, since the only way in which sentential categories can be differentiated from NPs is on the basis of the feature [±Tense], there seems to be no way to differentiate Acc-ing from Poss-ing constructions as presumably neither category possesses this feature. As was demonstrated in the previous chapter, Poss-ing constructions and NPs form a class against Acc-ing constructions, tensed clauses, and infinitives. The subcategorization frames of verbs, however, must be able to choose among them. In addition, the assignment of the feature [±Tense] to infinitives seems artificial.

Second, the arguments employed in the previous chapter for determining the lexical features for Poss-ing constructions fail when applied to other sentential categories. As demonstrated, the distribution of tensed clauses, infinitives, and Acc-ing constructions is not the same as that of NPs, nor does their distribution match that

of any other lexical category. It might be possible to preserve the thrust of Stowell's framework within the present analysis if we assume that sentential categories other than Poss-ing constructions are not specified for the features [±N,±V]; i.e., they are simply not lexical categories. Thus a sentential category may be chosen as the complement of a verb which may also take an NP as object since the sentential category will possess no feature conflicting with the specification [+N,-V]. Similarly, features which might be used to differentiate among sentential categories would not be specified for lexical categories. If all sentential categories are characterized by having the feature [±Tense], for example, a verb such as report may include within its subcategorization frame the features [+N, -V, +Tense], and the range of acceptable complements could be predicted:

(14) a. They reported Truman's early arrival / Truman's arriving early / that Truman arrived early
b. *They reported Truman to arrive early / Truman arriving early / that Truman arrive early

Although the analysis presented above differs in some details from that proposed by Stowell, the latter contains much which supports the line of argument pursued here. Building upon the work of Emonds (1976), Stowell demonstrates that sentential categories differ from NPs in the positions which they may occupy. A distinction exists among Cased positions at S-Structure in that Extraposition is possible from certain positions but not from others. The subject position of

an infinitive is an example of the latter type. While Poss-ing gerunds may occupy this position, sentential categories are marginal:[2]

(15) a. I considered [$_S$ [John's having come home] to be fortunate]
b. Bill showed [$_S$ [John's having lied] to be a fact]

(16) a. ?I considered [$_S$ [that John came home] to be fortunate]
b. ?Bill showed [$_S$ [that John lied] to be a fact]
c. ?I considered [$_S$ [to come home] to be easy]
d. ?Bill showed [$_S$ [for John to have lied] to be a fact]

Although sentential subjects appear to occupy subject position, when a complementizer is present, the resulting sentence is strained unless the subject is a Poss-ing gerund:

(17) a. John's belief [(that) [[your taking the course helped you] is unfounded
b. Although [[the house's being empty] may depress you],...

(18) a. ?John's belief [(that) [that you took the course helped you]] is unfounded
b. ?Although [[that the house is empty] may depress you,...
c. ?John's belief [(that) [(for you) to take this course] would help you is unfounded
d. ?Although [[(for you) to take this course] would help you,...

Object position distinguishes tensed from infinitival complements. When tensed clauses occur in predicates containing other complements,

the clause must follow:

(19) a. Mary said quietly [that she wanted to drive]
b. Paul mentioned to Bill [that his shirt was dirty]
c. John knew very well [that the law was unfair]

(20) a. ?* Mary said [that she wanted to drive] quietly
b. ?* Paul mentioned [that his shirt was dirty] to Bill
c. ?* John knew [that the law was unfair] very well[3]

In contrast, infinitive clauses may appear before or after other complements within the predicate:

(21) a. John has promised repeatedly [to help us]
b. John has promised [to help us] repeatedly

(22) a. Frank wants very badly [to visit us]
b. Frank wants [to visit us] very badly

Stowell accounts for this distribution by employing separate principles. Tensed clauses do not occupy Cased positions, he asserts, because these clauses contain a Case-assigning feature: the [±Past] feature which assigns nominative Case to the subject position of the clause. Stowell formulates this concept in the following principle:

(23) The Case-Resistance Principle
Case may not be assigned to a category bearing a Case-assigning feature.

Sentences with tensed sentential subjects or objects may escape violating this principle if the clause is moved by Extraposition. In the case of tensed sentential subjects, the Extraposition will be to a pre-S position. (Working within the standard framework, Stowell supposes this position to be COMP.):

(24) a. $[_S, [$That Jenny is a good hostess$]_i$ $[_S$ t_i is self-evident$]]$
b. $[_S, [$That Pauline moved to Kansas$]_i$ $[_S$ t_i surprised me$]]$
c. $[_S, [$That Brian dyed his hair$]_i$ $[_S$ t_i proves nothing$]]$

From object position, a tensed clause will move to a VP-final position:

(25) a. Mary said t_i quietly [that she wanted to drive]$_i$
b. Paul mentioned t_i to Bill [that his shirt was dirty]$_i$
c. John knew t_i from experience [that the law was unfair]$_i$

The fact that <u>to</u>-infinitives may appear either before or after other complements within the predicate suggests at first that these may occupy Cased positions. Stowell claims, however, that this is not the case. Evidence comes from the passive constructions. While tensed clauses may be the complements of passive verbs, <u>to</u>-infinitives may not:

(26) a. John knew/expected that the water would be clean
b. It was known/expected that the water would be clean
c. That the water would be clean was known/expected

(27) a. John knew/promised to fix the sink
b. *It was known/promised to fix the sink
c. *To fix the sink was known/promised

Since it is generally supposed that passive morphology absorbs Case, the impossibility of the passive along with a to-infinitive complement suggests that these verbs do not *assign* Case.

While the present analysis will proceed assuming that Stowell's arguments concerning the positions of sentential categories are correct, some differences between the two analyses which will become important in the subsequent discussion should be noted here. First, there is evidence that Case resistance does not account for the Extraposition of tensed clauses from Cased positions, as such movement apparently takes place from non-Cased positions as well:

(28) a. It has been revealed to us [that a crime has been committed]
b. *It has been revealed [that a crime has been committed] to us

Stowell claims that the source of the Extraposition in (28) is not Case resistance. He compares examples such as that in (28) to passives with NP-complements, where the NP moves to subject position:

(29) a. John was visited t by Mary
b. The news was reported t by Paul

Stowell suggests that passive sentences with tensed complements

undergo a similar derivation, except that from subject position, the tensed complement must then move to either pre-S position or to VP-final position, i.e., after the other predicate complements. The movement of NP, however, is necessitated precisely by reason of Case assignment. A tensed-clause complement of a passive verb, on the other hand, is already in a non-Cased position. It is unclear why any movement is necessary at all.

The present analysis would deal with such cases on the basis of the feature distinctions between lexical and sentential categories. Let us suppose that the subcategorization frames of transitive verbs uniformly specify at least the features [+N,-V], and that if these basic features are not met, the subcategorized category must undergo Extraposition at S-Structure. The distribution of sentential categories would then follow naturally.

The subcategorization frames of verbs taking to-infinitives differ from those taking other complements in that the former not only do not assign Case, but are not subcategorized for [+N,-V] complements at all. This is suggested by the fact that the "strong parallelism" of behavior between NP and S' with regard to subcategorization, referred to by Stowell, is generally lacking in the case of to-infinitive complements. The latter set contains a relatively small number of verbs and is not coextensive with the set of verbs taking for-infinitive complements. The for-infinitive complements in fact exhibit the same behavior as that of tensed clauses:

(30) a. We desire very much for Max to be given the award

b. *We desire for Max to be given the award very much

In Stowell's analysis, Extraposition would presumably operate in examples such as (30) on the basis of Case resistance. Here the analysis is in difficulty. If it is assumed that sentential categories bear lexical features, it is unclear how for-infinitives can be [+N,-V] if the head of the category, the complementizer for, is [-N] by virtue of being a Case assigner. Another difficulty is encountered with regard to wh-clauses. These in many respects seem to pattern like NPs:

(31) a. I consider [what he did] to be unacceptable
b. John's belief [that [[what he took] helped him] is unfounded
c. Paul mentioned [what he wanted] to Bill

If all sentential categories are considered to be [+N,-V] it is unclear how wh-clauses would be differentiated.

