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THE SYNTAX OF ABSTRACT CASE*

More than ten years have passed since the inception in the late 70's of the principles-and-parameters approach to the theory of grammar, which has come to be commonly known as government and binding (GB) theory. Since that time we have obtained much knowledge about natural language, though there still remain many unsolved puzzles.

(Abstract) Case is a well-studied subject in GB syntax. Refining the former Case theory, Chomsky (1986b) laid the cornerstone for recent studies on Case. He proposed that abstract Case be divided into two types. One is called 'structural Case,' including nominative Case and accusative Case; the other is called 'inherent Case,' which is assigned by lexical categories such as nouns, adjectives, and verbs. This class includes dative Case, partitive Case, instrumental Case, and so on.[1]

Subsequent studies (Shlonsky 1987, Belletti 1988, Belletti and Rizzi 1988, Kempchinsky 1988) claim that the ability to assign inherent Case is a property of particular θ-roles, rather than being derivable from the categorial nature of the head. That is to say, lexical items do not always assign inherent Case to the NPs they govern. On the other hand, structural Case is always assigned to an NP when that NP is governed by an item which has the ability to assign structural Case. Belletti (1988) further claims that inherent and structural Case are both REALIZED at S-structure, despite the fact that they are ASSIGNED at different levels. Structural Case, is assigned at S-structure, and inherent Case is assigned at D-structure in conjunction with θ-role assignment. The distinction between Case assignment and Case realization has sometimes been mentioned in the literature, but the exact characterization of the distinct mechanisms underlying these two processes have been neglected in the theory of syntax, to the best of my knowledge. The term CASE-MARKING is usually used in the literature to refer vaguely to both Case assignment and Case realization. Following a suggestion of Kayne's, I interpret the concepts of Case assignment and Case realization in the following manner: Case assignment is accomplished by the transmission of a Case feature K from a Case assigner A to a Case assignee B; given a chain C with Case K, K can be realized morphologically on at most one element of C (Kayne 1983a:216).

The point here is that although structural Case and inherent Case differ with respect to the level of representation at which they are assigned, they are realized at the same level, that is to say, S-structure. Why should this be so? Since abstract Case itself has no substantive content, it is natural to consider that inherent Case is realized by the same element that realizes structural Case. As far as I know, there are few papers in which this point is noted with much concern.

To explore the above question, let us consider why the realization of structural Case is suspended until S-structure. If both assignment and realization of accusative Case are executed by V under government, as is commonly assumed (e.g., by Chomsky (1986b) among others), we need a special device to prevent V from realizing accusative Case on the following object NP at D-structure. This is because if V has its own object in the position immediately to its right, then V will necessarily govern that object NP at D-structure. On the other hand, INFL, which is considered to be another category that has the ability to assign structural (nominative) Case, cannot assign nominative Case

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[1]In this paper, I will not discuss genitive Case, save for a few exceptional comments. It is plausible that genitive Case is realized by D, a functional category, as Abney (1987) assumes. This is consistent with the analysis to be presented in this paper, but I leave the matter open here.

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to any NP at D-structure, because at D-structure INFL does not govern any NP. In making this statement, I am obviously following the VP-internal subject hypothesis, which has recently been adopted in much of the literature. This matter will be further discussed in section 1.

Suppose that what governs the realization of accusative Case is not V, but a functional category, and that Case realization is executed under government.[2] Then, at D-structure, this functional category obviously cannot govern the object NP which is assigned accusative Case by V, because of the minimality barrier induced by V, which governs the NP at D-structure. Assuming further that this functional category merges into V at S-structure through head-movement, we can explain why the realization of accusative Case does not take place until S-structure. It is not until S-structure that the functional category with the ability to realize accusative Case can govern the object NP. At S-structure this functional category will be able to govern the NP from within the amalgam consisting of V and the functional category itself. In section 1, we will return to the topic of how the functional category can govern the NP from within this amalgam.

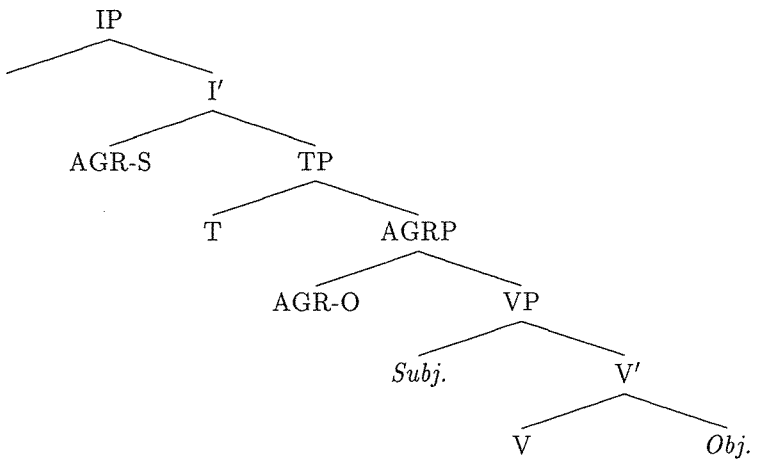
Hence, the main claim to be made in this paper is the following: Case assignment and Case realization should be clearly distinguished in syntactic theory, and Case realization should be executed by a certain functional category.[3] Section 2 will provide various pieces of evidence for the assumption that accusative Case is realized not by V, but by a functional category. Proposing some conditions on Case, in section 3, I will also point out some advantages of the hypothesis presented in section 2 over the general assumption that accusative Case is realized by V. In section 4, I will address myself to the mechanism that ensures the assignment and the realization of nominative Case, taking head-movement of functional categories into consideration. The final section contains my concluding remarks. Before entering into the main topic of discussion, I shall review in section 1 some recent analyses of head-movement presented by Pollock (1989) and by Chomsky (1989).

1 A Brief Review of Recent Studies on Head-Movement

The work of Pollock (1989) has had a very significant influence on the study of head-movement and clause structure. Introducing a new but crucial notion called 'economy of derivation and representation,' Chomsky (1989) advances Pollock's analysis as a universal.

Chomsky suggests that the fundamental structure of clauses is as follows:[4]

(1)



[2] In fact, a similar approach to this line of analysis is hinted in Chomsky (1989). In reply to a letter of mine in which I outlined the proposals to be made in this paper, Noam Chomsky states his opinion that structural Case and Agreement are basically the same phenomenon and thus are both syntactically governed by the same functional category, AGR. He uses CASE to refer to the syntactic function which both structural Case and Agreement bear in common.

[3] As will be suggested elsewhere in this paper, in cases where the realization of Case by a functional category is precluded for some reason, certain language-particular devices for the Case-realization may be invoked. For example, in English the prepositional particle *of* may be inserted before an NP whose Case is not realized. The insertion of *of* should be interpreted as a 'last resort' operation to realize Case in English (Chomsky 1989). For the relevant arguments see Chomsky (1986b) and also Stowell (1989).

[4] For the sake of compatibility with other works, I replace Chomsky's F, which means [±finite], with Pollock's T, which means [±Tense].

I will assume this structure in the discussions which follow.[5]

Subj. and *Obj.* in (1) stand for the positions where the subject θ-role and the object θ-role are respectively assigned at D-structure. The VP-internal subject hypothesis, which is adopted throughout this paper, is also adopted and verified in many recent papers discussing a variety of phenomena (e.g., Aoun and Li (1989), Fukui and Speas (1986), Guilfoyle, Hung and Travis (1989), Koopman and Sportiche (1988), Kuroda (1988), Larson (1988), Sportiche (1988), and many others). These include papers which deal with head-movement and functional categories (e.g., Fassi Fehri (1989), Mahajan (1989), Pesetsky (1989), and Shlonsky (1989)). None of them including Pollock (1989) and Chomsky (1989), however, clarifies the mechanisms which ensure that Agreement and (nominative) Case assignment take place at S-structure in English and French after head-movements have taken place.[6] Hereafter, I use capitalized Agreement to refer to the relation between two items which agree with each other.

Let us briefly review the system of head-movements in English and French discussed by Pollock (1989) and Chomsky (1989). Assuming that AGR-S and T bear an affixal feature, they claim that the two categories must merge with a lexical element at S-structure, owing to Lasnik's filter (1981), which is cited in (2) below from Pesetsky (1989):[7]

(2) LASNIK'S FILTER

An affix must be lexically supported (at PF). (Pesetsky 1989:1)

Therefore, if for no other particular reason, then at least for the sake of economy of derivation, V moves step by step up to AGR-S, which is the highest affixal head of the clause, adjoining to and amalgamating with each intermediate head.[8]

Assuming further that French AGR-O is 'transparent' and that the English counterpart is 'opaque' with respect to θ-role assignment, Pollock (1989) elegantly explains the difference in word order between English and French. Then we get the S-structures of transitive sentences in English and French, respectively, as illustrated in (3), deriving them from the common D-structure in (4) (= (1)):[9]

(3) a. $[_{\text{IP}}\, \text{NP}_k^{subj\cdot}\ t_i\ [_{\text{TP}}\, t_i\ [_{\text{AGRP}}\, t_i\ [_{\text{VP}}\, t_k\ [_{\text{V}'}\, [_{\text{V}}\, \text{V AGR-S}_i\ t_i\ \text{AGR-O}_i]_i\ \text{NP}^{obj\cdot}]]]]]$ (English)

b. $[_{\text{IP}}\, \text{NP}_k^{subj\cdot}\ [_{\text{AGR-S}_i}\, \text{AGR-S}\ t_i\ \text{AGR-O}_i\ \text{V}_i]\ [_{\text{TP}}\, t_i\ [_{\text{AGRP}}\, t_i\ [_{\text{VP}}\, t_k\ [_{\text{V}'}\, t_i\ \text{NP}^{obj\cdot}]]]]]$ (French)

(4) $[_{\text{IP}}\, e\ \text{AGR-S}\ [_{\text{TP}}\, \text{T}\ [_{\text{AGRP}}\, \text{AGR-O}\ [_{\text{VP}}\, \text{NP}^{subj\cdot}\ [_{\text{V}'}\, \text{V NP}^{obj\cdot}]]]]]$

Because English AGR-O is 'opaque,' V cannot move up to AGR-O in English. Any derivation in which V skips over AGR-O and moves up farther violates the HEAD MOVEMENT CONSTRAINT (HMC), originally proposed by Travis (1984), which is derivable from the ECP (Baker 1988, Chomsky 1989). It follows that in English, the affixal functional heads, AGR-S and T, must move down onto V at S-structure due to Lasnik's filter (2). This downward movement of AGR-S

[5] Some very recent papers such as those by Iatridou (1990) and Ouhalla (1990) point out defects in the construction in (1) from various viewpoints. But the present work, if correct, will sustain the validity of (1) and the approach hinted at in Chomsky (1989). Furthermore, other researchers such as Belletti (1990) and Gueron and Hoekstra (1988) dealing with head-movement in languages other than English propose their own clause-structure within IP. I would like to suggest, without any discussion here, that all languages—or at least English, French, and Italian (Ura in preparation)—have in common the clause-structure illustrated in (1). Note also that Nishikawa (1990) provides evidence from a different viewpoint that AGR-O exists in IP structure in English.

[6] Some papers cited above discuss how Agreement takes place in several languages other than English and French (Guilfoyle et al. 1989, Koopman and Sportiche 1988, Mahajan 1989).

[7] Koji Fujita (personal communication) has pointed out that "at PF" in Lasnik's filter (2) must be interpreted as at S-structure to maintain the explanation of Pollock (1989) and Chomsky (1989) for head-movement. Otherwise, functional categories which have an affixal feature are exempted from merging with a phonetically realized element in syntax (that is, at S-structure), and obviously this frustrates Pollock and Chomsky's elegant explanation for head-movement.

[8] Baker (1988:73) proposes the following filter:

(i) $*[_{\text{X}^0} \ldots t \ldots]$ (X^0 stands for a word-level category.)

This filter inhibits a head which has adjoined to another head from moving farther without amalgamation first taking place between the two. See Roberts (1986) for related discussion from a somewhat different viewpoint.

