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Author(s)	Oba, Yukio
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## THE UNIFORMITY AND VISIBILITY CONDITIONS\*

As is widely known, Universal Grammar consists of various subtheories— $\bar{X}$ -theory, binding theory, Case theory,  $\theta$ -theory, bounding theory, control theory, and so forth. Furthermore, each theory contains a certain principle with a limited degree of parameter variation. For example, Case theory and the  $\theta$ -theory have the Case filter and the  $\theta$ -criterion, respectively. Furthermore, the interaction of principles of these subtheories plays a crucial role in determining the well-formedness of sentences.

One of the most intriguing issues in recent work on generative grammar is the problem of how to eliminate redundancies in the rules and principles of the various subtheories of Universal Grammar. For instance, Chomsky (1986b) suggests that the Case filter can be reduced to the  $\theta$ -criterion if one assumes the visibility condition. In other words, his suggestion is that the Case filter can be dispensed with under the visibility approach, since, given the visibility condition, the linguistic phenomena accounted for by the Case filter can be explained by the  $\theta$ -criterion.

The visibility condition should be welcomed in generative grammar for its potential to eliminate redundancies between Case theory and  $\theta$ -theory. However, the visibility approach encounters some conceptual and empirical problems. In this paper, I will consider the visibility condition and point out some problems with it.

This paper is organized in the following manner. In section 1, I will briefly review Chomsky's (1986b) Case theory and consider how his Case system works to account for the distribution of NPs. In section 2, I will discuss the Case theory and point out some problems with it by bringing into focus the uniformity condition, another crucial condition of the Case theory. In particular I will show that although the uniformity condition can properly account for the behavior of genitive Case, which is assigned to complements of certain lexical heads (namely nouns and adjectives), it has some other empirical problems. For example, the uniformity condition cannot explain the grammaticality of sentences with transitive verbs like *persuade* and *assure*, or intransitive ones such as *complain* and *insist*. I will subsequently consider the visibility condition. If this condition applies not only to NPs but also to *that*-clauses and *to*-infinitival clauses—elements which have  $\theta$ -roles—it proves inadequate to account for the distribution of the latter two types of arguments. Such clauses occur in positions where no Case is assigned; hence, they should not be visible for  $\theta$ -marking and are wrongly excluded by the  $\theta$ -criterion. In section 3, I will revise the uniformity condition to account for the grammaticality of sentences with verbs such as *persuade*, *complain*, and so forth, and I will suggest that NPs, *that*-clauses, and *to*-infinitives are assigned Case features if and only if they are canonically selected by lexical heads. Furthermore, I will revise the visibility condition by utilizing Case features assigned by the revised uniformity condition in such a way that if *that*-clauses and *to*-infinitives are canonically selected by lexical heads, they are visible for  $\theta$ -marking, satisfying the  $\theta$ -criterion. In section 4, I will examine the adequacy of the revised uniformity and visibility conditions by applying them to various other structures involving sentences, and I will conclude not only that they solve the problems of Chomsky's Case system but also that they properly account for the distribution of *that*-clauses and *to*-infinitives in general. The final section will be devoted to a summary.

## 1 THE HISTORICAL DEVELOPMENT OF CASE THEORY

Case theory originates from the study of infinitival clauses with overt subjects. Such clauses can occur after a verb or a preposition, whereas they cannot appear after a noun or an adjective, as shown in (1).

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- (1) a. I believe [<sub>IP</sub> him to be intelligent].  
 b. I hope sincerely for [<sub>IP</sub> him to be intelligent].  
 c. \*the belief [<sub>IP</sub> him to be intelligent]  
 d. \*proud [<sub>IP</sub> him to be intelligent]

As an approach to data of this kind, Chomsky and Lasnik (1977) proposed the following filter, dispensing with rich and elaborate systems of phrase structure and transformational rules:

- (2) \* $[\alpha \text{ NP to VP}]$  unless  $\alpha$  is adjacent to and in the domain of a verb or *for*.  
 (Chomsky and Lasnik 1977:459)

The filter was deemed descriptively adequate, since it properly allows grammatical sentences like (1a,b) and filters out ungrammatical ones like (1c,d). However, it seemed rather ad hoc. Later, Vergnaud (1974) presented a Case filter, assuming it to be a general principle of the Case theory, and claimed that it subsumed the effect of (2). This basic idea has been adopted by many generative linguists, among whom Chomsky (1981) proposes a Case filter in a more explicit form as a part of a theory that assumes that every language has an abstract Case system.

- (3) EXTENDED CASE FILTER  
 \* $[\text{NP } \alpha]$  if  $\alpha$  has no Case and  $\alpha$  contains a phonetic matrix or is a variable.  
 (Chomsky 1981:175)

Chomsky (1981, 1986b), Stowell (1981), and others continued this line of research, further reducing the Case filter to the  $\theta$ -criterion by recourse to the visibility condition. They suggested that given the visibility condition, the complex phenomena of *to*-infinitival clauses with overt subjects could be accounted for without using the Case filter.

- (4) VISIBILITY CONDITION  
 An element is visible for  $\theta$ -marking only if it is assigned Case. (Chomsky 1986b:94)
- (5)  $\theta$ -CRITERION  
 Each argument  $\alpha$  appears in a chain containing a unique visible  $\theta$ -position  $P$ , and each  $\theta$ -position  $P$  is visible in a chain containing a unique argument  $\alpha$ . (ibid.:97)

The visibility condition should be a worthwhile addition to generative grammar since it can contribute to simplifying the relation between the Case and  $\theta$ -theories of Universal Grammar by eliminating the Case filter as an independent principle. However, before we commit ourselves to this approach, it is imperative to examine whether the visibility condition can sufficiently account for the data handled up until now by the Case filter.

## 2 ON THE CASE THEORY FROM 'KNOWLEDGE OF LANGUAGE'

In this section, I will briefly review the version of Case theory put forward in Chomsky's *Knowledge of Language* (1986b), which I would like to adopt in this paper. First of all, the theory assumes two kinds of Case, structural and inherent, as shown in (6).

- (6) TWO KINDS OF CASE  
 Structural Case: nominative and objective  
 Inherent Case: oblique and genitive

Structural Case is assigned by V or by AGR-bearing INFL at S-structure, while inherent Case is assigned by N, A, or P at D-structure.

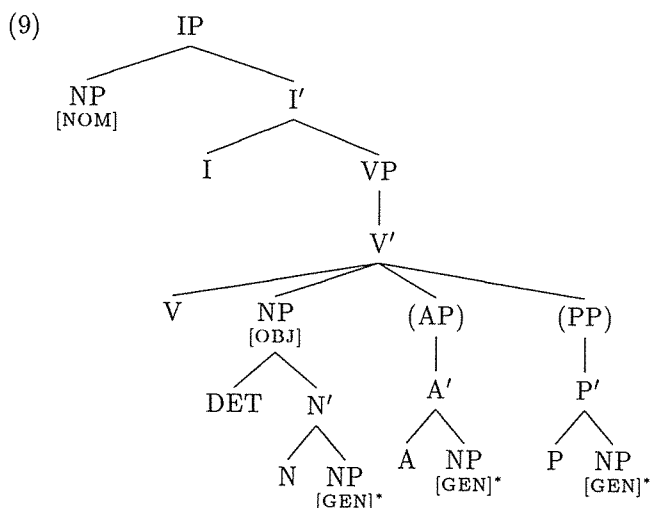
- (7) a. NP is objective if governed by V at S-structure.  
 b. NP is nominative if governed by AGR at S-structure.  
 c. NP is oblique if  $\theta$ -marked by P at D-structure.  
 d. NP is genitive if  $\theta$ -marked by A or N at D-structure.

Moreover, the Case assignments dictated by (7c,d) are subject to the uniformity condition (8).

(8) UNIFORMITY CONDITION

If  $\alpha$  is an inherent Case marker, then  $\alpha$  Case marks NP if and only if  $\alpha$   $\theta$ -marks the chain headed by NP. (Chomsky 1986b:194)

The notion of Case marking in (8) includes Case assignment at D-structure and Case realization at S-structure. Therefore, (8) implies that inherent Case, which is assigned by A or N at D-structure, must somehow be realized at S-structure. Structural Case is assigned to NPs under government at S-structure, and inherent Case is assigned to  $\theta$ -marked NPs at D-structure. Furthermore, at S-structure, inherent Case (in particular genitive Case) must be realized by the application of *of*-insertion or POSS-insertion. Figure (9) illustrates relevant structural configurations to which Case theory is applied.<sup>1</sup>



### 3 PROBLEMS WITH THE CASE THEORY

In this section, I will discuss both the uniformity condition (8) and the visibility condition (4), both of which are crucial to the Case theory, and I will point out some problems with these conditions.