Although for reasons different from those proposed by Stowell, the present analysis comes to the same general conclusion that sentential categories, with the exceptions discussed above, do not occupy Cased positions at S-Structure.

5. Movement from Sentential Categories

Following this analysis, we will assume that sentential categories, with the exception of Poss-ing constructions and wh-clauses, may not be Cased. The CCP would then predict that movement

from these categories is free except when an ECP violation results. (For the moment we will restrict our attention to tensed clauses and infinitives, postponing the discussion of Poss-ing and Acc-ing clauses.) Movement from an object position within a sentential category poses no difficulties, as in (32), with possible intermediate traces not indicated:

(32) a. Who did Bill say that Mary likes t
b. What do you prefer for Bill to do t
c. Which movies does Alice want to see t

The examples as shown in (32) of course constitute Subjacency violations. Since we have been proceeding under the assumption that the Subjacency Condition may be unnecessary within the present analysis, such movement at this point in the discussion might occur either in one fell swoop or cyclically. It is, however, more natural to assume the latter since, as has often been pointed out, a specific injunction would have to be formulated in order to insure that such movement did not take place. The number and position of intermediate traces varies in different analyses. Thus in the standard framework there is movement just to COMP, while in the barriers framework, with its great multiplication of the number of bounding nodes, moved elements adjoin to every category which is a non-argument so that Subjacency holds throughout the chain. Nothing up to this point in the present analysis has depended on cyclic movement, but the discussion below will rely on the intermediate traces being present.

Movement from subject position is more problematic. It is generally assumed that the subject position is not properly governed internal to S. Proper government from an external source into infinitives is demonstrated by Exceptional-Case-Marking (ECM) structures:

(33) Who do you believe [$_S$ t to be crazy]

No form of government, however, may extend from the matrix clause into a tensed sentential complement, since the subject of this complement may not be in the same governing category as elements within the matrix clause, as the Binding Principles indicate, due to the Minimality Condition:

(34) John$_i$ believes (that) he$_i$ is crazy

In sentences in which Wh-Movement takes place from the subject position of a tensed sentential complement, however, this position must be properly bound. This brings up the well-known problem of the that-trace effect:

(35) a. Who do you believe t loves Mary
b. *Who do you believe that t loves Mary

The grammaticality of (35a) could be explained on the basis of antecedent government. Chomsky (1986b) suggests that the Minimality

Condition accounts for the ungrammaticality of sentences such as (35b); cf. the structures of (35) shown in (36):

(36) a. Who do you believe [$_S$, t' [t loves Mary]
b. *Who do you believe [$_S$, t' that [t loves Mary]

The present analysis would place no barriers to movement from adjunct positions within sentential complements. The resulting traces could simply be antecedent governed as no barrier intervenes:

(37) a. How did you think [(that) Bill fixed the toaster t]
b. How did you prefer [(for) John to fix the toaster t]
c. How did you want [to fix the toaster t]

Since Poss-ing complements exhibit the distributional properties of NPs, the present analysis would predict that Wh-Movement should be impossible from this construction. Returning to the examples from the previous chapter, we see that this is in fact the case, as pointed out in Horn (1975):

(38) a. *Where did he defend [Bill's chewing gum t]
b. *What did Lois denounce [the faculty's soliciting t]
c. *Which chimpanzee did you protest [their sending t to Mars]
d. *What did the coach criticize [your drinking t]

(39) a. *What did we imagine [his singing t]
b. *What did the doctors visualize [their playing t]

Movement is permitted, however, from Acc-ing complements:

(40) a. What did we imagine [him singing t]
b. What did the doctors visualize [them playing t]

The analysis presented here of Wh-Movement from sentential categories also supports the analysis of empty subjects of gerunds. There it was claimed that since Poss-ing complements are opaque, their empty subjects are ungoverned and therefore ARB. Acc-ing complements are open, allowing their empty subjects to be governed. This category was identified as PRO. The analysis presented in this chapter would thus predict that when the empty subject of a gerund complement is ARB, Wh-Movement from that category is impossible, while such movement is permitted from a gerund complement whose empty subject is PRO. This distinction was first noted in Horn (1975:381-382) in examples such as the following:[4]

(41) a. *What did you imagine [ARB singing t] (as being fun for some people)
b. What did you imagine [PRO singing t] (for your debut)

(42) a. *What did the doctors visualize [ARB playing t] (as being good therapy)
b. What did the doctors visualize [PRO playing t] (during their presentation at the hospital follies)

wh-clauses were seen in the previous section to also pattern like NPs rather than like other sentential categories. This would suggest that they also occupy Cased positions and are opaque. This would account for wh-island phenomena such as those in (43):

(43) a. *What did you wonder [who would get t]
b. *Which car did he talk about [where to buy t]
c. *How did Maria know [which room to paint t]

The facts about wh-clauses are, however, more complex than can be accounted for by our analysis up to this point. We will return to the question in the next chapter.

Certain facts concerning NP-Movement would at first seem to challenge the present analysis. Let us first consider passives involving the subject of a sentential complement. Movement of such subjects from ECM structures is possible, but movement from other infinitive complements is not:

(44) John is believed $[_S$ t to be crazy]

(45) *John is wanted $[_{S'}$ $[_S$ t to leave]]

The S'-deletion in (44) but not in (45) should be of no consequence within the analysis presented here. Such examples thus appear to demand that the range of opaque categories be increased, and considering the data discussed above, not in any way that readily seems well motivated.

A solution in line with the present analysis is apparent if we consider why (45) is ungrammatical. Intuitively, the problem is that John seems to bear a θ-role derived entirely from want rather than from leave. The fronted NP in (44) also seems to bear a θ-role from the matrix verb as well as from the infinitive complement. A similar sense is found with the passives in (46):

(46) a. Max was held [$_{\alpha}$ t responsible]
b. Alice is considered [$_{\alpha}$ t intelligent]

Thus it appears that in ECM and the similar small-clause structures, the subject of the infinitive complement might receive its θ-role, at least in part, from the governing matrix verb. The problem is then with θ-role assignment. The verb want is subcategorized for the entire infinitive clause and cannot therefore also assign a θ-role to the subject of the infinitive. The problem of course is the exceptional nature of the θ-role assignment in ECM structures. Such structures, however, are exceptional also due to the fact that they not only are able to subcategorize for a particular structure, but also choose the semantic category of the verb within that structure, the choice limited to stative and ergative verbs, which at least in the case of small clauses need not even be present. Such strong selectional restrictions are typical of restructuring operations, as in the case of verb-preposition combinations. An argument along these lines is presented in Chomsky (1986a:91-92):

> These facts might be accommodated by assuming that the main verb s-selects [semantically selects] proposition and that the main verb and the predicate of α jointly s-selects the subject of α.

Thus, [believe...to be crazy] forms a kind of "super-predicate," assigning a θ-role to John.[5]

6. Quantifier Raising

The present analysis has argued up to this point that movement may be accounted for without resort to the Subjacency Condition. Operations at the level of surface structure, however, have not been the only evidence presented in favor of Subjacency. This condition has also been used to explain movement operations at the level of Logical Form (LF). It was suggested by May (1977) that Subjacency served as a well-formedness condition at LF, specifically with regard to Quantifier Raising (QR). While the claim of the present analysis, that an account of surface movement need not resort to the Subjacency Condition, the thrust of the argument would be considerably weakened if it were the case that similar operations at a different level found their simplest explanation in this condition.