[9] For the indexing mechanism in cases where a head merges with another head and the condition on head-movement, see, among others, Y.-F. Li (1990a) and also Roberts (1986). Probably Li's theory surmounts the difficulties involved in Baker's (1988) and Chomsky's (1989) proposals with respect to those points.

and T onto V inevitably involves their merger with AGR-O, as illustrated in (3a). This is because, otherwise, the HMC would be violated at LF (Chomsky 1989).[10]

Recall that structural Case assignment and realization are executed at S-structure. Thus, certain syntactic relations must come to hold at S-structure between the Case assigner (or realizer) and the item to be assigned Case (or the item whose Case is to be realized). In French sentences, the subject NP is, in fact, governed by AGR-S and located in the Spec of AGR-S at S-structure, as in (3b). If nominative Case is assigned (and realized) by AGR-S under government, as is generally assumed, and if Agreement always takes place between AGR and its Spec position, as Mahajan (1989) supposes, then the sentential subject NP and the matrix finite V in French declarative sentences get correct morphological changes without any special devices.[11]

In English sentences, on the other hand, the subject NP in the IP-Spec position is never governed by AGR-S itself at S-structure. Even if we grant that the trace of AGR is able to agree with the NP in its Spec position, is the trace of AGR-S also permitted to assign nominative Case to the NP it governs?

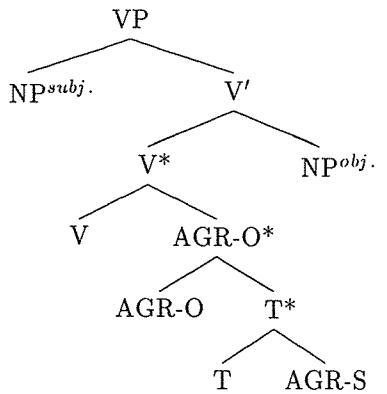
Further considerations reveal a more serious problem. According to Fukui and Speas (1986) and Koopman and Sportiche (1988), the VP internal subject which is generated in the VP-Spec position moves up to the IP-Spec position in order to get nominative Case from AGR-S at S-structure. In other words, if the subject can get Case in the original VP-Spec position, it need not move anywhere. Now reconsider (3a). The subject NP generated in the VP-Spec position need not move to the IP-Spec position, because it is governed by AGR-S and, as a result, it can get nominative Case from AGR-S in its original position, the Spec of VP.

The same reasoning outlined in the previous paragraph may, moreover, reveal another problem concealed in (3a). If, as is generally assumed, V is the accusative Case assigner and AGR-S is the nominative Case assigner, we have no means of prohibiting the subject NP in the VP-Spec position from being assigned accusative Case by V, the accusative Case assigner. Nor are we able to prevent the object NP from being assigned nominative Case by AGR-S, the nominative Case assigner. This is because at S-structure both NPs are governed by both Case assigners, i.e., AGR-S and V, as illustrated in (5):

(5) $[_{IP}\, e\ t\ [_{TP}\, t\ [_{AGRP}\, t\ [_{VP}\, NP^{subj.}\ [_{V'}\, [_{V}\, V\ AGR\text{-}O\ T\ AGR\text{-}S]\ NP^{obj.}]]]]]$

One might claim that AGR-S cannot govern anything from within its amalgam and that as a result the above problems never arise. This objection will soon be refuted from a theoretical point of view. Since head-movement is an adjunction (Chomsky 1986a, Baker 1988), the inner structure of the VP with the amalgam of the heads in (5) takes the form illustrated in (6):[12]

(6)



In (6), V obviously governs both NPs under Chomsky's (1986a) definition of government, which is stated as follows:

[10]It is, in fact, unlikely that English AGR-O has an affixal feature like AGR-S or T. Exploiting the fact that English does not have any (overt) object agreement, Noji (1990) argues that AGR-O never exists in English. Such an argument will soon vanish if we admit the hypothesis that structural Case and Agreement are the same phenomenon governed by AGR. The present work aims at establishing and defending that hypothesis.

[11]I tentatively assume here that AGR-O in French and English has no ability to cause morphological changes on either NP or V. See Ura (in preparation) for discussion about the relation between object agreement and AGR-O in French, Italian, and English.

[12]The asterisks in (6) have no theoretical significance. They are attached only for expository convenience. Hence, V*, for example, has the same categorical value as V. See Y.-F. Li (1990a) for related arguments.

(7) α governs β iff α m-commands β and every barrier for β dominates α. (1986a:8)

Let us assume the following definition of m-command:[13]

(8) X m-commands Y...iff neither X dominates Y nor vice versa, and the first maximal projection dominating X dominates Y as well. (Rizzi 1990:111)

Moreover, AGR-O and AGR-S also govern both NPs in (6). The first maximal projection that dominates AGR-S is VP,[14] and the VP in turn dominates both the subject and object NPs. Consequently, AGR-S m-commands both NPs. Only VP and V′ dominate AGR-S in (6), so in the framework of Chomsky (1986a), AGR-S therefore governs both NPs. Even if V′ counts as a minimality barrier induced by other heads, nothing prevents AGR-S from governing the object NP. In fact, V′ cannot count as a minimality barrier, because V′ dominates AGR-S as well as other heads. We therefore conclude that in (6) AGR-S governs and, as a result, can Case-mark both the subject and the object NP.

It should be noted before preceding any father that the definition of government presented in (7) is provided only for the purpose of exposition of the problems to be addressed here. The present work is based on Rizzi's relativized minimality framework, wherein government is divided into two types, HEAD-GOVERNMENT and ANTECEDENT-GOVERNMENT. The definition of head-government, which is relevant here, is as follows:[15]

(9) HEAD-GOVERNMENT

X head-governs Y iff

a. i. X is a head
   ii. X m-commands Y

b. $X = \{[\pm V, \pm N], AGR, T\}$

c. i. no barrier intervenes
   ii. relativized minimality is respected. (Rizzi 1990:25)

Note that in the subsequent discussion, whenever reference is made to cases in which an X^0-level element governs something, Rizzi's definition of head-government in (9) is to be assumed.

As long as we pursue the line of analysis presented in Pollock (1989) and Chomsky (1989), it is obvious from the discussion above that we need some explanation of how structural Case is assigned and realized. After accounting for the mechanisms of Case assignment and realization in sections 2 and 3, I will further explore the mechanism which determines how nominative Case is assigned and realized in section 4. The discussion in section 4 will also explicate the interaction of nominative Case assignment, the VP internal subject, and the movement of functional categories.

2 ACCUSATIVE CASE AND FUNCTIONAL CATEGORIES

In this section, I will present some examples which show that accusative Case is realized not by V, but by a certain functional category. Furthermore, I will claim on theoretical grounds that that functional category is AGR-O. These conclusions will be based on an examination of English data which involve *wh*-movement from positions where a θ-role is assigned but Case is not.

Before entering into discussion, it is useful to observe some Case-related properties of the English interrogatives *who* and *whom* which are crucially related to the discussion that follows.

It is commonly assumed that non-nominative *who* arises only as a colloquial replacement for *whom*. As the examples that follow show, however, there are sentences for which such an explanation is untenable:

[13] Incidentally, the c-command relation is defined as follows:

(i) X c-commands Y iff neither X dominates Y nor vice versa, and the first projection dominating X dominates Y as well. (Rizzi 1990:111)

[14] Even assuming that X^0 categories count as maximal projections, when we consider the inner construction of words, T*, AGR-O*, and V* in (6) will not be regarded as maximal projections that determine the m-command domain of AGR-S. This is so because none of them dominates AGR-S in (6).

[15] The definition of antecedent-government, will be provided later, in section 2. Alternatively the reader may consult Rizzi (1990:25).

(10) a. Who don't you think he would prefer very much t to win?
b. Who don't you think Bill believed sincerely t to be the best man?
c. Who don't you think they alleged t to be a pimp?
d. Who don't you think he estimated t to weigh 250 pounds?

(11) a. ?Whom don't you think he would prefer very much t to win?
b. ?Whom don't you think Bill believed sincerely t to be the best man?
c. ?Whom don't you think they alleged t to be a pimp?
d. ?Whom don't you think he estimated t to weigh 250 pounds?

The fact that the grammaticality of the sentences in (11) is slightly worse than that of the sentences in (10) shows that *whom* is not always freely alterable into *who*.

One should notice that the examples above have a property in common which is in a sense peculiar. The original trace positions of all *wh*-phrases in (10) and (11) are ones where no accusative Case is assigned, as (12) shows:[16]

(12) a. *He would prefer very much John to win.
b. *Bill believed sincerely John to be the best man.
c. *They alleged John to be a pimp.
d. *He estimated his sister to weigh 250 pounds. (Postal 1974:297–317)

From the observation of (12), one might conjecture that the delicate deviancy in (11) should be due to the lack of an accusative Case in the chain of *whom*. But this explanation is frustrated by the following examples:

[16]Taro Kageyama has reported to me that there are some native English speakers who accept sentences in which *estimate* takes the so-called 'ECM' construction seen in (12d). As a matter of fact, Postal himself provides such sentences as (i b) and (ii b), in which *estimate* takes an ECM construction:

(i) a. *I estimate Bill's boat to be 36 feet long.
b. I estimate the length of Bill's boat to be 36 feet.

(ii) a. *I estimate that beam to weigh 47 tons.
b. I estimate the weight of that beam to be 47 tons. (Postal 1974:299)

Kageyama has also reported that *say*, *repute*, and *rumor* as well as *allege* seem never to take such a construction, as in (iii):

(iii) a. *They said John to be tall.
(cf., John was said to be tall.)
b. *John rumors Bill to be tall.
(cf., Bill is rumored to be tall.)
c. *They repute Joan to be a countess.
(cf., Joan is reputed to be a countess.) (Postal 1974:314)

Michael T. Wescoat (personal communication), however, has pointed out to me that even *allege* can take an ECM construction under highly limited circumstances. Wescoat judges that (iv) is well-formed:

(iv) In this suit, I am alleging a fraud to have taken place.

One should notice that the existence of such examples as the one above does not annul the statement in the text that the original trace positions of all *wh*-phrases in (10) and (11) are ones where no accusative Case is assigned; therefore, it does not spoil the discussions that follow. This is because, even if *allege* and *estimate* can sometimes take an ECM construction under some circumstances and, as a result, can Case-mark the subject of their complement clauses in such cases, we cannot explain the ill-formedness of (12c,d) without resorting to the Case filter, which precludes any non-Case-marked overt NP. Compare the following well-formed sentences with (12c,d):

(v) a. Who(m)$_i$ did they allege [t_i to be a pimp]
b. Who(m)$_i$ did he estimate [t_i to weigh 250 pounds]

The difference between (v) and (12c,d) is whether the subject of their complement clauses is an overt NP or the trace of a *wh*-phrase. The subject is properly assigned a θ-role within the complement clause. If we assume that the subject position of the complement clauses which *allege* and *estimate* in (12c,d) take is not a Case-marked position, the Case filter rules out (12c,d) as desired. Since the Case filter does not apply to covert NPs such as a trace or PRO (see section 3 of this paper), the Case filter does not rule out (v). To sum up, although there are several cases in which *allege* and *estimate* can take ECM constructions, *allege* and *estimate* occurring in the context of (12c,d) at least prevent the Case-marking of the NP that follows them. That is to say, such verbs as *allege* or *estimate* sometimes allow the NP that follows them to be Case-marked and sometimes do not. Wescoat has surmised that there might be a semantic condition on this phenomenon. I agree with him but leave the issue open here.

(13) a. Whom did you prefer very much t to win?

b. Whom did Bill believe sincerely t to be the best man?

c. Whom did they allege t to be a pimp?

d. Whom did he estimate t to weigh 250 pounds?

These sentences are as acceptable as those in (10). Things seem to be more complicated.

Furthermore, as is exemplified by (13), the fact that *whom*, which has overt accusative Case, originates from a position where Case is not available shows that the accusative Case of *whom* is realized by something somewhere other than the original position. Following the general assumption that accusative Case is assigned by V, we can only assume that Case realization is governed not by V, but by something else. Therefore, unless we hypothesize that Case assignment and Case realization are distinct, we cannot explain where the accusative Case of *whom* in (13) comes from.

Now let us explore this hypothesis further.