#### 3.1 THE UNIFORMITY CONDITION

This section concerns the uniformity condition (8), showing that it cannot account for the grammaticality of sentences with verbs such as *persuade*, *complain*, and so forth.

3.1.1 THE UNIFORMITY CONDITION AND THE REALIZATION OF GENITIVE CASE. Let us consider the following strings:

- (10) a. John is uncertain [NP the time].  
 b. John is uncertain [PP of the time].
- (11) a. John's explanation [NP the problem]  
 b. John's explanation [PP of the problem]
- (12) a. the belief [IP John to be intelligent]  
 b. \*the belief [PP of John to be intelligent]
- (13) a. It seems [IP John to be intelligent].  
 b. \*It seems [PP of John to be intelligent].

<sup>1</sup>In (9), I omit the Case assignment of adverb-like PPs (namely locative, temporal, instrumental, manner, and reason PPs) since they are not immediately related to the uniformity condition. The symbol '\*' in (9) indicates an inherent Case assigned at D-structure.

The (a) and (b) sentences of the pairs above are corresponding D- and S-structures. These examples show that the application of the *of*-insertion rule makes (10a) and (11a) grammatical, whereas it does not make (12a) and (13a) grammatical. To account for this fact, Chomsky proposed the uniformity condition (8), in which the notion of Case marking is assumed to be that stated in (14).

(14) CASE MARKING

Case marking includes Case assignment and Case realization. At D-structure, an inherent Case is assigned to NP by an inherent Case assigner  $\alpha$  if and only if  $\alpha$   $\theta$ -marks NP; at S-structure, the inherent Case is realized in the chain headed by NP.

As mentioned in section 2, the inherent Case is realized by the application of *of*-insertion or POSS-insertion.

Given the uniformity condition, the grammatical contrast between (10) and (11), on the one hand, and (12) and (13), on the other, is successfully explained in the following way. In (10a) and (11a), the inherent Case assigners *uncertain* and *explanation*  $\theta$ -mark the NPs *the time* and *the problem*, respectively. Thus, under the uniformity condition, genitive Case is assigned to the NPs at the D-structures, and then the rule of *of*-insertion realizes the genitive Case at the S-structures, deriving (10b) and (11b). On the other hand, in the D-structures (12a) and (13a), *John* is not  $\theta$ -marked by *belief* and *seem*. Thus, genitive Case is not assigned to *John* under the uniformity condition, and as a result, *of*-insertion does not apply to the D-structures. It follows that there is no derivation for sentences like (12b) and (13b).

3.1.2 PROBLEMS WITH THE UNIFORMITY CONDITION. Let us consider the sentences in (15).

- (15) a. I persuaded [<sub>NP</sub> John] [<sub>CP</sub> that he should go to college].  
 b. I persuaded [<sub>NP</sub> John] of [<sub>NP</sub> the importance of going to college].

Chomsky (1986b) assumes that because properties of categorial selection (C-selection) of lexical items are redundant when stated in the lexicon, information associated with lexical items should be restricted to semantic selection (S-selection). C-selection should be derived from ‘canonical structural realization of a given semantic category  $\theta$ ’—or formally, CSR( $\theta$ ). Given this assumption, the lexical entry of *persuade* in (15), for example, is required to specify that it S-selects both a goal and a proposition. Furthermore, if we assume that CSR(goal) is an NP and that CSR(proposition) is either a clause or an NP, it follows that *persuade* C-selects either NP CP or NP NP, as in (16).

- (16) a. NP<sub>1</sub> CP  
 b. NP<sub>1</sub> NP<sub>2</sub>

Example (15a) has the structure in (16a). However, if (15b) has the structure in (16b), it will be excluded by the Case filter, since NP<sub>2</sub> is assigned no Case, a state of affairs that the filter specifically prohibits.

- (17) \*I persuaded [<sub>NP</sub> John] [<sub>NP</sub> the importance of going to college]. [cf. (15b)]

To derive (15b), Chomsky assumes that *persuade* should be regarded as an inherent Case assigner, so that it may assign genitive Case to NP<sub>2</sub>.<sup>2</sup> However, the inherent Case assigners are restricted to N, A, and P, and the structural Case assigners are V and INFL(AGR). It follows that Chomsky’s Case theory needs the stipulation that verbs such as *persuade* be inherent Case assigners and be able to assign genitive Case only to NPs which are not adjacent to said verbs. However, this seems rather ad hoc. The same stipulation is required to account for the following sentences:

- (18) a. He assured me [<sub>CP</sub> that he would heartily assist me].  
 b. He assured me of [<sub>NP</sub> his hearty assistance].  
 (19) a. John informed us [<sub>CP</sub> that Mary would resign].  
 b. John informed us of [<sub>NP</sub> Mary’s resignation].

<sup>2</sup>Chomsky (1986b:219, note 130) claims that in his analysis *persuade* must assign genitive Case to its ‘second object’ as an inherent Case in (17).

- (20) a. Mary reminded us [<sub>CP</sub>that the earth is round].  
 b. Mary reminded us of [<sub>NP</sub>the earth's roundness].

The (b) sentences above would be in violation of the Case filter if genitive Case were not assigned to the NPs in some way at D-structure and if the rule of *of*-insertion were not applied to them at S-structure in order to realize that genitive Case. Were Case marking not carried out in the manner just described, the (a) D-structures would yield Case filter violations like (21)–(23) below.

- (21) \*He assured me [<sub>NP</sub>his hearty assistance]. [cf. (18b)]  
 (22) \*John informed us [<sub>NP</sub>Mary's resignation]. [cf. (19b)]  
 (23) \*Mary reminded us [<sub>NP</sub>the earth's roundness]. [cf. (20b)]

Next, let us consider sentences like the following:

- (24) a. I complained [<sub>CP</sub>that he was ill-treated].  
 b. I complained of [<sub>NP</sub>his being ill-treated].  
 c. \*I complained [<sub>NP</sub>his being ill-treated].  
 (25) a. John insisted [<sub>CP</sub>that Mary leave].  
 b. John insisted on [<sub>NP</sub>Mary's leaving].  
 c. \*John insisted [<sub>NP</sub>Mary's leaving].

The verbs *complain* and *insist* S-select a proposition and C-select a clause or NP, the two possible values for CSR(proposition). Notice that these verbs are not inherent Case assigners, so that given the uniformity condition, they cannot assign genitive Case to the NPs in (24) and (25). Therefore, the *of*-insertion rule does not apply to them and consequently (24a,c) and (25a,c) are derived, and (24c) and (25c) are excluded as ungrammatical by the Case filter. However, we have no way of deriving grammatical sentences like (24b) and (25b).

To summarize so far, under the assumptions that information recorded in the lexicon is restricted to S-selection and that C-selection comes from the CSR of S-selected semantic categories, it follows that we cannot derive sentences with transitive verbs such as (15b), (18b), (19b), and (20b) as well as sentences with intransitive verbs like (24b) and (25b). According to the uniformity condition, since the verbs are not inherent Case assigners, they cannot assign genitive Case to the NPs that they  $\theta$ -mark at D-structure. Consequently, there is no genitive Case for *of*-insertion to realize at S-structure.

### 3.2 THE VISIBILITY CONDITION

This section deals with the visibility condition (4). In section 3.2.1, I will briefly review the condition and will show how it functions in eliminating the Case filter. In section 3.2.2, I will discuss some conceptual and empirical problems with the condition.

3.2.1 ELIMINATION OF THE CASE FILTER. It is proposed in Chomsky (1986b) that the visibility condition can reduce the Case filter to the  $\theta$ -criterion. Let us consider the following sentences and see how the visibility condition is applied to them in order to dispense with the Case filter:

- (26) a. I believe [<sub>IP</sub>John to be intelligent].  
 b. \*I tried [<sub>CP</sub>[<sub>IP</sub>John to go there]].