As formulated by May (1977), the operation of the Subjacency Condition at LF is demonstrated by examples such as the following:

(47) a. Jones hissed that Smith liked every painting in the Metropolitan
b. John quoted Bill as saying that someone had left
c. His mother said loudly that everyone had to go

d. Susan didn't forget that many people had refused to contribute
e. Helen grieved that each of the monkeys had been experimented on
f. It is instructive for someone to play the piece first
g. It's impossible for the kid to fight a contender
h. It's false that all the men left the party
i. John was asked whether he had bought some shuttlecocks at Abercrombie's
j. Carol wondered why everyone was reading Gravity's Rainbow
k. Mark regretted Sam's having invited so few people

The claim is that in each of the above sentences, the scope of the quantifier is limited to the domain of the complement clause. The surface representation of (47a) may be used to illustrate the principle:

(48) $[_{S_i}$ Jones hissed $[_{S'}$ that $[_{S_j}$ Smith liked [every painting]]]]

Assuming that QR operates freely, the quantifier may adjoin to either S_i or S_j:

(49) a. $[_{S}$ [every painting]$_a$ $[_{S_i}$ Jones hissed $[_{S'}$ that $[_{S_j}$ Smith liked a]]]]
b. $[_{Si}$ Jones hissed $[_{S'}$ that $[_{S}$ [every painting]$_a$ $[_{Si}$ Smith liked a]]]]

May argues, correctly, that the reading obtained from adjoining the quantifier to the matrix S (49a) is not possible. The interpretation

would be that each individual painting was such that Jones hissed at Smith's liking it. Jones's hissing is rather directed toward the entire proposition of the complement clause. This latter reading is expressed by the logical form in (49b), in which the scope of the quantifier is limited to the domain of the complement clause. This apparent limitation on QR may be explained, according to May, by the Subjacency Condition. The quantifier in wide-scope position in (49a) binds a trace which is separated from it by two bounding nodes, a Subjacency violation. Since only one bounding node (S_j) intervenes in (46b), there is no violation.

Further evidence is presented by way of multiply-quantified sentences where a quantifier in a complement clauses has narrower scope than one in the matrix:

(50) a. Someone hissed that Smith liked every painting in the museum
b. No one forgot that many people had refused to contribute
c. Everyone asked whether he had bought some shuttlecocks at Abercrombie's

In each case, the quantifier in the matrix clause has wider scope. Thus (50a) must have the interpretation that there is a specific person who hissed that Smith liked every painting. It cannot be read as meaning that for every painting in the museum, there is one person or other who hissed at Smith's liking that painting.

There are reasons, however, to believe that there are separate factors which cause complement clauses to be opaque. Let us return to

the examples in (47). While it is true that the quantifiers in (a), (b), and (c) do not allow a wide-scope interpretation, the reason may be due more to semantic characteristics of the matrix verb than to structural considerations. Clauses which complement ordinary verbs of saying are open with regard to QR, while those of verbs which characterize the manner of speech, such as the verbs in the first three sentences in (47), are opaque. Thus (51a) is ambiguous, while (51b) is not:

(51) a. John said that three people had left
b. John mumbled that three people had left

The verb grieve (47e) is arguably in the same category. It implies a mode of expression more specifically than the semantically similar regret, the complement of which would not be opaque:

(52) Helen regretted that each monkey had been experimented on

It would be odd for ordinary verbs of saying to be associated with a marked interpretation, while the semantically more specialized manner-of-speech verbs are considered to be typical. A cause for even deeper suspicion of this latter class is its properties with regard to Wh-Movement. As pointed out by May himself, extraction is impossible from the complements of these verbs:

(53) a. *What did Jones hiss that Smith liked

b. *Who did John quote Bill as saying had left
c. *Who did his mother say loudly had to go
d. *Which monkeys did Helen grieve had been experimented on

It is unclear what the source of the unacceptability of these sentences and of the restriction on QR in the corresponding examples in (47) is. Iterative application of Wh-Movement should allow the sentences to meet the Subjacency Condition. In addition, sentences structurally similar to those in (53) but with a different choice of verb are grammatical:

(54) a. What did Jones say that Smith liked
b. Who did John report Bill as saying had left
c. Who did his mother indicate had to go
d. Which monkeys did Helen regret had been experimented on

I could be the case, as suggested by Richard Kayne (personal communication), that the complements of manner-of-speech verbs are dominated by NP, while other sentential complements are not. In the present analysis, these former complements would then be opaque by the CCP. Whatever the reason for the opacity of the complements of manner-of-speech verbs, it cannot be the Subjacency Condition.

The general-statement quality of matrix clause in (47f) is perhaps the reason for the unlikelihood of a wide-scope interpretation of the quantifier. A slight modification might make a wide-scope interpretation more possible:

(55) Everyone found it instructive for two students to play the piece first

Although the wide-scope interpretation of the quantifier in the complement clause is perhaps less likely, it doesn't seem impossible. Again, lexical choices play a role. A wide-scope interpretation for the embedded quantifier in (55) might be more likely if a lexical choice were made which might decrease the possibility that different performers played for each person. Thus in (56) a wide-scope reading of the embedded quantifier might be the one preferred:

(56) Everyone found it amusing for two monkeys to play the piece first

Problems with negation (47d,f,g) and quantifier scope will be discussed in the next chapter, as will wh-island effects (47i,j). The last example (47k) involves a Poss-ing complement, and is thus rendered opaque by the CCP.

With respect to the data considered above, Subjacency does not appear to be a necessary condition at LF. There are other questions involving semantic factors, however, which will force a modification of the present analysis. These will be taken up in the following chapter.

NOTES

1. This analysis is admittedly sketchy, as Robert Fiengo (personal communication) points out. Ideal evidence would come from a language which possessed both types of possessive, since the influence of other factors could then be ruled out.

2. Judgments concerning the question-marked examples in (15) and (17) vary considerably. Stowell starred such sentences. Terry Langendoen (personal communication) finds them "grammatical, though admittedly awkward" and suggests that the reason for this may be "that they all involve an increase in center embedding over their counterparts with gerunds or extraposition, which is known to decrease acceptability."

Although Stowell may be correct concerning the leftward movement of sentential subjects, it is not clear where this subject ends up. Within the government-binding framework, such movement would be to COMP, thus accounting for the ungrammaticality, in Stowell's opinion, of the sentences in (16) and (18). In the barriers framework, however, the structure of S' is as in (i):

(i) $[_S, \ldots [_{COMP}, \text{ COMP } [_S$

The ellipsis in (i) represents the landing site for operations such as Wh-Movement. This of course cannot be the position to which sentential subjects move. If it were, the results would be wildly ungrammatical:

(ii) **John's belief $[_S, [_i$ that you took the course helped you] $[_{COMP}$, that $[_S \ t_i$ is unfounded]]]

(iii) **$[_S, [_i$ that the house is empty] $[_{COMP}$, although $[_S \ t_i$ may depress you...

Sentential subjects might, however, Chomsky-adjoin to S, resulting in a "crowding" effect, which, while not rendering a resulting sentence completely ungrammatical, causes a certain awkwardness.

3. There will be some degree of variation in the grammatical judgments concerning such sentences. Stowell's original example similar to (20c) was:

(i) John knew that the law was unfair from personal expaerience

Such sentences are better than the other sentences in this set perhaps due to heaviness shift. Such marginal cases improve yet further, I believe, if the adverbial is extended:

(ii) John knew that the law was unfair from long and bitter years of personal experience

If we allow this additional, essentially stylistic, operation to operate over and above the Extraposition of sentential complements, there would be no need to abandon Stowell's proposal.