2.1 Wh-trace and Accusative Case Realization

As is well known, accusative Case is not available for NPs which are not adjacent to the Case assigner. Observing paradigms such as those in (14) and (15), Epstein (1987) assumes that *wh*-trace need not be Case-marked:

(14) a. *You would prefer very much John to win.

b. Who would you prefer very much t to win?

c. the man who you would prefer very much t to win

(15) a. *Bill believed sincerely John to be the best man.

b. Who did Bill believe sincerely t to be the best man?

c. the man who Bill believed sincerely t to be the best man

Indeed, the original trace of *who* in (14b,c) and (15b,c) is located in a position where accusative Case is not available, as (14a) and (15a) show.[17]

The examples in (16) and (17) manifest the same point:

(16) a. *They alleged John to be a pimp.

b. Who did they allege t to be a pimp?

c. the Parisian who they alleged t to be a pimp

(17) a. *John estimates your sister to weigh 250 pounds.

b. Whose sister did he estimate t to weigh 250 pounds?

c. the girl who he estimated t to weigh 250 pounds (Postal 1974:298–305)

[17] Masayuki Ohkado (personal communication) reported to me that there are some speakers who judge the following sentence to be better than (15a):

(i) ??Bill believed [$_{IP}$ John sincerely to be the best man]

If (15b,c) is derived from (i), Case would not be relevant to (15b,c); however, one should notice that the acceptability of (i) is less by far than that of (15b,c). Hence, under the assumption that (15b,c) is derived from (i), it is unclear how we explain the differences in grammaticality between them. Moreover, a theoretical problem arises if we admit that (i) has the same logical meaning as (15a) has. In (15), *sincerely* is intended to be an adverb modifying the matrix verb *believe*. This modification is fulfilled by the attachment of *sincerely* to some projection of *believe* at S-structure. On the other hand, *sincerely* in (i) is not attached to any projection of *believe* at S-structure. Since, in spite of this, *sincerely* modifies *believe* in (i), we must consider *sincerely* in (i) to be used 'parenthetically.' For example, *incidentally* in (ii) below is used parenthetically:

(ii) ?Fred was just talking to Mary, incidentally, who asked John for help.
(cf., *Fred was just talking to Mary incidentally who asked John for help.) (McCawley 1988:724)

In fact, Michael T. Wescoat, who judges (i) no more acceptable than (15a), reports in personal communication that (i) becomes more acceptable when *sincerely* is stressed or when it is accompanied by some intensifier such as *very*. This indicates that (i) cannot be acceptable unless *sincerely* is interpreted as a parenthetical adverb. Again, note that *sincerely* in (15) is not used parenthetically. From these observations, we therefore conclude that (15b,c) is not derived from (i).

Because of their lexical peculiarity, *allege* and *estimate* block the realization of accusative Case on the NP that follows them, thus the ill-formedness of (16a) and (17a).[18] But, given that *wh*-trace need not be Case-marked, we correctly predict that (16b,c) and (17b,c) are well-formed.

Now let us recall the examples in (13), which are repeated as (18) below:

(18) a. Whom would you prefer very much t to win?
b. Whom did Bill believe sincerely t to be the best man?
c. Whom did they allege t to be a pimp?
d. Whom did he estimate t to weigh 250 pounds?

(19) also manifests the same point as (18):

(19) a. the man whom you would prefer very much t win
b. the man whom Bill believed sincerely t to be the best man
c. the Parisian whom they alleged t to be a pimp
d. the girl whom he estimated t to weigh 250 pounds

Whom is, needless to say, the overt accusative counterpart of *who*. However, how is this accusative Case-marking accomplished? As long as we take only the original trace of *wh*-movement into consideration, we cannot advance any farther.

2.2 Parallelism between Agreement and Case Realization

Kayne (1989) proposes a mechanism which may provide a clue to the explanation of how the overt accusative Case of *whom* in (18) and (19) is assigned and realized. Compare the following French examples with (18) and (19):

(20) a. *Paul a repeintes les chaises.
'Paul has repainted the chairs'
(cf., Paul a repeint les chaises.)
b. Paul les$_i$ a repeintes t_i.
c. les chaises$_i$ que Paul a repeintes t_i (Kayne 1989:85)

As shown in (20), the past participle in French does not agree with the following NP; but, when the NP is moved by clitic placement or by *wh*-movement, it must agree with the NP.

Thus, we may conclude that in these examples there is a certain relation which does not hold between the verb and the following NP position, but there appears a certain relation which does hold between the verb and the NP when the NP is moved by Ā-movement. The only difference between the English examples and the French ones is that whereas the relation between the verb and the NP in English is in terms of Case, that in French is in terms of Agreement.

Assuming that the NP to be preposed is adjoined to AGRP, which is headed by AGR-O (Chomsky 1989), as illustrated in (21), Kayne explains why Agreement appears in (20b,c), but not in (20a):

(21) Paul les$_i$ a [$_{\text{AGRP}}$ t'_i [$_{\text{AGRP}}$ AGR-O$_i$ [$_{\text{VP}}$ repeintes t_i]]]

[18] In this paper, I assume, following Belletti and Rizzi (1988), that V is a structural Case assigner iff it has an external argument. Since *allege* and *estimate*, of course, have an external argument, they, in fact, have the capacity to assign accusative Case to the NP that follows, in spite of the lack of the capacity to realize Case. There is empirical evidence that such verbs as *allege* and *estimate* indeed assign accusative Case. Compare the following well-formed examples with (16a) and (17a) above:

(i) a. He alleged there to be gambling going on in the back room.
b. I estimate there to be two million people in that valley.
c. I estimate it to be raining about two inches per hour. (Postal 1974:298–304)

As (ii) below shows, expletives such as *there* or *it* can never appear in the position where no Case is assigned:

(ii) a. (*there) to be a man in that room was very important.
b. (*it) to rain hard yesterday was very important to them.

See subsection 2.3, where I discuss this issue extensively.

Agreement between the past participle and *les* in (21) takes place at the AGRP-adjunct position, i.e., t', but not in the object position, t.[19] Government of the intermediate trace t' by AGR-O guarantees this agreement.[20]

2.3 Accusative Case Realization by AGR-O

Following Chomsky (1989), let us assume here that AGR-O is present regardless of whether verbs are transitive and whether overt object Agreement manifests itself. This is the null hypothesis. Then it follows that English verbs always agree with their object arguments 'vacuously.' Furthermore, I hypothesize here that AGR-O is a functional category which plays a role in realizing the accusative Case assigned to an NP by V and that the realization of accusative Case is executed under government by AGR-O.[21]

Given the assumption above, we can straightforwardly explain how the accusative Case of *whom* in (18) and (19) is assigned and realized. After Kayne's (1989) spirit, we now postulate more articulate S-structures for (18), which are analogous to (21), as illustrated in (22):[22]

(22) a. Whom$_i$ would you [$_{\text{AGRP}}$ t'_i [$_{\text{AGRP}}$ AGR-O [$_{\text{VP}}$ prefer very much t_i to win]]]

b. Whom$_i$ did Bill [$_{\text{AGRP}}$ t'_i [$_{\text{AGRP}}$ AGR-O [$_{\text{VP}}$ believe sincerely t_i to be the best man]]]

c. Whom$_i$ did they [$_{\text{AGRP}}$ t'_i [$_{\text{AGRP}}$ AGR-O [$_{\text{VP}}$ allege t_i to be a pimp]]]

d. Whom$_i$ did he [$_{\text{AGRP}}$ t'_i [$_{\text{AGRP}}$ AGR-O [$_{\text{VP}}$ estimate t_i to weigh 250 pounds]]]

Contrary to the general assumption that adjacency is necessary for the assignment of Case, let us assume that the adjacency requirement is relevant to the realization of Case but not to the assignment of Case. It follows that the accusative Case of each *whom* in (22) is assigned by the verb in its original trace position under government by the verb. (Recall that V, which has an external argument, is able to assign accusative Case to the NP which it governs.) Furthermore, because the intermediate trace t' in (22) is governed by AGR-O (in the framework of Chomsky (1986a)), accusative Case is, as required, realized by AGR-O at the position of t'. According to Pollock's (1989) analysis, AGR-O possibly moves down to V in English after realizing the accusative Case at the position of the intermediate trace t'.[23]

Two questions, however, soon arise: *(a)* How can AGR-O realize the accusative Case of an object NP in ordinary constructions? *(b)* Given that AGR-O moves down to V forming a V-AGR-O amalgam, why is it the case that the amalgam including AGR-O in (16a) and (17a) cannot

[19] In (21), the intermediate trace t' first agrees with AGR-O, and then the past participle repeint moves up onto AGR-O forming an amalgam AGR-O-V. Consequently, the past participle agrees with t' by the intermediation of AGR-O, getting the inflectional suffix *-es*. Following Pollock's (1989) proposal, I assume that V is allowed to move up onto AGR-O in French because French AGR-O is 'transparent' for θ-assignment. In English, on the other hand, the 'opaque' characteristic of English AGR-O prevents V from moving up onto AGR-O. For the details, see Pollock (1989). However, a theory-internal problem may arise as to whether Agreement in (21) takes place between the intermediate trace and AGR-O, as sketched above, or between *les* itself and AGR-O on its way up the structure. It seems to me that Agreement between *les* itself and AGR-O on the way of *les* to move up is more plausible than Agreement between the intermediate trace of *les* and AGR-O, but I leave this issue open here.

[20] In the framework of Rizzi (1990), the intervening lower AGRP segment in (21) does, in fact, block the government relation between t' and AGR-O. For some refinement, see the discussion at the end of this section. Mahajan (1989) claims that Agreement is executed not by government but by Spec-head agreement. See section 4 for related discussion. If Mahajan's analysis is on the right track, we need to refine the analysis presented above along the line of Mahajan's work. However, I leave this matter open in this paper. See Ura (in preparation), where I will extensively discuss French and Italian past participle agreement. The purpose here is to explicate the mechanism of Case realization. Government is the only related notion here, because Case realization is crucially contingent on government.

[21] It is natural to assume that nominative Case is realized by AGR-S under government. See section 4 for supporting argumentation. As for genitive Case, this may be realized by D, a functional category, or by inserting a prepositional particle which is properly matched with the θ-role assigned to the genitive NP (Abney 1987, Chomsky 1986b). Note that government by AGR (or D) is not the only device for realizing Case. As has already been suggested, certain language-particular devices may be invoked if government by functional categories is not available. I will discuss some issues related to this point in section 3.

[22] Note that in (22), t', the intermediate trace of *whom*, is not located in the AGRP-Spec position, but adjoined to AGRP.

[23] Note that even if AGR-O moves down to V amalgamating with it before the NP that follows V moves up, the NP does not get any realized accusative Case. In fact, AGR-O can govern the following NP position from within the amalgam. (Recall the discussion in section 1.) However, even if AGR-O amalgamates with V in (22a,b), the NP is not yet adjacent to the amalgam; as a result, the realization of accusative Case is not materialized. If AGR-O amalgamates with V in (22c,d), the lexical peculiarity of *allege* and *estimate* hinders AGR-O from realizing the Case assigned to the following NP. See the discussion that immediately follows in the text.

realize accusative Case on the following NP? These questions will be resolved if we consider the lexical properties of individual verbs in terms of Case.

Suppose that most English verbs including *hit* or *consider*, unlike *allege* or *estimate*, have an unmarked property with respect to Case realization. AGR-O can realize accusative Case from within the amalgam of such a verb and AGR-O itself, as illustrated in (23a,b):[24]

(23) a. John [$_{\text{AGRP}}$ t_j [$_{\text{VP}}$ [$_{\text{V}}$ hit-AGR-O$_j$] Mary]]

b. They [$_{\text{AGRP}}$ t_j [$_{\text{VP}}$ [$_{\text{V}}$ considered-AGR-O$_j$] John to be a pimp]]

c. *They [$_{\text{AGRP}}$ t_j [$_{\text{VP}}$ [$_{\text{V}}$ alleged-AGR-O$_j$] John to be a pimp]]

d. *John [$_{\text{AGRP}}$ t_j [$_{\text{VP}}$ [$_{\text{V}}$ estimates-AGR-O$_j$] your sister to weigh 250 pounds]]

As has already been suggested, verbs such as *allege* or *estimate*, on the other hand, have a peculiar property with respect to Case realization. It is plausible that they are 'opaque' with respect to Case realization. Thus, when AGR-O combines with such verbs, AGR-O cannot any longer realize the accusative Case of the following argument from within the amalgam, as illustrated in (23c,d). (For a list of such peculiar verbs, see Postal (1974: chapter 9).)

Furthermore, it is not possible in every construction for AGR-O to realize the accusative Case of the argument that follows V from its original position, i.e., the position of t_j in (23), for AGR-O cannot govern the relevant argument from that position because of the minimality barrier induced by V. Because of this minimality barrier, AGR-O cannot realize the accusative Case of the argument that follows V from its original position both in English and in French unless some movement takes place.[25]

In French, V moves up onto AGR-O and, as a result, AGR-O, which is now merged with V, governs and, consequently, realizes the Case of the NP which follows the trace of V from its original position, thanks to the government transparency corollary (Baker 1988:63–68).

(24) ... [$_{\text{AGRP}}$ [AGR-O$_i$* AGR-O V$_i$] [$_{\text{VP}}$ t_i NP]] ...

The government transparency corollary guarantees that AGR-O$_i$* in (24), the amalgam of AGR-O and V$_i$, can govern the NP and, accordingly, realize the Case assigned by V to the NP that follows t_i.