Although the Case filter correctly predicts the contrast in (26), the visibility condition is also able to make the same distinction. In (26a), objective Case is assigned to *John* because it is governed by *believe*. Thus, *John* is visible for  $\theta$ -marking under the visibility condition, so no problem arises. In (26b), on the other hand, no Case is assigned to *John*, since it is not governed by *tried*. Therefore, *John* in (26b) is not visible for  $\theta$ -marking. Consequently, the visibility condition makes the correct prediction that *John* in (26b)—but not in (26a)—is not  $\theta$ -marked, so that (26b) violates the  $\theta$ -criterion.

## 3.2.2 PROBLEMS WITH THE VISIBILITY CONDITION.

3.2.2.1 CONCEPTUAL PROBLEMS WITH THE VISIBILITY CONDITION. The visibility condition encounters the same problems as the Case filter. As is often pointed out, the Case filter is odd on conceptual grounds, in that it imposes a disjunctive requirement on an unnatural class of categories, namely lexical NPs and *wh*-traces. The visibility condition also imposes a disjunctive requirement on the two categories of lexical NPs and PRO, since lexical NPs and PRO must be Case-assigned for  $\theta$ -marking under the visibility condition.

- (27) a. I believe [<sub>IP</sub> John to be the winner].  
 b. John tried [<sub>CP</sub> [<sub>IP</sub> PRO to do it]].

However, these categories constitute an unnatural class in that lexical NPs must be governed in order for them to be assigned Case, but PRO must be ungoverned, as required by the binding theory.<sup>3</sup>

3.2.2.2 EMPIRICAL PROBLEMS WITH THE VISIBILITY CONDITION. In Chomsky's (1986b) analysis it is claimed that clausal complements as well as NPs must be Case-assigned for  $\theta$ -marking under the visibility condition. Let us consider the following sentences:

- (28) a. It is believed [<sub>CP</sub> that John is intelligent].  
 b. It seems [<sub>IP</sub> *e* to be believed [<sub>CP</sub> that John is intelligent]]. (Chomsky 1986b:133)

In (28), the CPs are arguments in a Caseless position. Therefore, under the visibility condition these clauses are not visible for  $\theta$ -marking, violating the  $\theta$ -criterion. To account for grammatical sentences like (28), Chomsky (1986b:132) introduces the notion of CHAINS, which includes both chains and pleonastic/argument pairs. In (28a) and (28b), the CHAINS (*it*, CP) and (*it*, *e*, CP) are formed, respectively. As the pleonastic *it* is in a Case-assigned position, it follows that the CHAINS are visible for  $\theta$ -marking under the visibility condition and that the sentences in (28) satisfy the  $\theta$ -criterion. Similarly, this analysis can correctly distinguish grammatical sentences like (29a) from ungrammatical ones like (29b).

- (29) a. I want [<sub>IP</sub> it to be likely [<sub>CP</sub> that John will leave]].  
 b. \*I tried [<sub>IP</sub> it to be likely [<sub>CP</sub> that John will leave]]. (Epstein 1987:263)

Concerning these sentences, we should note the following points: (a) clausal complements have  $\theta$ -roles in the same way as NP complements; (b) therefore, under the visibility condition, they must be Case-assigned for  $\theta$ -marking.

As is often noted in the literature, however, clausal complements can appear in positions where no Case is assigned. Consider the following sentences, repeated from above:

- (30) I persuaded John [<sub>CP</sub> that he should go to college]. [= (15a)]  
 (31) He assured me [<sub>CP</sub> that he would heartily assist me]. [= (18a)]  
 (32) John informed us [<sub>CP</sub> that Mary would resign]. [= (19a)]  
 (33) Mary reminded us [<sub>CP</sub> that the earth is round]. [= (20a)]

The position in these sentences where the *that*-clauses occur is not Case-assigned because it is not adjacent to the transitive verbs. Also, *that*-clauses can appear in the complement position of intransitive verbs, adjectives, and nouns, all of which are assumed not to be Case assigners.

- (34) I complained [<sub>CP</sub> that he was ill-treated]. [= (24a)]  
 (35) John insisted [<sub>CP</sub> that Mary leave]. [= (25a)]  
 (36) a. John is certain [<sub>CP</sub> that Mary is leaving].  
 b. John is aware [<sub>CP</sub> that the war will end soon].

<sup>3</sup>Following a suggestion from N. Chomsky, I assume that PRO has an inherent Case.

- (37) a. my complaint [<sub>CP</sub> that he was ill-treated]  
 b. John's insistence [<sub>CP</sub> that Mary leave]  
 c. John's certainty [<sub>CP</sub> that Mary is leaving]  
 d. John's awareness [<sub>CP</sub> that the war will end soon]

Similarly, *to*-infinitives can occupy a Caseless position; that is, they can follow intransitive verbs, adjectives, nouns, and the direct object position of transitive verbs.

- (38) a. I never expected [<sub>CP</sub> to be invited].  
 b. John wondered [<sub>CP</sub> how to fix the car].<sup>4</sup>
- (39) a. He is anxious [<sub>CP</sub> to know the facts].  
 b. He was eager [<sub>CP</sub> to play the guitar].
- (40) a. He announced a plan [<sub>CP</sub> to go to the United States].  
 b. His eagerness [<sub>CP</sub> to please others] is marvelous.
- (41) a. I persuaded John [<sub>CP</sub> to go to college].  
 b. I reminded him [<sub>CP</sub> to turn down the radio].

We see from these sentences that although both *that*-clauses and *to*-infinitives have  $\theta$ -roles, they can appear in a Caseless position. However, under the visibility condition they are not visible for  $\theta$ -marking, and thus they are in violation of the  $\theta$ -criterion. Therefore, the visibility condition cannot correctly predict the grammaticality of sentences with *that*-clauses and *to*-infinitives.

To solve this problem, we may take one of the following approaches: (a) abandon the visibility condition entirely and adopt the Case filter as an independent principle of Universal Grammar; (b) retain the visibility condition and (i) apply the visibility condition only to NPs, so that clausal complements need not be Case-assigned or (ii) apply the visibility condition to clausal complements as well as NPs as long as they have  $\theta$ -roles, so that the complements must be assigned a certain kind of Case. In the present paper, I will take the last approach, (b ii), since it seems preferable on theoretical grounds.<sup>5</sup>

#### 4 AN ALTERNATIVE ANALYSIS

This section concerns solutions to the problems with the uniformity and the visibility conditions. In section 4.1, I will modify the uniformity condition in order to solve the problems with it. In section 4.3, I will revise the visibility condition by utilizing Case features assigned under the modified uniformity condition, since the problems with the visibility condition have a very close relation to those posed by the uniformity condition.

Before presenting the alternative analysis, I would like to state the basic assumptions that I will adopt in this paper: (a) lexical entries must specify S-selection and transitivity, and they need not specify C-selection; (b) if an element S-selects a semantic category  $\theta$ , then it C-selects a syntactic category that is the 'canonical structural realization of  $\theta$ ,' i.e., CSR( $\theta$ ).

<sup>4</sup>The verbs *expect* and *wonder*, if they take *to*-infinitives as in (38), are intransitive, since we cannot apply the rules of passivization and topicalization to (38).

- (i) a. \*<sub>[CP</sub> To be invited] was expected *t*.  
 b. \*<sub>[CP</sub> How to fix the car] was wondered *t*.
- (ii) a. \*<sub>[CP</sub> To be invited], I never expected *t*.  
 b. \*<sub>[CP</sub> How to fix the car], John wondered *t*.

<sup>5</sup>Epstein (1987, 1990) adopts the same approach, revising the Case filter to resolve the problems that arise as a consequence of this choice.



## 4.1 A MODIFICATION OF THE UNIFORMITY CONDITION

To solve the problems pointed out in section 3.1, I offer the following modification of the uniformity condition and additional stipulations on Case marking, Case feature assigners, and Case feature realizers:

## (42) UNIFORMITY CONDITION

If  $\alpha$  is a lexical category, then it is Case-marked in its chain if and only if  $\alpha$  selects in the canonical direction.