4. Chomsky (1964:46) offers examples in which Poss-ing objects of prepositions are open:

(i) Who would you approve of my seeing

(ii) What are you uncertain about giving to John

Such sentences provide difficulties for any analysis since Poss-ing constructions seem to pattern like NPs in every environment but this one. There is evidence, however, which suggests that there are hidden complexities. First, Wh-Movement is possible from some but not all Poss-ing objects of prepositions:

(iii) Who would you object to my seeing

(iv) Who would you be surprised at my seeing

(v) Who wouldn't you put up with my seeing

(vi) *Who would you speak against my seeing

(vii) *Who would you write about my seeing

(viii) **Who would you be happy despite my seeing

(ix) **Who would you attack me because of my seeing

(x) **Who would you write to Jane about my seeing

The constructions in question appear to be open when there is a strong selectional restriction exerted by the verb on the preposition; i.e., these examples all involve phrasal verbs. Let us suppose then that restructuring takes place in (iii)-(v). Where the preposition retains independent meaning, the following Poss-ing construction is less likely to be open. Thus (vi) and (vii) are marginal at best. Where there is no relationship between the verb and preposition, as in (viii)-(x), Wh-Movement from the following Poss-ing is not possible at all.

This of course does not in itself solve the problem. It may be that restructuring permits a following Poss-ing construction which is

dominated by S rather than NP since the construction is then governed by a verb rather than an NP-demanding preposition.

Although the exact nature of the examples above is not clear, the phenomenon is, I believe, marginal and does not serve as a significant counterexample to the analysis proposed here.

5. Chomsky points out that there are unresolved problems with this analysis. We would not expect, for example, that this complex verb would be able to select an expletive. This is true for small clauses, but not for full sentential categories:

(i) *We believe there a man in the room

(ii) We believe there to be a man in the room

I believe that examples such as (ii) represent a different structure, namely a verb followed by a true sentential complement.

CHAPTER THREE

OPACITY AND LOGICAL FORM

1. Argument Opacity

The analysis thus far presented has allowed for the restriction of opaque categories to just independently Cased NPs. While this approach accounts for a significant range of data, it encounters two difficulties. The first is empirical. Although it is true that all opaque categories are Cased NPs, not all such categories are opaque. The second difficulty is theory-internal. The question remains as to why Case, rather than some other property, should influence opacity. The present chapter will present evidence that among NPs, only those which are arguments are opaque, while other categories contributing to logical form, i.e., quantified NPs, predicate NPs, and sentential complements, are open. This reanalysis will account for all the examples presented so far as well as a range of data which would otherwise be exceptional. It also has the appealing result of basing certain characteristics of binding, and therefore intended coreference, largely on the referential properties of containing categories.

2. The Problem of "Specificity"

The empirical problem is evidenced by NPs which differ in degree of opacity with regard to operations such as Wh-Movement, as

noted in Chomsky (1977:91,2):[1]

(1) a. Who did you see pictures of?
b. Who did you see the pictures of?
c. Who did you see John's pictures of?

Chomsky found a gradation of acceptability among these examples, the first being acceptable, the second marginal, and the third flatly ungrammatical. Cases such as (1c) are accounted for in Chomsky's analysis by the Specified-Subject Condition, the same condition which would explain the opacity with regard to anaphora of the embedded S in (2b):

(2) a. The men expected to shoot each other.
b. *The men expected John to shoot each other.

Chomsky accounted for the oddness of sentences such as (1b) by employing the feature [definite], which would impart a degree of opacity to NPs bearing the positive value. NPs with specific subjects would automatically be [+definite], as well as providing the relevant environment for the Specified-Subject Condition. This would explain the gradation in (1), with (1c) representing a double violation. Chomsky's analysis fails, however, to capture the distinction in sentences such as (3):

(3) a. Who did you see the picture of?
b. Who did you see John's picture of?

(3a) represents a violation because the object NP is definite, while in (3b), the object NP contains a specified subject, and thus should be less acceptable. It seems, however, much easier to obtain a reading for the second sentence. (3b) would demand, for example, that for each member of the set of individuals satisfying the interrogative there be a single photograph taken by John. In (3a), on the other hand, it would be necessary that for each individual in the set there exist only one picture, a less likely situation. It is for this reason that (1b) seems more acceptable than (3a), since it does not demand that there be a unique picture. Such pragmatic considerations are, of course, outside the realm of syntax proper. The question of ease of interpretation is thus quite distinct from that of ungrammaticality. The latter term will be used in the following discussion to characterize only those sentences which cannot receive an interpretation in any context. Ease of interpretation, on the other hand, will be a question of "context cost." A greater amount of contextualization or a less likely context will result in a higher cost, rendering a sentence with high context cost less acceptable in isolation. We will return to the relevance of such considerations later in the discussion.

A more extensive analysis of such examples was presented in Fiengo and Higginbotham (1981), where the differences in opacity were dealt with within the On-Binding framework. There a general principle was introduced, the Specificity Condition, whereby within a "specific" NP, anaphors and variables with external antecedents were disallowed. The intuitive notion is that NPs that have definite reference are

opaque. In that analysis there were a number of parameters which might contribute to the specificity, and therefore opacity, of an NP. Specificity would then have a relative rather than a merely binary value. Factors such as singular number or the presence of a definite article could each influence specificity:

(4) a. Who did you see pictures of?
b. Who did you see the pictures of?
c. Who did you see the picture of?

Thus (4b) would be less acceptable than (4a) due to the presence of the definite article, and (4c) is the least acceptable because of singular number as well as the definite article. However, while singularity does seem to contribute to the opacity of (4c), this feature does not appear to affect opacity uniformly. The sentences in (5), for example, seem equally acceptable despite the difference in number:

(5) a. Who did you see pictures of?
b. Who did you see a picture of?

The same effect is evidenced with regard to bound anaphora. The first pair in (6) have easily accessible readings, while the second pair do not, with a reading for (6d) being less likely than one for (6c):

(6) a. John saw pictures of himself
b. John saw a picture of himself

c. John saw the pictures of himself
d. John saw the picture of himself

A similar effect is evidenced with embedded quantifiers if Quantifier Raising is assumed. Both sentences in (7) are clearly ambiguous, with outside scope allowed for everybody.

(7) a. I saw pictures of everybody
b. I saw a picture of everybody

The wide-scope interpretation of this quantifier is more difficult in (8a), and less likely yet in (8b):

(8) a. I saw the pictures of everybody
b. I saw the picture of everybody

It seems that in such examples the primary distinction is definiteness, with singular number lending a greater degree of specificity to definite NPs, but having no apparent effect on those which are indefinite.

The two analyses presented above have both limited the range of the parameters determining opacity to the sentential level. A quite different approach is taken in Fiengo (1987, 1988), where it is demonstrated that a significant class of counterexamples to the Specificity Condition exists. If it is assumed that specificity contributes uniformly to opacity, it is difficult to explain the

distinction in (9):

(9) a. He bought the best picture of every actor
b. He bought the good picture of every actor

The wide-scope interpretation of the quantifier is a more likely possibility in (9a) than in (9b), in spite of the fact that the object NP in the first sentence might well be considered more specific than that in the second. The crucial distinction, according to this analysis, is that superlative modification, as opposed to modification by descriptive adjectives, renders the containing NP "unique." It is this property then which would account for the openness of the object NP in (9a). An important fact about uniqueness is that it may be influenced by extra-sentential factors:

(10) John painted the door of every building.