In English, on the other hand, AGR-O does not govern the NP that follows V from its original position at S-structure because of the minimality barrier induced by V. As a result, it cannot realize the Case assigned to the NP by V unless it moves down to V, because in English V cannot move up onto AGR-O due to the 'opaque' characteristic of English AGR-O (Pollock 1989).

As for (14a) and (15a), they are ill-formed not because the accusative Case of *John* fails to be realized owing to the 'opaque' characteristic of *prefer* and *believe* with respect to Case realization,[26]

[24] I ignore the effect of Tense and AGR-S on verbs because of its irrelevancy to the discussion here. For relevant discussion, see section 4.

[25] Nishigauchi and Takahashi (1990), observing the following Japanese examples, postulate that the Case-marking property of V can be activated only if it merges with INFL (what we call AGR-O) at the time (accusative) Case-marking takes place. See (Miyagawa 1990) for another approach to this phenomenon.

(i) a. piza-o tabe-ta
pizza-*acc.* eat-*aspect*(INFL)
'ate a pizza'

b. *piza-o tabe-kata
pizza-*acc.* eat-way(N)
['how to eat a pizza']

c. piza-no tabe-kata
pizza-*gen.* eat-way(N)
'how to eat a pizza'

This postulation may be subsumed under the hypothesis presented. In our terms, AGR-O incorporates with V not because V requires AGR-O in order for V to execute accusative Case-marking, but because AGR-O cannot govern the object and, as a result, cannot realize the accusative Case assigned to the object unless it merges with V, as discussed in the text.

[26] On the contrary, it is obvious that *prefer* and *believe* are far from 'opaque.' As (i) shows, (14a) and (15a) become perfect if the adverbs between V and *John* are omitted:

(i) a. I would prefer John to win.

b. Bill believed John to be the best man.

but because the adjacency requirement on Case realization between *John* and AGR-O in the amalgam of V and AGR-O itself is not met in (14a) and (15a).

2.4 The ECP and Intermediate Traces of Ā-Movement

Thus far we have observed that we can explain where the overt accusative Case of *whom* in (18) and (19) comes from, if we assume that AGR-O realizes the Case assigned to an argument it governs and that *whom* lands at a position which AGR-O can govern on its way to a CP-Spec position. Notice that in (18) and (19), there is no A-position available for the movement of *whom* to a CP-Spec position. Therefore, the position where the accusative Case of *whom* is realized by AGR-O is an Ā-position, wherever its precise adjunct site may be.[27] On the other hand, Rizzi, in his recent study on the ECP (Rizzi 1990), proposes that a *wh*-phrase may move directly from the original position to a CP-Spec position in sentences such as (25):

(25) a. Who$_i$ would you prefer t_i to win?

b. Who$_i$ did they consider t_i to be a pimp?

In the rest of this section, I will address myself to confirming within Rizzi's (1990) framework that (18) and (19) indeed involve an intermediate trace in an Ā-position.

Rizzi (1990) reduces the ECP to the following formal licensing requirement: A non-pronominal empty category must be properly head-governed. As for the identification of empty categories, he proposes two methods of identification. Briefly, one is for empty categories which are assigned a θ-role; the other is for those which are not assigned any θ-role, namely, adjunct traces without θ-role and all intermediate traces. The former requires that an empty category be bound by its antecedent.[28] The latter requires that an empty category be antecedent-governed by the immediately preceding member of the chain to which it belongs. Rizzi's definition of antecedent-government is as follows:

(26) Antecedent-Government

X W-antecedent-governs Y ($W = \{\mathrm{A}, \mathrm{A}', \mathrm{X}^0\}$) iff

a. i. X is in a W-position
ii. X c-commands Y

b. X and Y are coindexed

c. i. no barrier intervenes
ii. relativized minimality is respected. (Rizzi 1990:25)

On the basis of these assumptions, Rizzi (1990) explains the following contrast, which was first noted by Ross (1983):

(27) a. Who$_i$ do you think [(t') [we can help t_i]]

b. Who$_i$ don't you think [(t') [we can help t_i]]

(28) a. Why do you think [t' [we can help him t]]

b. *Why don't you think [t' [we can help him t]]

Rizzi claims that in (27), t_i, the original trace of *who*$_i$, is properly bound by *who*$_i$, regardless of whether or not the intermediate trace t' is present. In fact, t' must not be present for the sake of economy of representation, as Rizzi (1990) claims. In (28a), the original trace t is antecedent-governed by the intermediate trace t', the intermediate trace t' is, in turn, antecedent-governed by *why*, and there is no intervening operator that blocks these government relations, thus its

[27] As is mentioned in footnote 20, the position where the accusative Case of *whom* is realized by AGR-O is not an AGRP-adjunct position. We will return to the question of where *whom* is actually adjoined during its movement to a CP-Spec position.

[28] Note that Rizzi (1990:24–27) proposes a definition of binding slightly different from the usual one: X binds Y iff *(i)* X c-commands Y, and *(ii)* X and Y have the same referential index. Moreover, he claims that a referential index must be licensed by a (referential) θ-role and that when an item with a referential index moves from its original position, it leaves a trace with the same referential index in the original position. For further arguments, see Rizzi (1990).

well-formedness. This time, the intermediate trace t' in (28) must be present in order to identify the original trace t, because the original trace t in (28) has no referential index and, as a result, must be identified by antecedent-government. In (28b), however, the government relation between the intermediate trace t' and *why* is blocked by the negative operator not in the framework of relativized minimality, resulting in the ill-formedness of the sentence.

Observing the so-called 'surprising subject/object asymmetry,' as in (29), which was first noted by Pesetsky (1984), Rizzi further claims that the inferior status of (29a) with respect to (29b) should be due to the obligatory presence of the intermediate trace t'.

(29) a. ?*Who$_i$ do you wonder [whether [we believe [t' C^0 [t_i can help us]]]]

b. ??Who$_i$ do you wonder [whether [we believe [(t') C^0 [we can help t_i]]]]

c. *How do you wonder [whether [we believe [t' [we [can help Bill] t]]]] (Rizzi 1990:95)

In (29a,b), the original trace t_i is properly bound by *who*$_i$. Thus, as far as the original trace t_i is concerned, both sentences are perfect with respect to the ECP. The intrinsic deviancy of these sentences is due to a violation of the Subjacency condition. Then, why is (29a) worse than (29b)? Note, further, that (29a) is better than (29c). In (29c), *how* is too far away to antecedent-govern its original trace t. But even if we take the intermediate trace t' into consideration, the sentence cannot be improved. In fact, the original trace t is antecedent-governed by the intermediate trace t', but *how* is still too far away to antecedent-govern the intermediate trace t' because of the intervention of *whether*, resulting in its ill-formedness.

One should notice that the intermediate trace t' must be present in (29a), but not in (29b). This is because the intermediate trace t' in (29a) must agree with the complementizer C^0 in order that C^0 may properly head-govern the original trace t_i.[29] But the intermediate trace t' is never identified, because it does not have a referential index and is not antecedent-governed by *who* because of the intervention of *whether*. On the other hand, C^0 in (29b) need not properly head-govern the original trace t_i, which is, instead, properly head-governed by *help*; consequently, there is no reason that the intermediate trace t' must be present in (29b). As far as the identification of empty categories is concerned, the chain connection is properly established only by the original trace t_i and *who*$_i$ both in (29a) and (29b). Then, the intermediate trace t' in (29a), which is obligatorily present, fails to be properly interpreted at LF. The only role it plays is to agree with C^0 in order that C^0 may properly head-govern the original trace t with respect to the ECP. Hence, in (29a), the obligatory presence of the intermediate trace t', which is not properly interpreted at LF worsens the sentence somewhat. The result is that (29a) is worse than (29b).

Bearing these points in mind, let us turn our attention to our argument on the realization of accusative Case, which is relevant to the present topic.

2.5 Evidence for Ā-Adjunction in the Movement of 'Whom'

First let us consider the examples that follow:

(30) a. Who$_i$ don't you think he would prefer (very much) t_i to win?

b. Who$_i$ don't you think Bill believed (sincerely) t_i to be the best man?

c. Who$_i$ don't you think they alleged t_i to be a pimp?

d. Who$_i$ don't you think he estimated t_i to weigh 250 pounds?

(31) a. Whom$_i$ don't you think he would prefer t_i to win?

b. Whom$_i$ don't you think Bill believed t_i to be the best man?

Provided that *who* need not have its Case realized, we may consider, adopting Rizzi's ECP, that *who* in (30) directly moves up to the topmost CP-Spec position without adjoining anywhere.[30] Furthermore, the accusative Case of *whom* in (31) can be realized at the original position, since

[29] Under Rizzi's framework, C^0 cannot properly head-govern any element unless it agrees with its Spec-position. For details, see Rizzi (1990: chapter 2).

[30] Whereas *whom* must have its accusative Case realized for its morphologically overt manifestation to materialize, *who* need not, because it does not manifest accusative declension. Note that here I take only accusative *who* into consideration. See section 3 for the related discussion, and also see Ura (1991) for a more succinct argument for this.

AGR-O, situated within the amalgam which it forms with V, governs the original position of *whom*, and t_i is adjacent to that position. Consequently, *whom* in (31) can directly move up to the topmost CP-Spec position. Therefore, we predict that no Ā-adjunction arises in these constructions, and as a result these sentences are well-formed because nothing prevents the original trace from being identified by the binding from *who* or *whom* in the topmost CP-Spec position.

Now compare (32) with (30). When *who* in (30) is altered into *whom*, the sentences become slightly worse, as in (32):

(32) a. ?Whom$_i$ don't you think he would t' prefer very much t_i to win?

b. ?Whom$_i$ don't you think Bill t' believed sincerely t_i to be the best man?

c. ?Whom$_i$ don't you think they t' alleged t_i to be a pimp?

d. ?Whom$_i$ don't you think he t' estimated t_i to weigh 250 pounds? [=(11)]

Given the analysis presented in subsection 2.3, we correctly predict that in (32) the intermediate trace t', which must be present in order for the accusative Case of *whom* to be realized by AGR-O, makes the sentences worse, just as the illegitimate intermediate trace in (29a) makes that sentence worse.[31] This is because the original trace t_i is identified by the direct binding from *whom*$_i$, and the intermediate trace t', which is not antecedent-governed by *whom* because of the intervention of the negative operator *not*, has no connection to the chain (*whom*, t) with respect to chain identification. The intermediate trace t' in (32) exists only in order to facilitate the realization of the accusative Case of *whom*. Therefore, the sentences in (32) are worse than those in (30), just as (29a) is worse than (29b) because of the illegitimate intermediate trace t'.

(33)-(35) show the same point as (30)-(32):

(33) a. ??Who$_i$ do you wonder [whether [he would prefer (very much) t_i to win]]

b. ??Who$_i$ do you wonder [whether [Bill believed (sincerely) t_i to be the best man]]

c. ??Who$_i$ do you wonder [whether [they alleged t_i to be a pimp]]

d. ??Who$_i$ do you wonder [whether [he estimated t_i to weigh 250 pounds]]

(34) a. ??Whom$_i$ do you wonder [whether [he would prefer t_i to win]]

b. ??Whom$_i$ do you wonder [whether [Bill believed t_i to be the best man]]

(35) a. ?*Whom$_i$ do you wonder [whether [he would t' prefer very much t_i to win]]

b. ?*Whom$_i$ do you wonder [whether [Bill t' believed sincerely t_i to be the best man]]

[31] Kayne (1983c) reports that there are some English speakers who accept the following examples:

(i) a. the man whom I believe [$_{CP}$ t [$_{IP}$ t has left]]

b. the man whom I think [$_{CP}$ t [$_{IP}$ t is quite intelligent]]

Kayne claims that the accusative Case of *whom* in (i) is assigned at the embedded CP-Spec position which is governed by the matrix verb, or more precisely, by AGR-O from within the amalgam of the matrix verb and AGR-O. Then, one might claim that even in (32) the accusative Case of *whom* comes from the embedded CP-Spec position, as in (i). But I notify the fact that the number of the speakers who accept such sentences as in (i) is far from large. Furthermore, those who do not accept the sentences in (i) do accept the sentences in (32) and (ii) below:

(ii) a. the man whom you think [$_{CP}$ (t*) [$_{IP}$ he would prefer very much [$_{CP}$ t [$_{IP}$ t to win]]]]

b. the man whom I think [$_{CP}$ (t*) [$_{IP}$ Bill believed sincerely [$_{IP}$ t to be the best man]]]

Probably, speakers who do not accept the sentences in (i) do not allow Case-marking taking place at the embedded CP-Spec position as in French ECM constructions. Under Rizzi's framework, it follows that t* in (ii) does not exist for these speakers. In (iv), Case-realization, of course, does not take place in the position of t in (ii), because the adjacency requirement is not met. Moreover, using only Kayne's Case assignment, we cannot explain where the accusative Case of *whom* in (iii) and (iv) come from, because in these sentences there is no CP-Spec position that is able to be Case-marked:

(iii) a. Whom would you prefer very much t to win?

b. Whom did you believe sincerely t to be the best man?