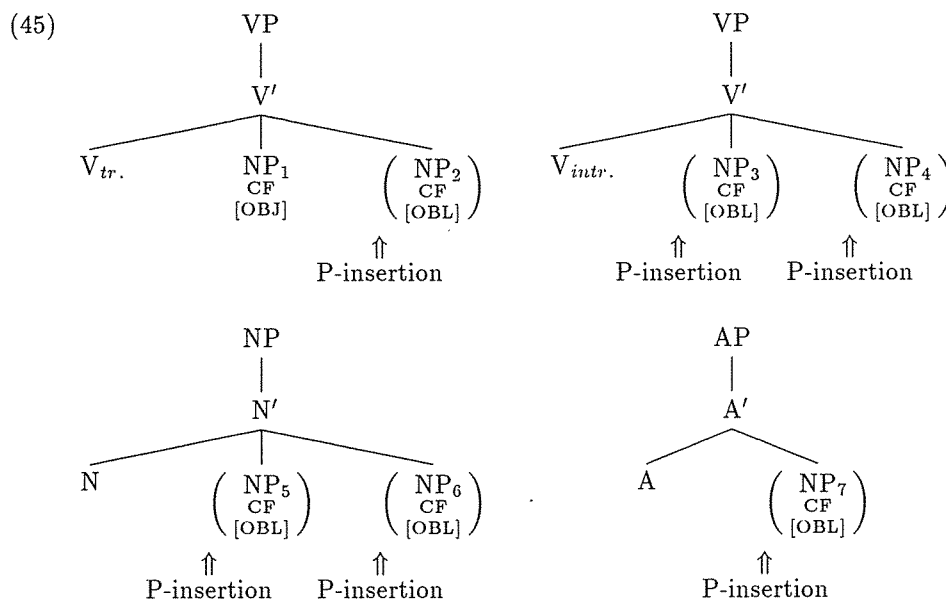
## (43) CASE MARKING

Case marking includes Case feature assignment and Case feature realization. At D-structure,  $\alpha$  assigns a Case feature to  $\beta$  if and only if  $\alpha$  selects  $\beta$  in the canonical direction; at S-structure, the Case feature is realized in the chain headed by  $\beta$ .

## (44) CASE FEATURE ASSIGNERS AND REALIZERS

- a. The Case feature assigners are V, N, and A.
- b. The Case feature realizers are V(t), INFL(AGR), and P.

Given these assumptions, Case marking takes place in the following way. At D-structure a Case feature is assigned to an NP by a verb if and only if the NP is canonically selected by the verb. Furthermore, at S-structure the Case feature is realized by the verb or by a preposition, the latter of which is introduced by the rule of P(reposition)-insertion. If the NP is moved to subject position by the rule of move- $\alpha$ , the Case feature assigned to the NP is realized by INFL with an AGR element. Note that Case realization is subject to the same adjacency condition as is Case assignment in the standard Case-assigning system, in which nominative Case is assigned by INFL(AGR), and so forth. For instance, let us consider the structures in (45).



In (45), the symbol CF indicates a Case feature. According to the system of Case marking which functions under the uniformity condition (42), the NPs in (45) are canonically selected by lexical heads—a transitive verb, an intransitive verb, a noun, and an adjective—and thus Case features are assigned to them by those lexical heads at D-structure. If the rule of move- $\alpha$  does not apply to (45), the Case feature of NP<sub>1</sub> in the top, left tree is realized by the transitive verb. However, these lexical heads—an intransitive verb, a noun, and an adjective—are not Case feature realizers as specified in (44b), so that all the Case features of the NPs other than that of NP<sub>1</sub> must be realized by the rule of P-insertion. And if one of the NPs in (45) is raised to the subject position by the rule of move- $\alpha$ , its Case feature is realized by INFL(AGR).

Here let us consider what kind of P-insertion rule applies at S-structure in order to realize the Case feature assigned to a canonically selected NP at D-structure. I assume that the preposition inserted in order to realize the Case feature of the NP is generally determined according to properties of the  $\theta$ -role assigned to the NP at D-structure.

(46)  $\theta$ -ROLE-TO-PREPOSITION MAPPING

goal	→	<i>to</i>
source	→	<i>from</i>
location	→	<i>on, at, in</i>
instrument	→	<i>with</i>
benefactive	→	<i>for</i>
agent	→	<i>by</i>

Prepositions other than those listed in (46) are assumed to be described in the lexical entries of individual lexical items. For example, *insist*, an intransitive verb, has information in the lexicon specifying that *on* is to be inserted in order to realize a Case feature assigned to a canonically selected NP. Following a suggestion by Chomsky (1986b), I also assume that the rule of *of*-insertion is the default case, applying only in those instances where none of the  $\theta$ -rules in (46) are specified.

Let us consider the NPs in (47), which have the same D-structure as (45c).

- (47) a. the gift to John of a book  
 b. the gift of a book to John  
 c. \*the gift of John of a book (Chomsky 1986b:195)

In (47), *gift* has (48a) as an S-selection and has (48b) as a C-selection.

- (48) a. *gift* : [goal, theme]  
 b. goal : NP<sub>1</sub>, theme : NP<sub>2</sub>

Under the revised uniformity condition (42), Case features are assigned to NP<sub>1</sub> and NP<sub>2</sub> by *gift* at the presumed D-structure of (47), since *gift* canonically selects these NPs. However, as *gift* is not a Case feature realizer, the rule of P-insertion must apply to realize the Case feature. The Case feature assigned to NP<sub>1</sub>, [goal], is realized by *to*-insertion, as listed in (46). But in (46), there is no Case feature realizer available for the Case feature of NP<sub>2</sub>, [theme]. Therefore, the rule of *of*-insertion applies to NP<sub>2</sub>. As a result, (47a) and (47b) are derived, but (47c) is not.

Notice the fact that the order of NP complements of a noun is free; this is illustrated in (47) above and in (49) below. This fact can be accounted for by the uniformity condition (42) and the rule of P-insertion, since nouns, which canonically select NP complements in free order, are not Case feature realizers and the Case features assigned to the freely-selected NPs under the uniformity condition (42) are realized by the rule of P-insertion, which is dependent on the  $\theta$ -roles of the NPs.

- (49) a. [NP Paul's retrieval of the cereal box-top from the trash can] surprised me.  
 b. [NP Paul's retrieval from the trash can of the cereal box-top] surprised me.  
 (Stowell 1981:109)

Next, let us consider the case of an intransitive verb.

- (50) a. John tapped on the table with his fingers.  
 b. John tapped with his fingers on the table.  
 c. *tap* : [agent, location, instrument] (Nakamura et al. 1989:67)

For example, *tap* in (50) has the S-selection in (50c). Since CSR(location) and CSR(instrument) are both NPs, *tap* selects the NPs in the canonical direction. Accordingly, the D-structures of (50a) and (50b) contain structures like (45b). Under the uniformity condition (42), Case features are assigned to the NPs at the D-structures of (50a) and (50b). At S-structure, they must be realized by the rule of P-insertion, since the intransitive verb *tap* is not a Case feature realizer. Therefore, to realize the Case features of the NP<sub>[location]</sub> and the NP<sub>[instrument]</sub>, *on* and *with* are

inserted, deriving (50a) and (50b) respectively. Since under the uniformity condition (42) Case features are assigned to NPs that are canonically selected by an intransitive verb and since they are realized by the rule of P-insertion, the NP complement order in a sentence with an intransitive verb is free, as shown in (50a,b). This freedom of ordering is the same as that found among NP complements canonically selected by a noun.

Sentences with transitive verbs are different from those with intransitive verbs in that the order of NP complements in sentences containing transitive verbs is not free.

- (51) a. He often amused the children with stories.  
 b. \*He often amused stories of the children.