The wide-scope interpretation of <u>every building</u> is possible just in case <u>the door</u> is understood to be unique in some way (the front door, the main entrance, the emergency exit, etc.). The same principle may be used to deal with the owner/agent distinction in the genitive, where extraction is more acceptable if the specifier noun is understood as the agent rather than the owner:

(11) a. Who did John buy Rembrandt's painting of
b. Who did John buy Hunt's painting of

Fiengo attributes this distinction to the expectation that it is likely that an artist would paint a single portrait of an individual, while there is no reason why a collector might not have a number of paintings of the same subject. There are of course objects of which a person would not normally own more than one. Thus both Wh-Movement and the wide-scope interpretation of the embedded quantifier are acceptable in (12):

(12) a. Which issue of LI did you borrow Bill's copy of
b. John borrowed Bill's copy of every Fall issue of LI

Within the proper context, even NPs which seem absolutely opaque might be interpreted as unique and therefore open. Thus if an adjective is understood as contrastive (i.e., unique for a given set) rather than merely descriptive, its containing category will be open:

(13) a. I photographed the left side of every building
b. Max stole the reference copy of every dictionary

The wide-scope interpretation of the embedded quantifier is possible in the sentences in (13) if it is assumed that for each quantified noun there exists a set of objects, one of which may be uniquely described by the modifying adjective in each case.

Uniqueness must be understood, however, in a particular sense. The function of uniqueness in the distribution of the definite article in English has been the subject of a number of descriptive treatments

which have sought to classify the varieties of uniqueness. The relevant distinction in the present discussion is between those uniques whose intended referent is a single object or person and those whose reference is determined distributionally. Thus the chairman of every committee may be unique either in the sense that there is a single individual who holds all of the chairmanships or in the sense that for each committee, there is a chairman. The containing NP will be open in this instance just in case the head noun is interpreted in its distributional sense, but not otherwise. In what follows, uniques which are understood as representing a single individual or object will be termed "absolute" uniques, while those which are understood in the distributional sense will be termed "relative" uniques. Thus it can at least minimally be stated that both indefinites and relative uniques represent open categories even when Cased.

3. Quantification and Opacity

An optimal solution would be to find a single parameter which would define all opaque NPs. The open NPs discussed above, indefinites and uniques, share the common characteristic that they all denote elements which are selected from some understood set. This is of course the common-sense notion of a quantifier. The analysis presented here will therefore adopt the following principle:[2]

(14) The Argument Principle:
Only argument NPs are opaque.

This principle will replace the CCP. It provides the correct results for the examples presented in the first two chapters. Predicate NPs are thus open because they are not arguments. Sentential categories are generally open since (14) applies only to NPs.

It may at first seem odd to regard the definite article as a quantifier. With superlatives and contrastives this seems intuitively correct, but can this judgment be proven by a syntactic test? The diagnostic which has been most frequently employed is to place an NP in a position subject to "Weak Crossover." Binding theory stipulates that pronouns must be free within their governing category. An extra-categorial factor, however, seems to intervene in some sentences containing an embedded pronoun and a bound variable to its right:

(15) a. Who$_i$ t_i introduced his$_i$ wife
b. *Who$_i$ did his$_i$ wife introduce t_i

Similarly, the trace of a quantifier raised from a position to the left of an embedded pronoun may be coindexed with that pronoun, while a quantifier raised from a position to the right may not (the structures in (17) representing the logical form of the sentences in (16)):

(16) a. Everyone$_i$ introduced his$_i$ wife
b. *His$_i$ wife introduced everyone$_i$

(17) a. Everyone$_i$ [e_i introduced his$_i$ wife]

b. *Everyone$_i$ [his$_i$ wife introduced e$_i$]

If Weak Crossover is to be taken as a test of quantificational properties, then uses of the definite article provide mixed results:

(18) a. His$_i$ lawyer dislikes [$_i$ the man]
b. His$_i$ lawyer dislikes [$_i$ the chairman of every committee]
c. His$_i$ lawyer dislikes [$_i$ the tallest man]
d. His$_i$ lawyer dislikes [$_i$ the taller man]

With regard to these sentences, the reading in (a) seems to be available, and indeed it is precisely sentences of this sort which are often offered as examples of the contrast between quantifiers and arguments. In (b), coindexing is possible if the object is understood as an absolute unique, i.e., if the bracketed expression refers to one individual who chairs every committee. As a relative unique, referring to different chairmen, it fails. The coindexing in (c) is possible if the intended referent of the object NP is either the tallest man in some understood set or the tallest man in the world. Comparatives, of course, force the presumption of an understood set, and here too coindexing is possible. For the notional definition of quantifiers suggested above (i.e. that quantifiers are elements the intended referents of which are chosen from some understood set), (a) and (b) pose no problem. It is not necessary to suppose that the definite article must specify an argument in every environment in which it occurs. As long as the conditions are stated with an

adequate degree of precision there is no problem in holding that the definite article may specify a quantifier in some environments but an argument in others. In (a) therefore we will take the object to be an argument. This seems intuitively correct, as the reference is intended in an absolute sense, it does not depend on the listener understanding that the man in question is chosen from some unmentioned set of men. The case in (b) is somewhat more complicated. A case might be made that the NP is an argument in the absolute sense but a quantifier in the relative sense, the idea being that in a case such as (b), the intended reference of the head noun is dependent upon the intended reference of the quantifier. This analysis will be discussed below. Assuming that this is at least a possibility, we would be able to maintain the Weak-Crossover analysis as well as the notional concept of quantification. The last two examples, however, present a real challenge, as coindexing is possible precisely where the intended referent is chosen from an understood set.

There is reason to believe, however, that the standard analysis of Weak Crossover is not correct. The general conclusion has been that the effect in question, as the name would suggest, primarily involves movement. There appear to be, however, other factors which account for the apparent Weak-Crossover effect. If sentences such as (16b) provide the critical environment for testing the quantificational properties of an NP, then a non-quantificational NP in object position should be acceptable. This seems to be true, as the following contrast demonstrates:

(19) a. *His$_i$ lawyer likes everyone$_i$
b. His$_i$ lawyer likes John$_i$

It should be noted, however, that (19b) is possible only with a particular intonation pattern, i.e., with the primary sentential stress on the verb rather than on the object. Thus the coindexing shown in (19b) is possible only with the intonation pattern shown in (20a) and not that in (20b):[3]

(20) a. His$_i$ lawyer likes John$_i$.
b. *His$_i$ lawyer likes John$_i$.

This effect is not dependent upon any special properties of names, as (21) and (22) demonstrate:

(21) a. His$_i$ lawyer likes [$_i$ Mary's husband]
b. *His$_i$ lawyer likes [$_i$ Mary's husband]

(22) a. His$_i$ lawyer likes [$_i$ the man]
b. *His$_i$ lawyer likes [$_i$ the man]

4. The Function of Familiarity

A solution suggests itself if the function of sentential stress is considered. This point is made in Bolinger (1971) with regard to the syntactic behavior of the pronoun objects of verbs which take adverbial particles. While full NPs may come either before or after the particle, pronouns may come only before:

(23) a. The cleaners rolled over the carpet
b. The cleaners rolled it over
c. *The cleaners rolled over it

Sentence-final stress is the normal pattern in English, i.e., in cases where no particular sentential element is given contrastive stress. This fact has long been cited in traditional grammars. Poutsma (1928:pt 1,423) [cited by Bolinger, p. 51]) explains that pronouns favor mid-position as they are "normally weak-stressed." Bolinger points out, however, that stress alone cannot account for this distribution, as stressed nouns may also appear in mid position:

(24) a. Let's take our friends over
b. They shot the whole place up

Erades (1961:57) was among the first to discuss the discourse function of clause-final position:

> The principle governing the place of the objects...is neither stress nor length nor rhythm, but something quite different: the news value which the idea denoted by the object has in the sentence. Objects denoting ideas that have news value, no matter whether they are nouns or pronouns, long or short, have end-position; those that have no such value come between verb and adverb.