(iv) ??Whom do you wonder how to prefer very much t to win?

In (iv) the only CP-Spec position which is able to be Case-marked by *wonder* is filled by how. Note again that the intrinsic deviancy of (iv) is due to the Subjacency violation. Hence, we conclude that the Case assignment (or realization) at the embedded CP-Spec position does not take place in (32). In the next subsection, I will provide further arguments against Case-marking in the CP-Spec position.

c. ?*Whom$_i$ do you wonder [whether [they t' alleged t_i to be a pimp]]

d. ?*Whom$_i$ do you wonder [whether [he t' estimated t_i to weigh 250 pounds]]

The contrast in acceptability between (33) and (35) is explained in just the same way that the contrast between (29b) and (29a) was handled. The sentences are made worse by the intervention of the illegitimate intermediate trace t' which is not antecedent-governed by its antecedent. In the better sentences, the intermediate trace t' need not exist. Thus, they are perfect with respect to the identification of empty categories. Notice again that their intrinsic deviancy should be due to the Subjacency violation.

From these examples, we conclude that in sentences such as (18) or (19) the *wh*-phrase indeed goes through an Ā-position between the original trace and its last landing site. In contrast to this, we also conclude that there is no intermediate Ā-position involved with *wh*-movement in (14b,c), (15b,c), (16b,c), and (17b,c), because the accusative Case of *who* need not be realized.

Incidentally, the sentences involving *assure* show the same asymmetry as has been observed above, and this supports the hypothesis that accusative Case realization takes place at a position where the government by AGR-O is available.

(36) a. *I assure you John Smith to be the best student in the class.

b. John Smith, who I assure you t to be the best student in the class,...
(Kayne 1983b:xiii)

Suppose that *assure* governs *you* and *John Smith* in (36a) and, consequently, assigns accusative Case to both of them. *John Smith* in (36a) fails to have its accusative Case realized because of the intervention of *you*, resulting in the ill-formedness of the sentence. Recall that we assume that the adjacency requirement is relevant only to Case realization. Now, observe the following paradigm:

(37) a. Who do you think Mary assured me t to be the best student in the class?

b. ?Whom do you think Mary assured me t to be the best student in the class?

c. ??Who do you wonder whether Mary assured me t to be the best student in the class?

d. ?*Whom do you wonder whether Mary assured me t to be the best student in the class?

Given the assumptions made above, we can realize that the differences in acceptability between (37a) and (37b) and between (37c) and (37d) is determined by whether or not there exists an intermediate trace of *wh*-phrase, which is necessary for Case realization but illegitimate with respect to the identification of the chain. It is obvious from the above discussions that (37b,d) must involve such a trace, hence the ill-formedness of the sentences.

2.6 Restriction on the Position of Case Realization

Thus far we have observed that the Case realization of *whom* is established as long as one member of its chain is governed by AGR-O. But Taisuke Nishigauchi (personal communication) has pointed out to me that we need some way to assure that derivations such as that in (38) below are impossible:

(38) $wh_i \ldots [_{\text{AGRP}_1}\, t'_i\, [_{\text{AGRP}_1}\, [_{\text{VP1}} \ldots [_{\text{CP}}\, wh_j \ldots [_{\text{AGRP}_2}\, \text{AGR-O}_2\, [_{\text{VP2}}\, \text{believe sincerely}\, t_i \ldots]]]]]$

If adjunction to AGRP is necessary solely for the purpose of Case realization, there is prima facie no reason that wh_i should not adjoin to AGRP_1, skipping over AGRP_2, so that t' may realize its Case by AGR-O_1. If this were possible, there would be no offending trace in (38), and it would result in the perfect acceptability of (38) with respect to the ECP. Then, we lose the explanation presented in the previous subsection.

In fact, there would appear unacceptable examples such as those in (39) below, unless we preclude such Case realization as in (38).[32] [33]

(39) a. *Whom$_i$ do you [$_{\text{AGRP}}$ t'_i [$_{\text{VP}}$ think [$_{\text{CP}}$ [$_{\text{IP}}$ John was kissed t_i]]]]

b. *Whom$_i$ do you [$_{\text{AGRP}}$ t'_i [$_{\text{VP}}$ think [$_{\text{CP}}$ [$_{\text{IP}}$ John was killed t_i]]]]

In (39), *John* is intended to be the agent of *kiss* and *kill*. Then, (39a), for example, should be interpreted as having the same meaning as (40a) or (40b):

(40) a. Who$_i$ do you think [[t'_i was kissed t_i by John]]

b. Whom$_i$ do you think [[John kissed t_i]]

As Nishigauchi points out, we cannot rule out (39), either with the ECP or on Case-theoretic grounds, if government by AGR-O suffices for the realization of accusative Case.

Nishigauchi suggests one way to preclude (38) as follows: What really requires licensing with respect to Case is the original trace, and this can be done, say, by the antecedent-government by an intermediate trace adjoined to AGRP$_2$. This restriction requires that the *wh*-phrase first adjoin to the first AGRP which it might otherwise have skipped over. Given this, we get the desired result.

Here I propose another approach, though it is similar to Nishigauchi's. After all, what we want is something which guarantees that the accusative Case which is assigned by a V is realized by the AGR-O which immediately precedes the V that assigns the accusative Case. As we observed in section 1, AGR-O is supposed to merge with V at any time. In the long run, AGR-O and V which are contiguous to each other at D-structure are identified as the same element at LF. On the other hand, AGR-O and V which are generated in different clauses never merge with each other (see, for instance, AGR-O$_1$ and *believe* in (38)).[34] Suppose that there is a condition which requires that the assignment and the realization of Case be executed uniformly. This seems to me to be plausible in the theory of grammar. Thus, I propose the following condition:[35]

[32] As Kayne (1983c) reports, speakers who accept (i) might accept (40).

(i) a. the man whom I believe [$_{\text{CP}}$ t [$_{\text{IP}}$ t has left]]

b. the man whom I think [$_{\text{CP}}$ t [$_{\text{IP}}$ t is quite intelligent]]

I am sure, however, that even such speakers would never accept such sentences as in (ii) below:

(ii) *Whom do you think there arrived t at the station?
(cf., Who do you think t arrived at the station?)

According to the Unaccusative Hypothesis (Perlmutter 1978, Burzio 1986), the argument assigned θ-role by *arrive* is base-generated at the complement position of the verb. Then, if Kayne's (1983c) postulation that accusative Case-marking may take place at the embedded CP-Spec position were right, (ii) would be acceptable. In section 3, I will discuss the reason that (ii) is unacceptable focusing on the conditions on Case assignment and realization.

[33] One could find many unacceptable examples above and beyond (39) that involve a configuration like that in (38). They might include the examples in (i) below:

(i) a. *Whom$_i$ did you t'_i try to be kissed t_i

b. *Whom$_i$ did you t'_i think Mary was proud t_i

c. *Whom$_i$ did you t'_i think [[e was/were kissed t_i]]

d. *Whom$_i$ did there arrive t_i

These examples, however, are ruled out by conditions which we will observe in sections 3 and 4, such as the Case conditions, which restrict the distribution of Case, or the chain condition, or the subject stipulation, which requires that the IP-Spec position be filled with an argument. See relevant sections for each condition.

[34] Although the point is intuitively plain that a verb generated in an embedded clause never moves up to a higher clause beyond the boundary of CP even if the verb successively moves up through head-movement obeying the HMC, it is not easy to guarantee this effect. Y.-F. Li (1990a), extending A/$\bar{\text{A}}$ distinction to head position, succeeds in guaranteeing it rather convincingly. Here I adopt his proposal without any discussion. See Y.-F. Li (1990a) for further discussion.

[35] The reason that C in condition (41) is restricted to structural Case is as follows: Suppose that D is a realizer of genitive Case. Then consider the following examples:

(i) a. [$_{\text{DP}}$ D [$_{\text{NP}}$ destruction [$_{\text{DP}}$ the city]]] (D-structure)

b. [$_{\text{DP}}$ [$_{\text{DP}}$ the city]$_i$ [$_{\text{D}}$'s] [$_{\text{NP}}$ destruction t_i]]] (S-structure)

According to Chomsky (1986b), the N *destruction* assigns genitive Case, which is regarded as an inherent Case, to the DP the city at D-structure in conjunction with its θ-role assignment to the DP. But N has no ability to realize Case; accordingly, the DP the city moves up at S-structure to the DP-Spec position whose head selects the NP headed by destruction, as illustrated in (i b) (Abney 1987). D, the realizer of genitive Case, does not merge with

(41) THE UNIFORMITY CONDITION ON STRUCTURAL CASE ASSIGNMENT AND CASE REALIZATION

Let A be the assigner of structural Case C, and B the realizer of C. Then A and B must be identified as the same element at LF.

Given the Uniformity Condition on Case Assignment and Realization, we can preclude such derivations as in (38) and rule out such examples as in (39).

2.7 THE POSITION OF THE ADJUNCTION OF 'WHOM'

Before concluding this section, we need to clarify the position to which the intermediate trace of *whom* in (18) and (19) is attached: that position plays a role in providing the position where its accusative Case is realized. We have argued hitherto that in such sentences as (18) or (19) the accusative Case of *whom* is realized by AGR-O under government in an adjunct $\bar{A}$-position. We have presumed the structure in (22) after Kayne's (1989) analysis of Romance past participle agreement. (22) is repeated here for convenience as (42):

(42) a. Whom$_i$ would you [$_{\text{AGRP}}$ t'_i [$_{\text{AGRP}}$ AGR-O [$_{\text{VP}}$ prefer very much t_i to win]]]

b. Whom$_i$ did Bill [$_{\text{AGRP}}$ t'_i [$_{\text{AGRP}}$ AGR-O [$_{\text{VP}}$ believe sincerely t_i to be the best man]]]

c. Whom$_i$ did they [$_{\text{AGRP}}$ t'_i [$_{\text{AGRP}}$ AGR-O [$_{\text{VP}}$ allege t_i to be a pimp]]]

d. Whom$_i$ did he [$_{\text{AGRP}}$ t'_i [$_{\text{AGRP}}$ AGR-O [$_{\text{VP}}$ estimate t_i to weigh 250 pounds]]]

In the *Barriers* framework, the intermediate trace t' is indeed governed by AGR-O; however, in the relativized minimality framework, which is adopted in this paper, AGR-O cannot govern the intermediate trace t' in (42), as mentioned in footnote 20. We must clarify the precise position to which the intermediate trace is adjoined. In (42a,b), if AGR-O incorporates with *prefer* or *believe*, AGR-O still has the ability to realize the accusative Case of an argument it governs from within the amalgam V-AGR-O, because *prefer* and *believe* are not 'opaque.' However, as has been assumed above, *allege* and *estimate* are 'opaque,' so AGR-O cannot realize accusative Case if it moves down to and amalgamates with V. Besides, it is assumed that AGR-O selects VP as its complement (Chomsky 1989). Then, it follows that the position of the intermediate trace is an $\bar{A}$-position which AGR-O can govern from its original position. Therefore, the only position available is a VP adjunct position, as illustrated in (43).

(43) a. Whom would you [$_{\text{AGRP}}$ AGR-O [$_{\text{VP}}$ t' [$_{\text{VP}}$ prefer very much t to win]]]

b. Whom did Bill [$_{\text{AGRP}}$ AGR-O [$_{\text{VP}}$ t' [$_{\text{VP}}$ believe sincerely t to be telling the truth]]]

c. Whom did they [$_{\text{AGRP}}$ AGR-O [$_{\text{VP}}$ t' [$_{\text{VP}}$ allege t to be a pimp]]]

d. Whom did he [$_{\text{AGRP}}$ AGR-O [$_{\text{VP}}$ t' [$_{\text{VP}}$ estimate t to weigh 250 pounds]]]

The position of the intermediate trace in (43) is, of course, an $\bar{A}$-position. So the analysis presented above in this section is not at all invalidated by this change.