The sentences in (51) have, in part, the same D-structure as (45a). Under the uniformity condition (42), Case features are assigned to *the children* and *stories*. According to my analysis, the verb *amused* in (51) would realize the Case feature of the NP which is adjacent to it, and the Case feature of the other NP would be realized by the rule of P-insertion. In (51a), *with* would be inserted to realize the Case feature of *stories*, since its  $\theta$ -role is 'instrument.' In contrast, in (51b), *of* would be inserted to realize the Case feature of *the children*, which expresses 'experiencer' as a  $\theta$ -role. However, (51a) is grammatical, whereas (51b) is ungrammatical. Therefore, to assure the correct order of NP complements of transitive verbs, we must assume that the lexical entry of a transitive verb should specify which Case feature of NP complements the verb should realize. Given this assumption, the lexical entry of *amuse* in (51), for instance, will specify that it realizes the Case feature of an NP expressing the  $\theta$ -role 'experiencer.' Thus, (51a) is derived, but not (51b). The assumption works very well in the following sentences:

- (52) a. John stole money from Tom.  
 b. John robbed Tom of money.  
 c. [agent, theme, source] (Nakamura et al. 1989:66)

In (52), *steal* and *rob* have the same S-selection, (52c). However, *steal* takes NP<sub>[theme]</sub> as its object, and *rob* takes NP<sub>[source]</sub>, as shown in (52a,b). Therefore, given the assumption that information about the realization of the Case feature of an NP complement is described in the lexical entry of a transitive verb—specifically a verb taking three arguments—we will be able to derive sentences with the right complement order. For example, suppose that *steal* can realize the Case feature of the NP<sub>[theme]</sub> and that *rob* can realize that of the NP<sub>[source]</sub>. In (52a), *from* is inserted to realize the Case feature of *Tom*<sub>[source]</sub>, as prescribed in (46). Likewise, in (52b), *of* is inserted to realize the Case feature of *money*<sub>[theme]</sub>. Thus, (52a,b) are derived as predicted. The assumption implies that the complement order of a sentence with a transitive verb is not free.

Finally, let us consider Case feature realization by INFL(AGR), which, as stated above, can realize the Case feature of an NP raised from the complement position of a lexical head to the subject position by move- $\alpha$ .

- (53) a. John INFL be killed *t*.  
 b. The children INFL be amused *t* with stories.

At the presumed D-structures of (53), *John* and *the children* are selected in the canonical direction by *killed* and *amused*, respectively. Under the uniformity condition (42), Case features are assigned to them. However, *killed* and *amused* cannot realize the Case features, since they are not transitive verbs but rather past participles, which are not Case feature realizers. But the application of move- $\alpha$  derives S-structures such as (53a,b), and then the Case features of these NPs are realized in the chains by INFL(AGR), satisfying the uniformity condition (42).

Incidentally, Chomsky's uniformity condition can correctly predict the ungrammaticality of (54), since the Case realization in his condition takes place under government.

- (54) a. \*John's story about a picture of *t*  
 b. \*John's story about being killed *t*

Under Chomsky's uniformity condition, *picture* and *killed* in (54) assign genitive Case to *John*, but they do not govern *John*. Therefore, they cannot realize the genitive Case of *John*, with the result

that they are not derived for lack of application of POSS-insertion to *John*. It might be argued, on the other hand, that the revised uniformity condition (42) cannot account for the ungrammaticality of (54).<sup>6</sup> Note, however, that the uniformity condition (42) is defined on the basis of a chain. In (53a), for instance, the chain (*John*, *be-I*, *e*, *killed*, *t*) is formed under Chomsky's (1986a) analysis. Thus, the Case feature of *John* is realized in its chain by INFL(AGR). In (54a), however, the sequence (*John*, *t*) is not a chain, since [<sub>N'</sub> picture *t*] or [<sub>P'</sub> about a picture of *t*] constitutes a minimality barrier in the sense of Chomsky (1986a), blocking the relation of antecedent government between *John* and its trace.<sup>7</sup> In (54b), [<sub>P'</sub> about being killed *t*] blocks the relation of antecedent government between *John* and its trace as well. Thus, it follows that (54) is in violation of the ECP or in violation of the  $\theta$ -criterion under the analysis of Rizzi (1990).

Here let us consider the two kinds of counterexamples to Chomsky's uniformity condition. Examples of the first kind are reintroduced in (55)–(58) below.

(55) I persuaded [<sub>NP</sub> John] of [<sub>NP</sub> the importance of going to college]. [= (15b)]

(56) He assured [<sub>NP</sub> me] of [<sub>NP</sub> his hearty assistance]. [= (18b)]

(57) John informed [<sub>NP</sub> us] of [<sub>NP</sub> Mary's resignation]. [= (19b)]

(58) Mary reminded [<sub>NP</sub> us] of [<sub>NP</sub> the earth's roundness]. [= (20b)]

What is common to the structures of these sentences is that the verbs canonically select two NP complements that express the  $\theta$ -roles of 'goal' and 'proposition,' respectively. Therefore, under the uniformity condition (42), Case features are assigned to the NPs by the verb at the D-structure of each sentence. At the S-structure, one of the Case features is realized by the verb on the basis of information about Case feature realization described in the lexical entry of the verb. Suppose that the lexical entries of these transitive verbs have information specifying that they can realize the Case feature of the NP<sub>[goal]</sub>. Accordingly, the Case feature of NP<sub>[goal]</sub> in each sentence is realized by the transitive verb. But the other NP is not adjacent to the verb. Thus, the Case feature of NP<sub>[proposition]</sub> must be realized by the rule of P-insertion. Since this NP has 'proposition' as a  $\theta$ -role and since there is no  $\theta$ -role-to-preposition mapping in (46) to realize the Case feature of the NP, *of* is inserted by default, deriving these sentences.

Next, let us consider the second kind of counterexample.

(59) I complained of [<sub>NP</sub> his being ill-treated]. [= (24b)]

(60) John insisted on [<sub>NP</sub> Mary's leaving]. [= (25b)]

In (59) and (60), the intransitive verbs *complain* and *insist* canonically select NPs. Thus, Case features are assigned to the NPs under the uniformity condition (42). However, the intransitive verbs cannot realize the Case features. Therefore, in (59), *of* is inserted to realize the Case feature of the bracketed NP, which has 'proposition' as a  $\theta$ -role. And in (60), the Case feature is realized by *on*-insertion, which is supposed to be specified in the lexical entry of the verb *insist*.

The revised uniformity condition (42) can successfully exclude examples which originally motivated Chomsky's uniformity condition.

(61) \*the belief [<sub>PP</sub> of John to be intelligent] [= (12b)]

(62) \*It seems [<sub>PP</sub> of John to be intelligent]. [= (13b)]

In (61) and (62), *John* is not canonically selected by the lexical head *belief* or *seems*. Thus, no Case feature is assigned to it. Consequently, the rule of *of*-insertion cannot be applied to *John*, so that (61) and (62) are not derived.

To summarize my argument so far, I have proposed a revision of Chomsky's uniformity condition. Furthermore, I have demonstrated that the modified uniformity condition (42) can accommodate data like (61) and (62)—which motivated Chomsky's original condition—as well as both kinds of counterexamples to his condition, namely sentences with transitive verbs like *persuade* and those with intransitive verbs such as *complain*.

<sup>6</sup>S. Oshima (personal communication) has pointed out this problem to me.

<sup>7</sup>Chomsky (1986a) defines the minimality condition as follows (cited from Cinque (1990:22)):

(i) In the configuration ...  $\alpha$  ... [ $\gamma$  ...  $\delta$  ...  $\beta$ ],  $\gamma$  is a barrier for  $\beta$  if  $\gamma$  is the immediate projection of  $\delta$ , a zero-level category distinct from  $\beta$ .

## 4.2 SOME CONSEQUENCES OF THE REVISED UNIFORMITY CONDITION

In the definition of the uniformity condition (42), lexical elements which are to be assigned Case features at D-structure are not restricted to NPs. Therefore, CPs and IPs are assigned Case features if and only if they are canonically selected by lexical heads. Let us consider the following sentences:

- (63) a. John advised me [<sub>CP</sub> that I should not go to the party].  
 b. They pray God [<sub>CP</sub> that the prisoner may be set free].
- (64) a. The teacher ordered me [<sub>CP</sub> to work harder].  
 b. John promised me [<sub>CP</sub> to help my brother].

The CPs in (63) and (64) are assigned Case features under the uniformity condition (42), since they are canonically selected by the matrix verbs. However, NPs and CPs differ in the realization of their assigned Case features. That is, the Case feature assigned to the NP must be realized by a verb, by INFL(AGR), or by a preposition (*by*-insertion), while the Case feature assigned to the CP must not be realized.

Stowell (1981) proposed the Case Resistance Principle (65) to account for the fact that tensed clauses do not appear in Case-assigned positions.

## (65) THE CASE RESISTANCE PRINCIPLE (CRP)

Case may not be assigned to a category bearing a Case-assigning feature.