NPs new to a given discourse might just as easily appear in mid-position as in clause-final position, but this latter position, as Erades points out, is not favored for familiar objects:

(25) a. I chose a tie...Then I wrapped the tie up
b. ?I chose a tie...Then I wrapped up the tie

(26) a. John bought a car...Then John tried the car out
b. ?John bought a car. Then John tried out the car.

In Erades' account, the greater the amount of information supplied by an NP, the greater its news value. This would then account for heavy NPs favoring clause-final position:

(27) a. I picked out a tie
b. I picked a tie out

(28) a. I picked out a red tie with green stripes
b. ?I picked a red tie with green stripes out

The mid-position favored by pronouns would thus be explained by the fact that pronouns are typically familiar. There are, however, apparent counterexamples in which a pronoun may follow an adverbial particle. Bolinger (1971:39-40):

(29) a. The lady bade her take away the fool; therefore, I say again take her away -- Sir, I bade them take away you

b. If you want to ease your mind by blowing up somebody, come out into the court and blow up me
c. I knew that the school board contemplated throwing out Spanish in order to throw out me
d. ...you may give up society without any great pang..., but severe are the mortifications and pains you have if society gives up you
e. Leave out him if you don't have enough for everybody
f. As between the man and the company, I figured that if I was going to buy out him I might as well buy out it

Bolinger points out that in these cases, the pronoun is permitted in clause-final position because it is contrastive. Deictics, he points out, exhibit the same behavior:

(30) The lights won't pick up this

The same phenomenon is observed with Dative Movement, where the operation produces unacceptable results if the direct object is a pronoun:

(31) a. They gave it to an old man
b. *They gave an old man it

Familiar NPs, as expected, exhibit the same behavior:

(32) I had a book...I gave the book to an old man / ?an old man the book

As with Particle Movement, direct objects which are used to express contrast and deixis are exceptional:

(33) a. They promised me her, not him
b. I gave him the book, not the newspaper

(34) a. You sent me <u>him</u>!
b. I bought her <u>this</u>

With regard to the apparent Weak-Crossover phenomena, it may be that in the acceptable sentences (i.e., the "non-Weak-Crossover" cases), the embedded pronouns are not bound variables, but simply referential pronouns whose intended reference is not with the following noun but with a referent the listener is presumably familiar with. Coindexing between an embedded pronoun and a following NP would be possible just in case that NP is familiar, as they are both contextually "bound" by an understood antecedent. If this is the case we would expect that coindexing would be easiest when the NP on the right is itself a pronoun since pronouns are not normally used in a discourse unless the listener is familiar with the intended referent. Thus a sentence such as (35) would be impossible at the beginning of a discourse:

(35) His_i lawyer dislikes him_i

This interpretation is possible, of course, only if the pronoun is unstressed. When the pronoun bears normal sentence stress, it is not familiar (again because this position under normal stress is identified with novelty) and a minimally contrasting sentence demonstrates the change in reading:

(36) *His$_i$ lawyer dislikes <u>him$_i$</u>

Contrastive stress, however, may alter judgments:

(37) His$_i$ lawyer dislikes <u>him$_i$</u>, not <u>me</u>

The stressed pronoun in (37) must of course be understood as familiar. If this analysis is correct, we would expect the contrasts involving Particle Movement to be apparent in these cases as well. Assuming that familiar NP's do not appear in post-particle position, our analysis would predict that NPs in this position could not be coindexed with preceding embedded pronouns. The evidence in (38) and (39) appears to bear this out (where no contrastive stress is indicated):

(38) a. His$_i$ lawyer called John$_i$ up
b. *His$_i$ lawyer called up John$_i$

(39) a. Her$_i$ neighbor took [$_i$ the actress] out
b. *Her$_i$ neighbor took out [$_i$ the actress]

Structures resulting from Dative Movement evidence the same pattern:

(40) a. His_i lawyer showed $John_i$ a letter
b. *His_i lawyer showed a letter to $John_i$

(41) a. Her_i neighbor gave [$_i$ the actress] a gift
b. *Her_i neighbor gave a gift to [$_i$ the actress]

Primary stress may of course be place on other sentential elements. In some cases this will change the judgments indicated above; in others it will not:

(42) a. His_i lawyer called up $John_i$
b. Her_i neighbor took out [$_i$ the actress]
c. His_i lawyer showed a letter to $John_i$
d. Her_i neighbor gave a gift to [$_i$ the actress]

(43) a. *His_i lawyer called up [$_i$ every actor]
b. *Her $neighbor_i$ took out [$_i$ every actress]
c. *His_i lawyer showed a letter to [$_i$ every actor]
d. *Her_i neighbor gave a gift to [$_i$ every actress]

Such distinctions are to be expected. If we assume that the element bearing the primary sentential stress is novel and that unstressed names and definite NPs are typically familiar, the judgments in (42) follow naturally. It might seem then that it is possible to claim that quantifiers or their traces are always novel. But the fact that no degree of contrastive stress seems to affect the coindexing

patterns in sentences such as those in (43) leads to the conclusion that quantifiers are simply outside the system of novelty/familiarity distinctions.

An alternative analysis has been suggested in Chomsky (1976), where sentential "focus" becomes the relevant factor. The principle can be illustrated by the sentences in (44), where the elements bearing main sentential stress are underlined:

(44) a. Bill saw John
b. Bill saw John

Chomsky proposes a Focus rule which will assign to the sentences in (44) the representations in (45):

(45) a. the x such that Bill likes x -- is John
b. the x such that x likes John -- is Bill

The representations in (45) are termed by Chomsky "partially developed logical forms." The Focus rule applied to (46a) yields (46b):

(46) a. The woman he loved betrayed John
b. the x such that the woman he loved betrayed x -- is John

The Focus rule thus causes elements bearing main stress to undergo quantifier-like raising, resulting in a structure exhibiting the typical Weak-Crossover effect: he appears to the left of the variable,

and the two cannot therefore be coindexed.

Although the properties of sentential focus and novelty share a common domain, both typically involving the clause-final, main-stress position in English, the domains of these properties are not coextensive. The position in question could contain elements which are familiar but contrastive, thus bearing the main stress and presumably being the focus of the sentence under any meaningful definition of that term. The examples in (47) provide the relevant contrast:

(47) a. *The woman he$_i$ loved chose John$_i$, not Bill
b. The romantic rivalry between John and Bill was intense, but in the end, the woman he$_i$ loved chose John$_i$, not Bill

In (47a), where the suitors had not been mentioned in the previous discourse (and where presumably some other suitor could provide an antecedent for the pronoun), coindexing is not possible. In (47b), however, where the stressed noun is familiar, the coindexing is permitted. Chomsky's Focus rule would provide the central clause in (47b) with precisely the same representation as (46b). In (47b), however, the Weak-Crossover effect is absent. Chomsky's analysis, therefore, does not provide a complete account of the phenomenon in question.