Up to this point I have been occupied with the task of defending the hypothesis that accusative Case is realized by the functional category, AGR-O. Having clarified the position where the accusative Case of *whom* in sentences such as (18) or (19) is realized, I believe we have obtained strong evidence for the hypothesis. Beginning with the next section, I will introduce and modify the Case theory, which has been recently undergoing various refinements in the work of such researchers as Belletti (1988) and Shlonsky (1987). I will provide further supporting evidence for the hypothesis presented in this section that accusative Case is realized by AGR-O. Certain issues left open up to this point will be discussed in the next section. However, before proceeding with that discussion, I offer a pair of appendices on issues related, though somewhat tangential to the topics discussed so far.

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destruction, the assigner of the genitive Case. Further, given that *of*-insertion is a 'last resort' operation to realize (inherent) genitive Case (Chomsky 1986b), of in (ii) below, the realizer of genitive Case of *the city*, does not merge with *destruction*, the assigner of the Case. Incidentally, following Stowell (1989), I assume that the inserted *of* does not head a PP projection but that it is adjoined to NP.

(ii) [$_{\text{DP}}$ [$_{\text{NP}}$ destruction [$_{\text{NP}}$ of the city]]]

Therefore, we need to exempt cases of inherent Case realization from the application of (41). Thanks to Koji Fujita for reminding me of this point.

APPENDIX 1: EVIDENCE FOR TOPICALIZATION AS NULL-OPERATOR MOVEMENT

Since Ross's (1967) significant observation, it has been well-known that sentences involving topicalization obey the same syntactic restrictions as *wh*-interrogative sentences with respect to locality. Abstracting from various restrictions which had been proposed, Chomsky (1977) advanced a general principle restricting the movement of *wh*-phrases. And he also argued that topicalization indeed involves null-operator movement (Cinque 1990). Chomsky's argument is heavily dependent on the observation that topicalization obeys the same principles as *wh*-interrogatives. By utilizing the conclusion of section 2 as a diagnostic, we can tell whether or not topicalization actually involves a null-operator movement.

(44) a. Him, Mary believed sincerely *e* to be the best man.
b. Him, they alleged *e* to be a pimp.

Needless to say, *him* is the overt accusative counterpart of *he*. Therefore, it follows from the discussion above that *him* must be assigned accusative Case and have its accusative Case realized. Then, if in (44) *him* itself moves up from the gap position *e* to the sentence-initial position, it must be adjoined to VP on its way to the initial position to have its accusative Case realized. As already observed in section 2, if this is the case, we predict that the sentences in (44) should become somewhat worse when they are embedded within island constructions. That prediction, however, fails, as (45) shows:

(45) a. Him, I don't think Mary believed sincerely to be the best man.
b. Him, I don't think they alleged to be a pimp.

(46) a. Him, I think Mary believed sincerely to be the best man.
b. Him, I don't think Mary believed to be the best man.
c. Him, I think they alleged to be a pimp.

The grammaticality of the sentences in (45) is no less than that of the sentences in (46). In addition, the fact that the acceptability of the sentences in (47) is again no less than that of the sentence in (48) shows the same point as above. The intrinsic deviancy of the examples below is due to a Subjacency violation.

(47) a. ??Him, I wonder whether Mary believed sincerely to be the best man.
b. ??Him, I wonder whether they alleged to be a pimp.

(48) ??Him, I wonder whether Mary believed to be the best man.

Moreover, one should notice that the grammaticality of the examples in (49) below is still no less than that of the sentences in (45) and (46):

(49) a. the man, who I don't think Mary believed sincerely to be the best man
b. the man, who I don't think they alleged to be a pimp

Compare (49) with the somewhat less acceptable examples in (50):

(50) a. ?the man, whom I don't think Mary believed sincerely to be the best man
b. ?the man, whom I don't think they alleged to be a pimp

From these observations, we conclude, as Chomsky (1977) assumed, that a topicalized element is not itself extracted from the gap position. It follows that topicalization indeed involves null operator movement. Since a null-operator, like accusative *who*, does not manifest any overt declension (this is so because it does not have a phonetic matrix), it need not have its Case realized. This means that a null-operator need not land at any position which AGR-O governs, even when its accusative Case is not realized at the original trace position. Therefore, (45) is perfectly acceptable, as is (49). On the other hand, as has been discussed in section 2, to have its accusative Case realized, *whom* must be adjoined to the position which AGR-O can govern when its original position is excluded from the realization of accusative Case by AGR-O. The lesser acceptability of (50) results from this.

Appendix 2: A Note on Adjacency and Case Assignment

Nakajima (1987) argues that adverbs such as *sincerely* or *forcefully* have no connection with the existing Case adjacency condition, which requires that a Case-assigner be strictly adjacent to its Case-assignee (Stowell 1981). What prevent Case assignment in terms of adjacency are, he claims, major categories which can be defined by the combination of the features [±V] and [±N]. Nakajima observes the following examples:

(51) a. John yelled forcefully the command.

b. Bill saw quickly the intention. (Nakajima 1987:186)

Since the object NPs in (51) cannot be moved elements by movement rules such as the Heavy NP Shift (Nakajima 1987:186ff.), we cannot persist in the existing Case adjacency condition which crucially refers to adverbs as well as to the other intervening elements between Case-assigner and Case-assignee. On the other hand, because a PP is headed by a major category P, he attributes the ill-formedness of (52a) to the violation of his new Case adjacency condition:

(52) a. *John sent to Mary his new book.

b. John sent his new book to Mary.

Given that intervening adverbs themselves never prevent Case-assignment, what makes (53a) ill-formed?

(53) a. *I believed sincerely the boys.

b. I sincerely believed the boys.

Keyser (1968) proposes a convention with respect to adverbs and their positions, which permits adverbs to move only to the sister positions of their original positions, but not to the mother or daughter positions. Adopting Keyser's proposal, Nakajima (1987:189) argues that (53a) is prohibited by that convention because *sincerely* is a V″ (=VP) adverb and, thus, it cannot occur between V and its direct object.

Here I do not intend to argue against Nakajima (1987), but it raises a serious problem for our discussion in section 2. We argued that *believe*'s Case-marking of *Bill* fails in (54a):

(54) a. *John believes sincerely Bill to be the best man.

b. John sincerely believes Bill to be the best man.

If the ill-formedness of (54a) is not due to a Case-related account, as Nakajima argues, we might abandon the discussion in section 2. In what follows, I will address myself to showing that the contrast in terms of grammaticality between (54a) and (55) below have some connection with Case.

(55) Who(m) do you believe sincerely t to be the best man?

If, as Nakajima (1987) claims, *sincerely* cannot occur in V′, we *must* postulate that the complement clause of *believe* is extraposed and attached to VP (what he calls V″), as illustrated in (56) below:

(56) Who(m)$_i$ do you [$_{VP}$ [$_{VP}$ [$_{VP}$ believe t_j] sincerely][$_{IP}$ t_i to be the best man]$_j$]

(In (56), t_j stands for the trace of the extraposed clause.) As will be closely discussed in section 3, the original traces of *wh*-phrase must be assigned Case, though it need not be realized at the original position. Given this, it is necessary that the original trace of *who(m)* in (55) is a position where Case is assigned. The position of t_i in (56), however, is not a position where Case is assigned by *believe*. This is so because if it were the case, *Bill* in (54a) could be assigned Case and, thus, (54a) would show well-formedness; for, we can postulate that the complement clause of *believe* in (54a) is also extraposed, which is illustrated in (57):

(57) *John [$_{VP}$ [$_{VP}$ [$_{VP}$ believes] sincerely][$_{IP}$ Bill to be the best man]]

In addition, there is another argument against the structure illustrated in (56). As Nakajima himself states, "adjunction of a phrase to VP generally makes the phrase into an adjunction island." Given this, any extraction from the extraposed clause in (56) would be prohibited; however, the well-formedness of (55) shows that the extraction of *who(m)* from the complement clause is possible.[36] Furthermore, the fact that the contrast in grammaticality between (58a) and (58b) shows the same contrast between (54a) and (55) suggests that the same account is in order for these contrasts.

(58) a. *John believes from bottom of his heart Bill to be the best man.

b. Who(m) do you believe from bottom of your heart *t* to be the best man?

According to Nakajima's Case adjacency condition, while the ill-formedness of (58a) is due to *Bill's* failure of being assigned Case by *believe* because of the intervention of the PP *from the bottom of his heart*, the ill-formedness of (54a) is not attributed to *Bill*'s lack of Case. Then, why are these sentences saved if *Bill* is replaced with *who(m)* and it is moved by Ā-movement? If we attribute the ill-formedness of (54a) and (58a) to different causes, we cannot exploit the same explanation for that reason.

On the other hand, if we attribute the ill-formedness of (54a) and (54b) to the same cause, i.e., *Bill*'s lack of Case, we can straightforwardly explain not only that reason but also the reason that (59a,b) below show the same mild deviance in grammaticality. This approach has been taken in section 2.

(59) a. ?Whom don't you think John believes sincerely *t* to be the best man?
(cf., Who don't you think John believes sincerely *t* to be the best man?)

b. ?Whom don't you think John believes from the bottom of his heart *t* to be the best man?
(cf., Who don't you think John believes from the bottom of his heart *t* to be the best man?)

We must conclude from these observations that we *cannot* postulate (56) as the real structure of (55). This, in turn, indicates that it is not the case that *sincerely* cannot occur in V′. We also conclude against Nakajima's proposal that *sincerely* at least in (54a) and (55), indeed, occurs in V′ and prevents *believe* from assigning Case to the subject of its complement clause.

3 The Conditions on Case Assignment and Case Realization

In section 2, we adopted the assumption that *who* need not have its Case realized. Owing to this, *who* in (60) below, for example, can directly move up to the CP-Spec position without having its accusative Case realized anywhere:[37]

(60) a. Who did John believe sincerely *t* to be the best man?
(cf., *John believed sincerely Bill to be the best man.)

b. Who did they allege *t* to be a pimp?
(cf., *They alleged John to be a pimp.)

The fact that the original trace of *wh*-movement need not be in a Case-realized position for *wh*-phrases is also true of *whom*. In (61), the original trace of *whom* is, indeed, assigned accusative Case, but the Case is not realized at the position of *t* in (61), as discussed in section 2.

(61) a. Whom did John *t′* believe sincerely *t* to be the best man?

b. Whom did they *t′* allege *t* to be a pimp?

[36] One might claim that even though the complement clause becomes an island, *who(m)* in (56) is able to be extracted without crossing the island boundary if it is moved before the complement clause is extracted. This view, however, conflicts with the standard view of the ECP, which is supposed to be applied to representations, but not to movements themselves. Given this, regardless of whether *who(m)* is adjoined to the extraposed IP on its way, t_i, the original trace of *who(m)*, violates the formal licensing requirement of the ECP, which requires that a pronominal empty trace be properly head-governed (Rizzi 1990:87). Thanks to Koji Fujita for calling my attention to this point.

[37] Note that, as discussed in section 2, the original trace position *t* in (60) is indeed assigned accusative Case by the verbs.

Since *whom* is the overt accusative counterpart of *who* and the accusative Case of *whom* must, therefore, be realized somehow, *whom* must land in some position which AGR-O can govern, in order to have its accusative Case realized by AGR-O on its way to the CP-Spec position when its accusative Case is not realized at the original trace position. Note that this crucially depends on the assumption that *who* can get default Case if Case-realization is not available for the chain of *who*.

It has been assumed in the literature that the realization of structural Case always coincides with its assignment and both operations are lumped together under the label of Case-marking. In fact, Epstein (1987), observing such examples as those in (60), hypothesizes that *wh*-trace need not be Case-marked. However, if we continue to follow the assumption that *wh*-trace need not be Case-marked, a troublesome dilemma soon results. (62) and (63) below make it obvious that we need some restriction on the original trace of *wh*-phrases with respect to Case-marking.[38]

(62) a. *Who does it seem t to have kissed Mary?
b. *Who was it believed t to have kissed Mary?
c. ?*Who does there seem to be t in the room?
d. ?*Who was there believed to be t in the room?

(63) a. *Who is it certain t to win?
b. *Who is it important t to solve the problem?

Unless we attribute the ill-formedness of the above examples to the original traces of *wh*-phrases, we can hardly explain why they are ill-formed.

The examples that follow also show the same point:

(64) a. *Who(m) was Mary proud t before?
b. Who(m) was Mary proud of t before?
c. *What was Mary familiar t before?
d. What was Mary familiar with t before?