(Stowell 1981:146)

If we consider the following sentences, we can easily see why they are excluded by the CRP:

- (66) a. \*Bill showed [<sub>CP</sub> that John lied] to be a fact. (ibid.:149)  
 b. \*Bill showed [<sub>CP</sub> for John to have lied] to be a fact. (ibid.:168)

The tensed clause in (66a) has a Case-assigning feature [+tense], and it is Case-assigned by *show*, since the verb is an exceptional-Case-marking (ECM) verb. Therefore, (66a) is in violation of the CRP (65). On the other hand, Stowell supposes that *to*-infinitives are inherently Case-assigned in the same way as PPs. If this assumption is correct, the *to*-infinitive in (66b) violates the CRP (65), since it is Case-assigned by the verb *show*. Although the CRP works well in the Case-assigning system of Stowell (1981), without modification it will not function correctly in the Case theory adopting Case features. Therefore, we need to revise (65) by adopting the following principle:<sup>8</sup>

## (67) THE CASE FEATURE RESISTANCE PRINCIPLE (CFRP)

The Case feature of a CP may not be realized.

Given (67), we can account for the ungrammaticality of (68) and (69).

- (68) a. \*John advised me of [<sub>CP</sub> that I should not go to the party].  
 b. \*They pray God of [<sub>CP</sub> that the prisoner may be set free].
- (69) a. \*The teacher ordered me of [<sub>CP</sub> to work harder].  
 b. \*John promised me of [<sub>CP</sub> to help my brother].

<sup>8</sup>Stowell claims that the CRP (65) applies to PP, excluding sentences like (i b) and (ii b).

- (i) a. It would be nice [<sub>CP</sub> for [<sub>NP</sub> the counter-top] to have a nice paint job].  
 b. \*It would be nice [<sub>CP</sub> for [<sub>PP</sub> on the counter-top] to have a nice paint job].
- (ii) a. We talked [<sub>PP</sub> about [<sub>NP</sub> the direction of the wind]]  
 b. \*We talked [<sub>PP</sub> about [<sub>PP</sub> from the west]]

(Stowell 1981:143)

However, (ib) violates the  $\theta$ -criterion, since the verb *have* takes two  $\theta$ -roles and C-selects two NPs. In (iib), on the other hand, *talk* selects an NP in our analysis. Under the uniformity condition (42), a Case feature will be assigned to the NP, and it will be realized by *about*-insertion, because the verb is not a Case feature realizer. Therefore, (iib) is never derived in our analysis, which means that the CRP (65) may not apply to PPs. This is the reason that the Case feature realization in (67) is restricted to CPs.

The CPs in (68) and (69) are selected in the canonical direction, and, thus, Case features are assigned to them by the verbs under the uniformity condition (42). However, since the Case features must not be realized because of the CFRP (67), the rule of *of*-insertion never applies to the CPs.<sup>9</sup> Consequently, (63) and (64) are derived as expected, and (68) and (69) are not derived.

As summarized in (70) below, I have shown that there is a clear contrast in Case feature realization between NPs and CPs, which are canonically selected by lexical heads, and that the contrast can be explained by the CFRP (67).

(70) NP/CP CASE-MARKING CONTRAST

		NP	CP
Case Feature Assignment		yes	yes
Case Feature Realization		yes	no

4.3 A MODIFICATION OF THE VISIBILITY CONDITION

In section 3.2.2, I have pointed out that CP complements of transitive verbs that take three arguments—such as *persuade*, *inform*, and so forth—are not visible for  $\theta$ -marking under Chomsky's visibility condition because they are not Case-assigned. Therefore, although they are, in fact, perfectly grammatical, they are wrongly ruled out by the  $\theta$ -criterion. In section 4.1, I modified the uniformity condition to be (42) and claimed that CPs as well as NPs are assigned Case features at D-structure if and only if they are selected by a lexical head in the canonical direction. Furthermore, the only Case features that must not be realized at S-structure are those of CPs because of the CFRP (67). In the present section I will consider Chomsky's visibility condition. To solve the problem of the invisibility of certain CP complements for  $\theta$ -marking under Chomsky's visibility condition, I will revise the visibility condition to be as stated in (71) by utilizing Case features assigned to canonically selected CPs under the uniformity condition (42).

(71) VISIBILITY CONDITION

A  $\theta$ -position P is visible for  $\theta$ -marking if and only if the chain containing the  $\theta$ -position P has a KASE.

The notion of KASE, introduced in (71), is defined as follows:

(72) A KASE includes Case or a Case feature.

Furthermore, it must be assumed that the visibility condition (71) can refer to a Case feature only if the Case feature is assigned in a single-membered chain, as will be set forth in section 4.4.

The revised visibility condition (71) implies that CPs having Case features in the single-membered chains are visible for  $\theta$ -marking, satisfying the  $\theta$ -criterion as a result. Let us consider how the visibility condition (71) can explain the counterexamples to Chomsky's visibility condition repeated below.

(73) I persuaded John [<sub>CP</sub> that he should go to college]. [=(15a)=(30)]

(74) He assured me [<sub>CP</sub> that he would heartily assist me]. [=(18a)=(31)]

(75) John informed us [<sub>CP</sub> that Mary would resign]. [=(19a)=(32)]

(76) Mary reminded us [<sub>CP</sub> that the earth is round]. [=(20a)=(33)]

(77) I complained [<sub>CP</sub> that he was ill-treated]. [=(24a)=(34)]

(78) John insisted [<sub>CP</sub> that Mary leave]. [=(25a)=(35)]

(79) a. John is certain [<sub>CP</sub> that Mary is leaving]. [=(36a)]

b. John is aware [<sub>CP</sub> that the war will end soon]. [=(36b)]

(80) a. my complaint [<sub>CP</sub> that he was ill-treated] [=(37a)]

b. John's insistence [<sub>CP</sub> that Mary leave] [=(37b)]

---

<sup>9</sup>In section 4.4, I will discuss the structure of exceptional-Case-marking verbs such as that in (66).

- c. John's certainty [<sub>CP</sub> that Mary is leaving] [= (37c)]  
 d. John's awareness [<sub>CP</sub> that the war will end soon] [= (37d)]

The CPs in these sentences are canonically selected by such lexical heads as transitive verbs, intransitive verbs, adjectives, and nouns. Thus, Case features are assigned to them under the uniformity condition (42). However, the Case features are not realized, because the CPs are not adjacent to transitive verbs, and the intransitive verbs, adjectives, and nouns are not Case feature realizers. It follows that these sentences are not in violation of the CFRP (67). At the same time, given the visibility condition (71), the CPs are visible for  $\theta$ -marking in terms of the Case features assigned to them; therefore, these sentences are admitted by the  $\theta$ -criterion.

We can account for the following counterexamples to Chomsky's visibility condition in a similar fashion:

- (81) a. I never expected [<sub>CP</sub> to be invited]. [= (38a)]  
       b. John wondered [<sub>CP</sub> how to fix the car]. [= (38b)]  
 (82) a. He is anxious [<sub>CP</sub> to know the facts]. [= (39a)]  
       b. He was eager [<sub>CP</sub> to play the guitar]. [= (39b)]  
 (83) a. He announced a plan [<sub>CP</sub> to go to the United States]. [= (40a)]  
       b. His eagerness [<sub>CP</sub> to please others] is marvelous. [= (40b)]  
 (84) a. I persuaded John [<sub>CP</sub> to go to college]. [= (41a)]  
       b. I reminded him [<sub>CP</sub> to turn down the radio]. [= (41b)]

The *to*-infinitives in these sentence-pairs are canonically selected by intransitive verbs, adjectives, nouns, and transitive verbs, respectively. Therefore, under the uniformity condition (42), Case features are assigned to the *to*-infinitives at D-structure. Furthermore, they are not realized at S-structure by the same reasoning that was applied to the tensed clauses in (66) above. Consequently, the CFRP (67) correctly admits these *to*-infinitives. Moreover, given the visibility condition (71), the *to*-infinitives are visible for  $\theta$ -marking because they are assigned Case features in their single-membered chains. Consequently, these sentences are admitted by  $\theta$ -theory.

To resolve the problem posed by the counterexamples to Chomsky's visibility condition, in this section I have revised the uniformity condition to be (71), by utilizing Case features assigned to canonically selected CPs under the uniformity condition (42).