The linking operation proposed in Higginbotham (1983) might provide a formalized account for these facts. Since coindexing loses information concerning the particular antecedent for a given category

and the direction of the antecedence relationship, Higginbotham proposed that a headed arrow be used instead:

(48) John said he thought Mary liked him

Higginbotham's analysis would have to be extended in two ways. First, a provision for the Weak-Crossover effect would have to formulated within Higginbotham's framework (Higginbotham dealt with the Strong-Crossover cases). This could be effected by a provision simply stating that a pronoun may not be linked to an otherwise linked category to its right. Thus for the two possible linkings for the pronoun in (49), only the representation in (50a) is possible:

(49) Bill told the woman he loved to choose everyone

(50) a. [everyone] [Bill told the woman he loved to choose t]

b. * [everyone] [Bill told the woman he loved to choose t]

(Higginbotham has an independent principle blocking the linking of categories in A-positions with those in Ā-positions, except in the case of the linking which results from movement operations. Thus in (50), the pronoun cannot be linked with the quantifier.) This principle would not work, however, with the examples we have been

considering. Consider the simple case where a clause-final name is unfamiliar and receives normal sentential stress. In (51), only the linking in (a) is possible:

(51) a. Bill told the woman he loved to choose John

b. *Bill told the woman he loved to choose John

If the linking were allowed to extend beyond the boundaries of the sentence, there would be an independent principle to account for these facts. The example in (47b) would thus have the following representation:

(52) The romantic rivalry between John and Bill was intense, but in the end, the woman he loved chose John, not Bill

This provision helps to clarify the concept of familiarity. In the examples offered above, the categories identified as familiar were actually mentioned in the preceding discourse. This is of course a special case of familiarity. Names, for example, are not used, outside of sentences which are identificational, unless the speaker is familiar with the referent. As (51,52) demonstrate, this latter familiarity is not enough. Since the noun must appear in the context, linking allows the familiarity condition to be formalized.[4]

The phenomenon of Weak Crossover is therefore illusory, as the effect is dependent upon the discourse function of particular elements

rather than on movement. The evidence involving comparatives and superlatives is thus not as problematic as it first appeared ((18 c,d) repeated here):

(53) a. His_i lawyer dislikes [$_i$ the tallest man]
b. His_i lawyer dislikes [$_i$ the taller man]

In the analysis presented here, coindexing is permitted in the latter example since with comparatives, it is always the case that the given element is chosen from a set which is familiar. With superlatives we have a choice: the element may be chosen from a familiar set or from the universal set. In the former instance it will be familiar, in the latter novel. In the latter case we must make an exception, however, but one which is part of another generalization. There are cases in which a particular individual or object is identified within a given discourse by some descriptive expression. Let us imagine a discourse in which the subject of discussion is not otherwise identifiable, for example if his name is not known. A descriptive expression might be used repeatedly, but under this circumstance it would effectively become a name. There is of course a certain balance which must be struck. The longer and more complex an expression, the less likely it is to serve as a name both because certain information need be introduced only once within a given discourse and because the repetition of such an expression would be awkward. Thus there is a reading (presumably with primary stress on some non-final sentential element) in which the coindexing indicated for the sentence is

possible, but it is far from likely:

(54) His_i lawyer dislikes [$_i$ the balding guy with the ruddy complexion and suspicious grin on his face]

5. Determining Quantification

While the "Weak-Crossover" environments do not distinguish quantifiers from arguments, other tests exist. Ladusaw (1981) demonstrates that only certain quantifiers may licence polarity any. Although this test will not identify all possible quantifiers, any element licencing polarity any must be a quantifier. A number of occurrences of definite NPs pass this test:

(55) a. The students who ever read anything about phrenology attended Gall's lecture
b. The smartest student who ever read anything about phrenology attended Gall's lecture

The case of the definite NP containing a quantifier is a bit more complex, as it would be natural to read the restrictive relative as modifying the quantifier rather than the head noun:

(56) The father of every student who ever read anything about phrenology attended Gall's lecture.

It is possible, however, to construct examples which would favor, based on pragmatic considerations, a reading in which the relative

would modify the head:

(57) [The owner of every Europa] [who ever had any trouble with the car] answered the ad in paper

This sentence is acceptable if the head noun is understood as a relative rather than an absolute unique; i.e., the head noun cannot have as its intended referent that individual who is the owner of every Europa. In fact, were the noun to be taken as having this sense, restrictive modification seems impossible. In cases such as this one as well those discussed earlier, there seems to be a certain principle of inheritance involved. Let us assume again that, in contrast to arguments, quantifiers have the property that their intended reference is dependent upon a choice from some understood set. This set itself could of course function as an argument. Thus the expression <u>every student</u> may be a quantifier if the intended referent varies as members are chosen from an understood set. The expression is an argument, however, if the intended referent is the entire set, loosely meaning "all students." In a phrase consisting of a head noun modified by an expression which might be interpreted as either an argument or a quantifier, if the reference of the head depends upon the reference of the entire set referred to by the modifying expression taken as a whole (i.e., the case where the expression is itself an argument), then the entire expression will be taken as an argument. If, however, the reference of the head varies, being dependent in turn upon each member of the set in the domain of a

quantified modifying expression, then the entire expression will be interpreted as a quantifier. As seen in many of the examples cited above (e.g., Bill's copy of every issue) many sentence-external, even pragmatic factors must be taken into consideration. This is of course to say that the logical form of such sentences cannot be determined in isolation.

If this test may be taken as evidence that relative uniques and superlatives are quantificational, then the hypothesis that it is the quantifier-argument distinction that determines opacity may be maintained. There are cases, however, in which quantified NPs appear to be closed. The NPs in (58), for example, do not permit Wh-Movement:

(58) a. *Which committees did they contact few members of
b. *What did you find no picture of

Similarly, wide-scope interpretation is impossible for the embedded quantifier in (59):

(59) a. They contacted few members of many committees
b. I found no pictures of every building

In each case, the quantifier is negative. It may thus be considered an independent principle that the scope of negation is opaque, and that following from this, the scope of a negative element will always

be wider that of any quantifier within its scope. With regard to the discussion in the previous chapter of QR and the Subjacency Condition, this explains why quantifiers embedded in complement clauses consistently fall within the scope of a negative element contained in a matrix S:

(60) a. Susan didn't forget that many people had refused to contribute
b. We didn't believe that most of the students had left

In cases where a negative element quantifies the head noun of an NP in which another quantifier is embedded, the negative quantifier will take the wider scope, but this specification is part of the general principles governing the interaction of quantifiers, and does not represent an exception to or a complication of the analysis presented here.[5]

6. Other Islands

The modifications made in our analysis in this chapter also aid in providing a full account of wh-islands. It was argued in the previous chapter that wh-clauses pattern like NPs. Let us explore the distribution of these categories a bit further. Such categories pattern like NPs in that they may be the objects of prepositions:

(61) a. He objected to what we had done
b. We talked about what to do

Topicalization and Clefting yield acceptable results, which are perhaps a bit awkward due to the heaviness of the moved category:

(62) a. What we had done he knew
b. What to do we discussed

(63) a. It was what we had done that he knew
b. It was what to do that we discussed

Conjoined clauses of this type seem to be able to induce either singular or plural agreement:

(64) a. What we had done and where we had gone was/were discussed by everyone
b. What to do and where to go was/were obvious

With regard to Extraposition, wh-clauses appear to have the same distribution as sentential categories in general:

(65) a. It was obvious what we had done
b. It was undecided what to do

The above distribution can be accounted for if it is assumed that rules choose either for lexical or sentential features. Thus wh-clauses will fit the feature specifications for either NPs or sentential categories.