Each trace in (64) is assigned a θ-role, as required. If *wh*-trace need not be Case-marked, then what makes (64a,c) ill-formed? As (64b,d) show, (64a,c) are saved if *wh*-trace occupies the position where Case is overtly realized.[39]

From these examples, it has been concluded in much of the literature that *wh*-trace must be in a Case-marked chain (Rouveret and Vergnaud 1980, Chomsky 1981, Borer 1984, Safir 1985). Should we follow this general assumption, or, rather, should we forsake the assumption that *wh*-trace need not be Case-marked?

If we continue to follow the latter assumption, we cannot explain the facts in (62)-(64). If we take the former, however, we lose the explanation in section 2 and cannot explain why such sentences as those in (60) are well-formed:

(65) a. Who did John believe sincerely t to be the best man?
b. Who did they allege t to be a pimp? [=(60)]

(66) a. *John believed sincerely Bill to be the best man.
b. *They alleged John to be a pimp.

As (66) shows, the original traces of *who* in (65) are not Case-marked. Moreover, as we have observed in section 2, there is evidence which shows under the relativized minimality framework that *who* in (65) directly moves up to the topmost CP-Spec position and does not land anywhere

[38] Here, I assume, following Stowell (1981), Shlonsky (1987) and many others, that existential *be* selects a small clause as its complement.

[39] Here I assume that prepositions which adjectives obligatorily take owing to their lexical peculiarities, e.g., of in (64b) or with in (64d), are inserted between the adjective and the NP to which the adjective assigns a θ-role in order to realize the inherent Case which is assigned to the NP by the adjective in conjunction with the θ-role assignment (Chomsky 1986b, Belletti and Rizzi 1988). Further, following Stowell (1989), I assume that such inserted prepositions do not head a PP projection but are adjoined to NP.

on the way. Hence, it follows that *wh*-trace in (65) is not in any Case-marked chain. Note that Case-marking includes both Case-assignment and Case-realization.

Shlonsky (1987), introducing new conditions on Case, partly solves this dilemma. As we will observe in the following subsection, his conditions on Case properly admit (65a) and rule out (62a,b) and (63), but erroneously admit (62c,d) and rule out (65b). Accepting Shlonsky's (1987) approach as fundamentally correct, in the second subsection below, I will show that the defect of his Case conditions lies in identifying Case assignment with Case realization, and then I will refine his Case conditions according to the hypothesis presented in section 2 that accusative Case assignment and realization are executed by V and by AGR-O, respectively.

In the third and subsequent subsections, I will concern myself with showing that the dilemma may be solved by the interaction between the Case theory, which has been overhauled in some recent papers such as Chomsky (1986b), Belletti (1988) or Shlonsky (1987), and the modified Case conditions.

3.1 The Conditions on Case

Shlonsky (1987), following Belletti's (1988) Case theory, proposes new conditions on Case, which differ from each other in the level of representation at which they apply, and argues that an adequate characterization of the distribution of Case requires both conditions. The conditions may be restated as follows:[40]

(67) a. The Case Filter (applied at S-structure)
Every overt NP in A-position must be assigned a Case.

b. Shlonsky's Condition (11) (applied at LF)
The head of an A-chain must be in a Case position (or be PRO).

With these conditions, Shlonsky succeeds in breaking some parts of the dilemma. Consider the following examples, which cause the dilemma in part:

(68) a. Who did John believe sincerely t to be the best man?

b. Who would you prefer very much t to win?

(69) a. *Who does it seem t to have kissed Mary?

b. *Who was it believed t to have kissed Mary?

First, let us observe how Shlonsky's Case Conditions rule in (68). The sentences in (68) are hard to explain if we follow the generally accepted assumption that *wh*-trace must be in a Case-marked chain. Note that regardless of whether it is an NP- or *wh*-trace, a trace vacuously satisfies the Case filter (67a) because it is not an overt NP. So (68) meets the Case filter at S-structure. Shlonsky claims that at LF, VP-internal adverbs move up to the adjunct position of the VP without leaving a trace to represent their scopal domain. Then the LF representation of (68) is as follows:

(70) a. Who$_i$ did John [$_{VP}$ sincerely [$_{V'}$ believe t_i to be the best man]]

b. Who$_i$ would you [$_{VP}$ very much [$_{V'}$ prefer t_i to win]]

In (70), the *wh*-trace, which forms a single-membered A-chain and thus heads that A-chain, is now adjacent to and governed by *believe*.[41] Thus (70) satisfies the condition (67b). Then it follows that (68) meets both Case conditions and is therefore well-formed.

Next, let us consider (69), which is hard to explain if we follow the assumption that *wh*-trace need not be Case-marked. In (69), although the traces occupy non-Case-marked positions, they vacuously satisfy the Case filter (67a) for the reason discussed above. Shlonsky (1987, 1989) proposes that expletive *it* must be replaced with the highest category that can replace it at LF. Then, the LF representation of (69) is as follows:

(71) a. Who$_i$ does [$_{IP}$ t_i to have kissed Mary]$_j$ seem t_j

[40] For expository purposes, I paraphrase Shlonsky's original proposals. I am sure that the validity of his conditions remains the same.

[41] As a matter of fact, in (70) *believe* and *prefer* move up to AGR-O position at LF (Pollock 1989, Chomsky 1989). Here I assume, following Shlonsky (1987:28), that the trace of a verb retains the Case assigning property of its antecedent (Torrego 1984, Stowell 1989).

b. Who$_i$ was [$_{IP}$ t_i to have kissed Mary]$_j$ believed t_j

Replacing *it*, the embedded clause t_i *to have kissed Mary* composes an A-chain that takes the form ([t_i *to have kissed Mary*]$_j$, t_j), as in (71). As far as this chain is concerned, (71) meets the condition (67b) because [t to have kissed Mary]$_j$, the head of the chain, occupies the IP-Spec position where nominative Case is assigned. However, the original trace of *who*$_i$ in (71), which is the head of the single-membered A-chain (t_i), fails to get Case, resulting in the violation of the Case condition (67b). It follows, then, that (69) is ill-formed.

Shlonsky's Case conditions also predict correctly that such sentences as those in (72) are ill-formed. Although Shlonsky (1987) does not discuss such sentences explicitly, following Shlonsky's proposal of *it* replacement, we can explain why (72) is ill-formed. In (72), t_i vacuously satisfies the Case filter in(67a) at S-structure. As (73) shows, however, t_i violates the Case condition (67b) at LF, just as in (71):

(72) a. *Who$_i$ is it certain t_i to win?

b. *Who$_i$ is it important t_i to solve the problem?

(73) a. Who$_i$ is [t_i to win]$_j$ certain t_j [LF representation of (72a)]

b. Who$_i$ is [t_i to solve the problem]$_j$ important t_j [LF representation of (72b)]

Thus far we have observed that Shlonsky's Case conditions (67) are superior to both the assumption that *wh*-trace need not be Case-marked and the assumption that *wh*-trace must be in a Case-marked chain. Yet Shlonsky's Case conditions (67) still fail to capture the facts in the following examples:

(74) a. Who did they allege t to be a pimp?

b. Who did John estimate t to weigh 250 pounds?

(75) a. ?*Who does there seem to be t in the room?

b. ?*Who was there believed to be t in the room?

First, let us consider (74). The S-structures and LF representations of (74) are as follows (see section 2):[42]

(76) a. Who$_i$ did [$_{IP}$ they [$_{AGRP}$ t_j [$_{VP}$ [$_V$ allege AGR-Oj] t_i to be a pimp]]] [S-structure of (74a)]

b. Who$_i$ did [$_{IP}$ John [$_{AGRP}$ t_j [$_{VP}$ [$_V$ estimate AGR-Oj] t_i to weigh 250 pounds]]] [S-structure of (74b)]

(77) a. Who$_i$ did [$_{IP}$ they [$_{AGRP}$ [$_V$ allege AGR-O]$_k$ [$_{VP}$ t_k t_i to be a pimp]]] [LF representation of (74a)]

b. Who$_i$ did [$_{IP}$ they [$_{AGRP}$ [$_V$ estimate AGR-O]$_k$ [$_{VP}$ t_k t_i to weigh 250 pounds]]] [LF representation of (74b)]

As discussed above, every trace satisfies the Case filter (67a). So (76) meets the filter. Shlonsky (1987), however, does not distinguish Case realization from Case assignment. Therefore, under Shlonsky's framework, we must assume that *allege* and *estimate* do not assign accusative Case to the following NP. Otherwise, an overt NP could occur in the position that immediately follows *allege* or *estimate*. Since it is very unlikely that the traces of *allege* and *estimate* come to assign accusative Case to the following NP at LF, we conclude that under Shlonsky's framework, t_k in (77), the trace of V, does not assign Case to t_i, the original trace of *who*$_i$. At LF, t_i forms a single-membered A-chain and thus heads that A-chain. Therefore, it follows that (77) violates condition (67b). Contrary to this, the sentences in (77) are, indeed, well-formed. Accordingly, Shlonsky's Case conditions, as they are, fail to rule in (74).

[42]In the sentences which involve *do*-support or subject-aux inversion, while Tense and AGR-S move up at S-structure together with *do* or auxiliaries, AGR-O does not move up with them. This is so because in English, AGR-O, unlike Tense and AGR-S, does not have an affixal feature. Instead, AGR-O moves down onto V at S-structure in order to realize the Case assigned by V to the NP that follows V. See section 2 for discussion. For the movement of other functional categories, see section 4.

Moreover, Shlonsky's mechanism of *there* replacement erroneously leads us to the prediction that (75) meets the Case conditions in (67). Shlonsky (1987) claims that expletive *there* must be replaced at LF with the following small clause when it appears with existential *be* as in (75). Thus the S-structures and the LF representations of (75) are as follows:

(78) a. Who$_i$ does there seem to be [$_{SC}$ t_i in the room] [S-structure of (75a)]

b. Who$_i$ was there believed to be [$_{SC}$ t_i in the room] [S-structure of (75b)]

(79) a. Who$_i$ does [$_{SC}$ t_i in the room]$_j$ seem to be t_j [LF representation of (75a)]

b. Who$_i$ was [$_{SC}$ t_i in the room]$_j$ believed to be t_j [LF representation of (75b)]

Again (78) meets the Case filter just as in the case of (76). Furthermore, one should notice that in (79), t_i, the head of the single-membered A-chain (t_i), does indeed occupy a Case-marked position. Safir (1983) presents the following examples which show that the position t_i in (79) is, in fact, Case-marked. If *workers* in (80) were not Case-marked, the sentences would be ill-formed because of a violation of the Case filter.

(80) a. [$_{SC}$ [$_{NP}$ workers] angry about the pay] is/*are just the sort of situation that the ad campaign was designed to avoid.

b. [$_{SC}$ [$_{NP}$ workers] angry about the pay] does indeed seem to be just the sort of situation that the ad campaign was designed to avoid. (Safir 1983:732)

As for the other chain ([$_{SC}$ t_i *in the room*]$_j$, t_j) in (79), the small clause [$_{SC}$ t_i *in the room*]$_j$, the head of the chain, indeed, occupies the IP-Spec position where nominative Case is assigned. Accordingly, (79) meets the condition (67b). This leads us to the erroneous conclusion that (75) is perfect with respect to Case theory.

On the contrary, as (81) exemplifies, the deviancy of (75) (= (78) and (79)) should be accounted for on Case theoretic grounds.[43]

(81) a. There seems to be a man in the room.
(cf., ?*Who does there seem to be in the room?) [=(75a)]

b. There was believed to be a man in the room.
(cf., ?*Who was there believed to be in the room?) [=(75b)]

Since Shlonsky's mechanism of *there* replacement is significant in the explanation of expletive-argument pairs, we may attribute the failure to explain the grammaticality of (74) and (75) to a defect of the Case conditions (67).

As has been suggested above, the defect of the Case conditions (67) seems to lie in the failure to distinguish Case realization from Case assignment. In the following subsection, I will modify the Case conditions (67) according to the hypothesis presented in section 2 that categories which have the ability to realize Case are not lexical categories, but rather functional categories.

3.2 Case Assignment and Case Realization

Shlonsky's (1987) original purpose in proposing the Case conditions (67) was to explain the Case-related properties of expletive-argument pairs. Following Belletti's (1988) idea that partitive Case, which is an inherent Case, is sufficient to satisfy the Case filter, Shlonsky explains the contrast between (82) and (83) below:

(82) a. There is a man in the room.

b. There arrived three trains.

(83) a. *There is the man in the room.

[43] One might claim, along with Safir (1985, 1987) that the deviancy of (75) is due to the definiteness effect. That is, *wh*-phrases such as *who* would not correspond to predicates which require that an indefinite NP follow them. Needless to say, existential *be* is typical of such predicates. As the grammatical examples that follow show, however, this objection is beside the point.