#### 4.4 SOME CONSEQUENCES OF THE REVISED UNIFORMITY AND VISIBILITY CONDITIONS

The revised uniformity condition (42) and visibility condition (71) entail certain consequences, the first being that sentences like the following are correctly predicted to be ungrammatical:

- (85) a. \*John wondered [<sub>CP</sub> how [<sub>IP</sub> [<sub>NP</sub> Bill] to upset Mary]].  
       b. \*John wondered [<sub>CP</sub> how [<sub>IP</sub> [<sub>CP</sub> that Bill came in late] to upset Mary]].  
       c. \*Bill wondered [<sub>CP</sub> how [<sub>IP</sub> [<sub>CP</sub> to have come home] to have upset Mary]].  
 (86) a. \*It appears [<sub>IP</sub> [<sub>NP</sub> the fish] to have upset Mary].  
       \*It appears [<sub>IP</sub> [<sub>CP</sub> that Bill came in late] to have upset Mary].  
       b. \*It appears [<sub>IP</sub> [<sub>CP</sub> for Bill to have come home] to have upset Mary].

(Stowell 1981:150–151, 169)

Irrespective of whether they are NPs or CPs, the embedded subjects in (85) and (86) are not selected by the main verbs or the embedded verbs in the canonical direction. Thus, under the uniformity condition (42), Case features are not assigned to them. Also, the NPs in (85a) and (86a) are assigned no Case, since the matrix verbs are intransitive verbs. Therefore, the NPs and the CPs in (85) and (86) are not visible for  $\theta$ -marking under the visibility condition (71). As a result, the sentences are excluded by the  $\theta$ -criterion. However, it should be noted here that under Chomsky's visibility condition, (85b,c) and (86b,c) cannot be excluded since the category that the visibility condition affects is restricted to NP. From this it may be seen that the revised uniformity and visibility conditions in (42) and (71) are superior to Chomsky's original versions of those conditions in accounting for the ungrammaticality of sentences such as those in (85) and (86). The same thing is true of data like (87).

- (87) a. \*the belief [<sub>IP</sub> [<sub>CP</sub> that John is guilty] to be true]  
 b. \*It seems [<sub>IP</sub> [<sub>CP</sub> that John is guilty] to be true].

Furthermore, the revised uniformity and visibility conditions can explain the grammatical contrast between the (a) and (b) sentences in (88) and (89).

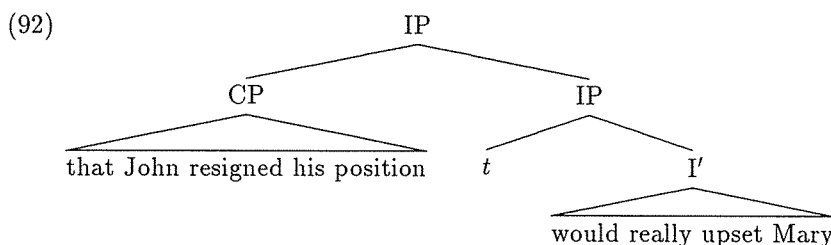
- (88) a. ?\*Mary said [<sub>CP</sub> that she wanted to drive] quietly.  
 b. Mary said *t* quietly [<sub>CP</sub> that she wanted to drive].
- (89) a. ?\*Paul mentioned [<sub>CP</sub> that his shirt was dirty] to Bill.  
 b. Paul mentioned *t* to Bill [<sub>CP</sub> that his shirt was dirty]. (Stowell 1981:161)

As observed by Stowell, the CPs in these sentences must be moved to the end of the sentences. This fact is easily accounted for under my analysis. In (88) and (89), the CPs are canonically selected by the verbs *say* and *mention*. Thus, Case features are assigned to the CPs under the uniformity condition (42). In (88a) and (89a), the Case features are realized by the verbs, violating the CFRP (67). In (88b) and (89b), on the other hand, the CPs are extraposed and the traces left behind by the CPs form one-membered chains whose Case features are realized by the verbs.<sup>10</sup> Therefore, they are visible for  $\theta$ -marking, satisfying the  $\theta$ -criterion. As for the CFRP (67), it admits (88b) and (89b), since the CPs of these sentences are not governed by the verbs and their Case features are therefore never realized.

Here one might argue that grammatical sentences such as (90) and (91) would be wrongly excluded under the visibility condition (71). This is because the CPs in these sentences are not canonically selected. Consequently, Case features are not assigned to them under the uniformity condition (42), so they are not visible for  $\theta$ -marking.

- (90) a. [<sub>CP</sub> That John resigned his position] would really upset Mary.  
 b. [<sub>CP</sub> For Bill to remain] would upset Mary.
- (91) a. I think that [<sub>CP</sub> for Bill to remain] would so upset so many people that he and everybody else would be very much more comfortable if he left quietly but immediately.  
 b. It seems that [<sub>CP</sub> that Fred left early] so bothered all the people who have been waiting for him that they now refuse to do business with him. (Delahunty 1983:382)

However, it is generally assumed in the literature that sentential subjects are not really in the subject position, but rather in the 'topic' position, namely in the IP-adjunct position. If this assumption is on the right track, (90a), for example, will have the following S-structure:



In (92), the trace forms a single-membered chain and is Case-assigned by the INFL(AGR) of the matrix clause. Therefore, it is visible for  $\theta$ -marking under the visibility condition (71), and the  $\theta$ -criterion is satisfied, as expected. Note that the CFRP (67) never applies to the CP in (92), since it is not assigned any Case feature under uniformity condition (42). Therefore, sentences such as (90a) are not regarded as counterexamples to the revised uniformity and visibility conditions. The argument holds for all the other data in (90) and (91).

One advantage of our analysis is that we need not have recourse to the notion of CHAIN to account for (93).

- (93) a. It seems (to us) [<sub>CP</sub> that John is guilty].

<sup>10</sup>I assume that if a Case feature is assigned to a canonically selected CP under the uniformity condition (42), the CP and a trace left behind by the CP share that Case feature.



- b. It appeared (to the police) [<sub>CP</sub> that the mayor liked the wine]. (Stowell 1981:164)

In (93), the CPs have  $\theta$ -roles, but they are not Case-assigned under the standard Case theory. Thus, (93) would be incorrectly excluded by the  $\theta$ -criterion. To avoid this incorrect result, Chomsky (1986b) extends the notion of chains to include pleonastic/argument pairs. He defines the extended chains as a CHAIN, as noted in section 3.2.2.2. Accordingly, in (93a) and (93b) the CHAIN (*it*, CP) is formed, and it has a Case-assigned position occupied by *it*, so that it is visible for  $\theta$ -marking, satisfying the  $\theta$ -criterion.

However, the CHAIN analysis confronts some empirical problems. One of these concerns the following contrast:

- (94) a. It seems [<sub>IP</sub> *e* to be believed [<sub>CP</sub> that John is intelligent]]. [= (28b)]  
 b. \*It seems [<sub>IP</sub> [<sub>CP</sub> that John is intelligent] to be believed *t*].

In (94a), the CHAIN (*it*, *e*, CP) is formed, and the CHAIN (*it*, CP, *t*) is formed in (94b). We may observe that each CHAIN has a Case-assigned position which is filled with the pleonastic *it*. In spite of the fact that (94b) is clearly unacceptable, Chomsky's visibility condition incorrectly predicts that both sentences in (94) are grammatical in the same way that (93a,b) are. However, if we adopt the uniformity condition (42) and the visibility condition (71), the notion of a CHAIN is not required to account for the sentences in (93) and (94).

In section 4.1, it has been noted that the order of the complements of an intransitive verb is free. Thus, both (93) and (95) ought to be derived as grammatical sentences.

- (95) a. \*It seems [<sub>CP</sub> that John is guilty] [<sub>PP</sub> to us].  
 b. \*It appeared [<sub>CP</sub> that the mayor liked the wine] [<sub>PP</sub> to the police].

But (93) is grammatical, as expected, while (95) is not. So, to guarantee that clausal complements of raising verbs must appear after the other subcategorized complements, it must be supposed that the sentences in (93) are derived from the corresponding D-structures by raising and extraposition. The sentences in (93) would then have the following S-structures:

- (96) a.  $It_{i/j}$  seems  $t_i$  [<sub>CP</sub> that John is guilty] $_{i/j}$ .  
 b.  $It_{i/j}$  appears  $t_i$  [<sub>CP</sub> that the mayor liked wine] $_{i/j}$ .