Movement from such categories is generally proscribed. The

examples below illustrate typical "wh-island" effects which would have been accounted for by the CCP:

(66) a. *What did you wonder [who would get t]
b. *Which car did he talk about [where Max bought t]
c. *How did Maria know [which room to paint t]

Unlike NPs, wh-clauses may also appear in Caseless positions:

(67) a. It is clear what he did in East Aurora
b. It is obvious where to put the desk

Wh-Movement is proscribed form wh-clauses in these positions as well:

(68) a. *Where$_i$ is it clear [what he did t_i]
b. *What$_i$ is it obvious [where to put t_i]

If it is assumed, however, that opacity is restricted to arguments, then all of the facts concerning wh-islands follow. This opacity may be explained within the present analysis only if these categories are arguments. If we assume that wh-clauses are distinguished from other sentential categories in that they possess the same lexical features as NP, they should be able to receive Case and thereby not be subject to Extraposition. It was seen in the previous chapter that sentential complements generally follow other complements. This is not the case with wh-complements, where order of clause-final elements seems to have little effect:

(69) a. Paul mentioned to Bill [what he wanted]
b. She told us repeatedly [where to go]
c. I repeated to the police [what I knew]

(70) a. Paul mentioned [what he wanted] to Bill
b. She told us [where to go] repeatedly
c. I repeated [what I knew] to the police

It has often been pointed out that wh-island violations are weaker than other violations. The following examples are from Chomsky (1986b:36):

(71) a. What$_i$ did you wonder [to whom$_j$ to give t_i t_j]
b. To whom$_j$ did you wonder [what$_i$ to give t_i t_j]

Recall, however, that according to the present analysis, wh-clauses have both lexical and sentential features. Since the claim is made here that NPs which are arguments are opaque and sentential categories are open, the fact that wh-clauses constitute a marginal category does not necessarily present an obstacle. Chomsky (1986b:37) provides further evidence for the present analysis with examples of what he terms "non-argument wh-phrases", which generally seem to be open:

(72) a. Which car did John tell you [how to fix t]
b. Which car did he wonder [whether to fix t]

As Chomsky points out, however, there are many category-internal features which affect opacity such as the presence or absence of tense and the specificity of wh-elements. All of these, along with the argument-opacity analysis presented here, would be factors in a more inclusive theory of opacity which is yet to be developed.

Robert Fiengo (personal communication) points out an interesting distinction with regard to wh-complements. Sentences such as (61) are ambiguous:

(73) John knows how to fix tires

(73) could mean either that John has the ability to fix tires or that John knows how tire fixing is done, even if he might not be able to fix them himself. The wh-complement is clearly an argument in the latter case; John has a piece of knowledge. In the former case, know how forms a unit. The exceptional nature of the know-how sequence is underscored by the fact that it may undergo functional shift, whereas other verb-wh-word combinations do not:

(74) a. John is the most sought-after mechanic in the shop because of his know how
b. *Phyllis will never land a decent job as an art critic because she doesn't have enough know who
c. *I regard Nora's ask how as morbid curiosity rather than genuine interest
d. *Carl's work in syntax displays a real lack of wonder why

The present analysis would predict that the reading in which the how-complement is an argument will allow only the ARB, the structure presumably being as in (75):

(75) John knows $[_{NP}\ [_{S'}$how $[_{S}$ ARB to fix a tire]]]

Additional evidence for this analysis comes from the fact that if the how-clause is appears as the subject of a passive, only the ARB interpretation is possible for its subject:

(76) [How ARB to fix a tire] is known to every eighth grader

In (76) it is not necessarily the case that the students can do the fixing themselves.

An apparent difficulty for the present analysis is encountered with regard to subject position. Categories in this position are opaque with regard to Wh-Movement regardless of whether the category involved is an argument or a quantifier:[6]

(77) a. *Who did [every picture of t] interest Bill
b. *Who will [the father of t] be at the meeting
c. *What is [Bill's book about t] in his library
d. *Which key was [Haydn's symphony in t] performed

Categories in subject position are not exceptional, however, with regard to QR:

(78) a. Every picture of several dissidents interested Bill
b. The father of each student will be at the meeting
c. ?Bill's book about three subjects is in his library
d. ?Haydn's symphony in each key was performed

Facts about anaphor binding demonstrate that the subject position may be either open or opaque depending on the quantificational status of the category containing the anaphor:

(79) a. A picture of himself would please Bill
b. *The picture of himself would please Bill

Again, the typical argument-quantifier distinction is apparent. This binding, however, is arguably not directly to the "antecedent" which follows. As in the cases of "Weak Crossover," binding is possible only if the coindexed NP is familiar:

(80) a. A picture of himself$_i$ won John$_i$ over
b. *The picture of himself$_i$ won John$_i$ over

(81) a. *A picture of himself$_i$ won over John$_i$
b. *The picture of himself$_i$ won over John$_i$

The evidence then is rather ambiguous. Subject position may be generally opaque, as in the barriers framework, and the openness to QR and A-binding accounted for by independent principles. On the other hand, it could be maintained that Wh-Movement is subject to special

restrictions. Let us suppose that facts concerning QR and A-binding can be accounted for only at the level of LF. Assuming that it is only NP-argument positions which are closed, NPs may become open only if they undergo QR. We would expect this principle to be universal (allowing of course for differences in anaphor-type). Wh-Movement, the operation which evidences a great deal of variation among the world's languages, would be explicable only at SS. Let us further suppose that a rule of Extraposition allows this operation from any A-position where there is a mismatch of properties, e.g. sentential categories in NP positions or quantifiers in argument position, the rule being optional and in fact limited by structural constraints. The representation of Wh-Movement from an open quantifier at SS would thus be:

(82) Who_i did you send t_j [$_j$ a picture of t_i]

The presence of clause-final adverbials would block such movement, since Case assignment depends on adjacency:

(83) *Who_i did you send t_j to Bill [$_j$ pictures of t_i]

This analysis would predict that extraction from the bracketed NP in (83) when it is in the trace site would not be possible, and this seems to be correct:

(84) *Who_i did you send [pictures of t_i] to Bill

This would explain why, as has often been noted, that extraction is not favored from structures in non-final positions. As in the case of sentential subjects, it is not clear whether Extraposition to pre-S position actually takes place. If such movement is proscribed, for whatever reason, the opacity of subject position would be explained.

NOTES

1. Different combinations of nouns and prepositions will yield different results, as in the following example from Bach and Horn (1976):

(i) *Who did they destroy a book about

Such examples, however, differ from those considered here in other respects as well. They are not subject for example to Pied-Piping or Extraposition:

(ii) *About whom did they destroy a book

(iii) *A book was destroyed about Nixon

These operations pose no difficulty for phrases from which Wh-Movement is possible:

(iv) Of whom was a picture taken

(v) A picture was taken of Nixon

(vi) Who did you take a picture of

This suggests that it is the extraposed PP from which Wh-Movement takes place. This presents no problem for any of the theories considered below since the question is still one of the opacity of the containing NP, in this case for Extraposition rather that for wh-Movement.

2. This principle does not cover two of the constraints presented in Ross (1967): the Complex-NP Constraint and the Coordinate-Structure Constraint. A separate principle might be needed to prevent operations from affecting subparts of arguments.

3. The fact that contrastive stress may block coreference was noted Akmajian and Jackendoff (1971) in examples such as the following:

(i) *After $\underline{\text{he}}_i$ woke up, John_i went to town

(ii) *After he_i woke up, $\underline{\text{John}}_i$ went to town

4. If linking were used, a distinction would have to be made between linking arising from movement operations, and that existing between arguments in a given discourse. We will refer to the former as Ā-

linking and the latter as A-linking. The following principle would thus account for the Weak-Crossover effect:

> A pronoun can be linked to a category to its right only if the category is A-linked.

5. Robert Fiengo (personal communication) makes an a point relevant to the opacity of arguments with regard to examples of the following type:

(i) They$_i$ read each other's$_i$ books

The CCP would of course fail in such cases since the object NP should be opaque. With regard to θ-roles, however, sentences such as (i) differ those such as (ii):

(ii) John read the book

In (ii) the verb may be said to define a relationship between the subject and the object. Such a relationship does not exist between the subject and object in (i), as it cannot be said that the verb defines a relationship between the persons they and the objects, whatever those would be, each other's books. The relationship must be decomposed as a relationship between each member of the set represented by they and the book of another member of the set. The object NP in (i) cannot thus be considered an argument, and is therefore open.

6. Terry Langendoen (personal communication) offers an example where movement from subject position is "marginally possible":

(i) Which countries are [the boundaries of t] in dispute

He also points out that pied-piping helps in some cases:

(ii) I just bought a painting of which [the size t] is quite impressive

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