In both of the S-structures in (96), the chain ( $it_{i/j}$ ,  $t_i$ , CP $_{i/j}$ )—in which the extraposed CP is generally assumed to be in an A-position—is formed, and it has the Case-marked pleonastic *it*. Therefore, the  $\theta$ -position  $t_i$  is visible for  $\theta$ -marking, satisfying the  $\theta$ -criterion. Also the CFRP (67) admits (96) because the Case features of the CPs, which are assigned at D-structure under the uniformity condition (42), are not realized in the position that the CPs occupy at the S-structures. On the other hand, (94a) has the following S-structure under our analysis:

- (97)  $It_{i/j}$  seems [<sub>IP</sub>  $t_i$  to be believed  $t_i$ ] [<sub>CP</sub> that John is intelligent] $_{i/j}$ . [cf. (94a)=(28b)]

Example (97a) has the chain ( $it_{i/j}$ ,  $t_i$ ,  $t_i$ , CP $_{i/j}$ ), in which  $it_{i/j}$  is Case-marked. Thus, the third member of the chain— $t_i$ , which occupies a  $\theta$ -position—is visible for  $\theta$ -marking. However, in (94b), the chain (CP, *t*) is not Case-marked. Although a Case feature is assigned to the CP under the uniformity condition (42), the visibility condition (71) does not apply to it, since the condition can refer to a Case feature only if the Case feature is assigned in a single-membered chain, as assumed in section 4.3. Therefore, the trace *t* is not visible for  $\theta$ -marking under the visibility condition (71). Consequently, (94b) is ruled out by the  $\theta$ -criterion. Furthermore, this analysis can account for the grammatical contrast in (29) from section 3.2.2, reintroduced in (98).

- (98) a. I want [<sub>IP</sub> it to be likely [<sub>CP</sub> that John will leave]]. [= (29a)]  
 b. \*I tried [<sub>IP</sub> it to be likely [<sub>CP</sub> that John will leave]]. [= (29b)]

The application of raising and extraposition to the D-structures of (98) will derive the following S-structures, in which the CFRP (67) admits the CPs:

- (99) a. I want [<sub>IP</sub>  $it_{i/j}$  to be likely  $t_i$  [<sub>CP</sub> that John will leave] $_{i/j}$ ]. [cf. (98a)=(29a)]  
 b. \*I tried [<sub>IP</sub>  $it_{i/j}$  to be likely  $t_i$  [<sub>CP</sub> that John will leave] $_{i/j}$ ]. [cf. (98b)=(29b)]

In (98a), the chain  $(it_{i/j}, t_i, CP_{i/j})$  has a Case-marked position which is filled by  $it_{i/j}$ . Thus,  $t_i$  is visible for  $\theta$ -marking. However, in (98b) the chain  $(it_{i/j}, t_i, CP_{i/j})$  has no Case-marked position, so that  $t_i$  is not visible for  $\theta$ -marking, and (98b) is in violation of the  $\theta$ -criterion.

Finally, let us consider sentences with ECM verbs.

- (100) a. \*I would never have thought [<sub>IP</sub> [<sub>CP</sub> that so many people would be displaced by the war] to be a possible outcome].  
 b. I would never have thought [<sub>IP</sub> it to be a possible outcome] [<sub>CP</sub> that so many people would be displaced by the war].

In (100a), a Case feature is assigned to the IP under the uniformity condition (42), since the IP is canonically selected by the verb *think*. Suppose that the Case feature assigned to the IP complement by an ECM verb percolates to the head of the IP and then is assigned to the subject by Spec-head agreement. If this analysis is on the right track, (100a) is excluded by the CFRP (67), since the Case feature is realized by the verb *thought*. In (100), which is derived from (100a) by the rule of extraposition, the pleonastic *it* is inserted in the embedded subject position and is governed and Case-marked by *thought*. Therefore, it is visible for  $\theta$ -marking under the visibility condition (71), satisfying the  $\theta$ -criterion. Also, the CFRP admits the CP, since its Case feature is not realized by the verb.

Next, let us consider sentences such as (101).<sup>11</sup>

- (101) a. \*I would never have believed [<sub>CP</sub> that so much could be done in so little time] to be a feasible goal.  
 b. [<sub>CP</sub> That so much could be done in so little time] I would never have believed *t* to be a feasible goal.

Example (101a) is excluded by the CFRP (67) by the same reasoning that applies to (100a). On the other hand, (101b) is derived from (101a) by application of the rule of topicalization, and the trace of the CP forms a single-membered chain, which is Case-marked by *believed*. Thus, it is visible for  $\theta$ -marking under the visibility condition (71). The CFRP (67) also admits the sentence because the Case feature of the CP is not realized in the IP-adjunct position. Therefore, the difference in grammaticality between (101a) and (101b) is accounted for under the revised uniformity condition (42) and visibility condition (71). These conditions can also account for the grammaticality of the following sentence:

- (102) John believes [<sub>IP</sub> [<sub>NP</sub> Bill] to be intelligent].

Under the uniformity condition (42), a Case feature is assigned to the IP in (102) by *believe*, since the IP is canonically selected by the verb. Notice here that the CFRP (67) claims that the Case feature of a canonically selected CP must not be realized at S-structure. This implies that the CFRP (67) may not apply to a canonically selected IP. Therefore, the Case feature of the IP in (102) can be realized by the verb. Furthermore, the Case feature percolates to the head of the IP, and it is assigned to the subject *Bill* by Spec-head agreement. As assumed in section 4.1, the Case feature of an NP must be realized. In (102), the verb properly realizes the Case feature of the subject *Bill*. Under the visibility condition (71), both the IP and [<sub>NP</sub> Bill] are visible for  $\theta$ -marking; thus, (102) satisfies the  $\theta$ -criterion. However, it should be noted that the Case feature realization of a canonically selected IP is optional. Let us consider the following sentence:

- (103) Bill is believed [<sub>IP</sub> *t* to be intelligent].

In (103), a Case feature is assigned to the IP as usual, but it is not realized by the past participle *believed*, since it is not a Case feature realizer. The Case feature percolates to the head of the IP, and it is assigned to the subject *Bill* by Spec-head agreement. Since the Case feature of an NP must be realized, *Bill* is forced to move to the matrix subject position, where the Case feature is realized by the INFL(AGR). Thus, both the IP and *Bill* are visible for  $\theta$ -marking. In addition, let us consider (104).

- (104) a. *e* is believed [<sub>IP</sub> John to win the race].

<sup>11</sup>The examples in (100) and (101) were pointed out to me by M. T. Westcoat.

- b. \* $[_{IP} \text{John to win the race}]_i$  is believed  $t_i$ .  
 c. \* $It_{i/j}$  is believed  $t_i$   $[_{IP} \text{John to win the race}]_{i/j}$ .

In (104a), which is the D-structure of (104b,c), a Case feature is assigned to the IP, since the IP is canonically selected. Thus, the IP is visible for  $\theta$ -marking under the visibility condition (71). Furthermore, the Case feature is assigned to *John* by percolation and Spec-head agreement. Although the Case feature of an NP must be realized at S-structure, the Case feature assigned to *John* is never realized in S-structures (104b) and (104c). Therefore, *John* is not visible for  $\theta$ -marking, violating the  $\theta$ -criterion.

In this section I have shown that the revised uniformity condition (42) and visibility condition (71) can apply to various constructions and that these conditions can successfully account for the distribution of canonically selected CPs and IPs.

## 5 A SUMMARY

I have dealt with Chomsky's uniformity condition and visibility condition, pointing out some problems involved in these aspects of the Case theory. Concerning the uniformity condition, I discussed the *of*-insertion rule which applies to sentences with intransitive verbs and transitive verbs taking three arguments. As for the visibility condition, I first discussed the distribution of clausal arguments and then modified the uniformity condition to solve the problems to which it gave rise. Subsequently, noting that the problems with the visibility condition are related to those of the uniformity condition, I revised the visibility condition. Specifically, I redefined it by utilizing Case features assigned to canonically selected elements under the revised uniformity condition (42). Finally, I showed that the revised uniformity condition (42) and visibility condition (71) play crucial roles in accounting for the distribution of two types of clauses (tensed clauses and *to*-infinitives) in various sentence structures.