(i) a. Who is there t in the garden?

b. What was there t in the room?

b. *There arrived the train.

Partitive Case assignment requires that the NP to be assigned the Case be indefinite. This is because partitive Case crucially depends on θ-role assignment. While in (82) this requirement is met, in (83) it is not. Therefore, a contrast results between them.

Just as in (82), in (84) *three men* and *three trains* are assigned partitive Case in conjunction with θ-role assignment by *be* and *arrive*, respectively. Thus, (84) meets the Case filter at S-structure.

(84) a. There seemed to be three men in the room.

b. There seemed to arrive three trains.

In contrast, *seem* in (85) never assigns any θ-role to *three men* or *three trains*, and as a result they are never assigned inherent partitive Case. Further, seem is not an accusative Case assigner because it has no external θ-role (Belletti and Rizzi 1988). Then it follows that *three men* and *three trains* have no Case, resulting in a violation of the Case filter.

(85) a. *There seemed three men to be in the room.

b. *There seemed three trains to arrive.

Shlonsky (1987) further claims that the deviancy of (86) below is due to the violation of the adjacency requirement of Case assignment.

(86) a. *There arose quietly a terrible storm.

b. *There developed quickly an argument.

(87) a. There arose a terrible storm quietly.

b. There developed an argument quickly. (Shlonsky 1987:25)

However, if inherent Case is assigned in conjunction with θ-role assignment, as Belletti (1988) and Shlonsky (1987) claim, why is it that the NP to be assigned inherent Case must be adjacent to the predicate assigning that Case? It is very unlikely that θ-role assignment needs adjacency.[44]

Furthermore, if inherent Case is sufficient to satisfy the Case filter, what makes (88) and (89) ill-formed?

(88) a. *Mary was proud *her son.*

b. *Mary is familiar *linguistics.*

(89) a. *the arrival *three trains*

[44] Here I follow Shlonsky's (1987) judgment for (86) and (87). Contrary to this judgment, for some native speakers (86) is good and (87) bad. However, Shlonsky (1987:26 note 7) offers the following observations:

> Noam Chomsky (personal communication) notes that (86a,b) are not as bad as they ought to be given the analysis in the text. He also cites (i) which is at least as good as (ii):
>
> (i) there arrived yesterday a strange letter
>
> (ii) there arrived a strange letter yesterday
>
> It seems to me, however, that (i) as well as (86a,b) involve 'Heavy NP Shift' of the indefinite NP, accounting for their marginal, as opposed to ungrammatical status. It is a well known fact that indefinite NPs may undergo HNPS while definite, non-heavy ones may not (Chomsky 1986b, Stowell 1981). Thus, for example, while (iv) is a possible alternant for (iii), (vi) does not alternate with (v). (Thanks to H. Lasnik for discussing this point with me.)
>
> (iii) I gave a letter to him.
>
> (iv) I gave to him a letter.
>
> (v) I gave the letter to him.
>
> (vi) *I gave to him the letter.
>
> Given the option of HNPS in (86a,b), an adjacency violation is circumvented in (86a), for instance, by assigning the postverbal NP *a terrible storm* Case in a structure such as (87) and then moving the Case marked NP to the right. Thus, the marginal as opposed to ungrammatical status of (86a,b) is not a genuine problem for the analysis in the text. A question which remains mysterious is why (86a) is still marginal to ungrammatical, in comparison with the fully acceptable (86). In other words, why the escape route offered by HNPS is not entirely acceptable in the former.

b. *the development *an argument*

In (88), the emphasized NPs are properly assigned a θ-role. Although adjectives are not accusative Case assigners, it is possible to consider that they can assign inherent Case to the NP to which they assign a θ-role, because inherent Case is assigned in conjunction with θ-role assignment (Chomsky 1986b). Moreover, (89) is ill-formed despite the fact that it can be assumed that the emphasized NPs in (89) are properly assigned partitive Case, just as in (87).

Chomsky (1986b) states that inherent Case is realized at S-structure according to the characteristic of each inherent Case assigner. (90) and (91) below illustrate the properly realized counterpart of inherent Case of the emphasized NPs in (88) and (89).

(90) a. Mary was proud of her son before.

b. Mary is familiar with linguistics.

(91) a. the arrival of three trains

b. the development of an argument

These observations make it obvious that we need to modify the Case filter (67a) to take into account the distinction between Case realization and Case assignment. In conjunction with this modification of the Case filter, we need to modify the Case condition in (67b) as follows:

(92) THE MODIFIED CASE CONDITIONS

a. THE CASE FILTER (CF, APPLIED AT S-STRUCTURE)
Every overt NP in A-position must have a realized Case.

b. THE CASE CONDITION ON A-CHAINS (APPLIED AT LF)
The head of an A-chain must be in a position where structural Case is assigned (or be PRO).

We may regard (92b) as a new visibility condition, in accord with recent Case theory, which has been developed in Belletti (1988) and Shlonsky (1987) and is being developed in this paper. The visibility condition has been stated in the following manner:

(93) For a chain to receive a θ-role, it must be either Case-marked or headed by PRO.
(Aoun 1985:76)

(94) THE (NEW) VISIBILITY CONDITION (VC, APPLIED AT LF)

The head of an A-chain must be in a position where structural Case is assigned (or be PRO). [=(92b)]

Before entering into the analyses with the modified Case conditions (92), I must clarify the reason that 'structural' in (92b) is added to the former definition (67b). Under Belletti and Shlonsky's Case theory, it is necessary that we discern what kind of Case is responsible for the visibility condition. Consider the following paradigm:

(95) a. There arrived three trains.

b. There developed an argument.

(96) a. three trains$_i$ arrived t_i

b. an argument$_i$ developed t_i

(96) represents the LF constructions of (95) after *there* replacement. According to Belletti and Shlonsky, in (95) the indefinite NPs are assigned inherent Case. Then, t_i, the trace of the preposed indefinite NPs, does indeed occupy a Case-marked position at LF. Besides, each indefinite NP itself occupies the IP-Spec position where Case is assigned at LF, as illustrated in (96). It follows that each A-chain in (96) has two Cases. This results in the violation of the Chain condition proposed by Chomsky (1986b).

(97) THE CHAIN CONDITION

If $C = (\alpha_1, \ldots, \alpha_n)$ is a maximal CHAIN, then α_n occupies its unique θ-position and α_1 its unique Case-marked position. (Chomsky 1986b:137)

This is an undesirable result. If we preserve the chain condition (97), we must assume that the Case which is actually relevant for the (New) visibility condition (92b) (i.e., the Case condition on A-chains (92b)) is not inherent Case, but structural Case, and that inherent Case, but not structural Case, is exempted from the Chain condition (97).

In the remainder of section 3, I address myself to the task of demonstrating the validity of the modified Case conditions proposed above in (92), analyzing examples currently left unexplained and presenting new examples that illustrate the advantages of the modified Case conditions.

3.3 Expletives and 'Wh'-Movements

First, let us consider the examples Shlonsky's Case conditions failed to explain.

(98) a. ?*Who does there seem to be t in the room?

b. ?*Who was there believed to be t in the room? [=(75)]

(99) a. Who$_i$ does $[_{SC}\, t_i$ in the room$]_j$ seem to be t_j
[=(79a), LF representation of (75a)=(98a)]

b. who$_i$ was $[_{SC}\, t_i$ in the room$]_j$ believed to be t_j
[=(79b), LF representation of (75b)=(98b)]

Again (98) meets the Case filter of (92a), and the chain $([_{SC}\, t_i$ *in the room*$]_j, t_j)$ in (99) meets the visibility condition of (92b) because its head occupies the position where nominative Case, a structural Case, is assigned.

However, the head of the single-membered A-chain (t_i) in (99) does not occupy a position where structural Case is available. In the foregoing discussion, I claimed that the position which t_i occupies in (99) is indeed a Case-marked position, quoting Safir's (1983) examples:

(100) a. $[_{SC}\, [_{NP}$ workers] angry about the pay] is/*are just the sort of situation that the ad campaign was designed to avoid.

b. $[_{SC}\, [_{NP}$ workers] angry about the pay] does indeed seem to be just the sort of situation that the ad campaign was designed to avoid. [=(80)]

Note that the NP *workers* in (100) is not assigned nominative Case. We can see this from the fact that in (100) *workers* does not agree with the matrix verb or auxiliary in number. It might be the case that *workers* in (100) is assigned inherent Case by *angry*.[45] At any rate, t_i in (99) is not assigned structural Case at LF, violating the VC, whence the ill-formedness of (98).

The failure of Shlonsky's Case conditions to explain (98) lies in the failure to introduce the distinction between structural Case and inherent Case into the conditions.

Next, let us consider a simple but theoretically complicated contrast. Consider the examples in (101) and (102) below:

(101) a. Who is there t in the room?

b. How many animals are there in the zoo?

(102) a. i. How many trains did there arrive t at the station?

ii. *How many trains arrived there t at the station?
(cf., How many trains arrived at the station?)

b. i. *What storm did there arise t last night?

ii. *What storm arose there t last night?
(cf., What storm arose last night?)

[45] This point is, though, arguable. There is an alternative to derive the Case of *workers* in (100). Note that the small clause in (100) occupies the IP-Spec position where nominative Case is assigned. Stowell (1989) argues that the Case which is assigned to a maximal projection may transmit to the Spec position of the maximal projection when the Case is not realized on the head of the maximal projection. Given that the small clause in (100) is the maximal projection of *angry*, an adjective, it follows that the nominative Case which is assigned to the small clause may transmit to *workers*. According to Stowell (1989), the Case transmitted to the Spec position is realized on that position. In fact, suggesting that adjectives carry a morphological AGR element that agrees in person, number, and gender with the nouns of which the adjective is predicated, Zubizarreta (1987) notes that the subject of an adjectival small clause may agree with the adjective. Given that *workers* in (100) is assigned a Case somehow, the Case assigned to *workers* can be realized by AGR which *angry* morphologically bears.

All sentences in (101) and (102) meet the CF (92a). The deviancy of (102a ii,b ii) is due to the illegitimate head-movement of *arrive* and *arise* at S-structure. According to Pollock (1989) and Chomsky (1989), in English, V cannot move up because of the 'opaque' character of English AGR-O. If V moves up beyond AGR-O, there results a violation of the HMC, which, one may recall, is reducible to the ECP. To avoid this, *do*-support takes place in English as a 'last resort' (Chomsky 1989). In (102a ii,b ii), V moves up in lieu of *do*-support, resulting in the ill-formedness of the sentences.

Pollock (1989) states that even in English, modals, aspectual *be* and *have*, and passive *be* are not θ-role assigners and that as a result, they can move up at S-structure. Further, contrary to the general assumption that existential *be* assigns a θ-role to the following small clause (Rothstein 1987), Pollock claims that even existential *be* does not assign any θ-role and, consequently, that it can freely move up through AGR-O. It follows, then, that existential *be* can move up and precede *there*, as in (101). Hence, we predict that *be* can skip over VP-initial adverbs but that other unaccusative verbs such as *arrive* or *arise*, which assign a θ-role to the following NP, cannot. As (103) below shows, that is the case:

(103) a. There is$_i$ often t_i a terrible storm here.

b. *There exist$_i$ always t_i three men in the room.

c. *There arrived$_i$ soon t_i three trains at the station.

But if we follow Pollock's assumption, we must abandon the assumption that existential *be* assigns partitive Case to the following NP in conjunction with θ-role assignment. Shlonsky (1987), following Lasnik's (1989) analysis, assumes that existential *be* can be either a structural Case assigner or an inherent Case assigner. If Lasnik's analysis is true, we are never impeded by the abandonment of the former assumption. Because the trace of V retains the Case assigning property of its antecedent, *a terrible storm* in (103a), for example, can be assigned structural (accusative) Case by t_i, the trace of *is*, and it has the accusative Case realized by AGR-O from within the amalgam of *is* and the AGR-O under government thanks to the government transparency corollary. On the other hand, *three men* and *three trains* in (103b,c) do not get partitive Case from *exist* and *arrive*, respectively, because *exist* and *arrive* in (103b,c) occupy AGR-O position which precludes their assigning a θ-role to *three men* and *three trains* owing to the 'opaque' character of English AGR-O with respect to θ-role assignment. This preclusion of θ-role assignment also prevents them from assigning partitive Case to the following indefinite NPs, because partitive Case assignment is executed together with θ-role assignment. Then a violation of the CF results, whence the ill-formedness of (103b,c).

On the other hand, we should attribute the deviancy of (102a,b) to the violation of the modified Case conditions (92), because in (102a,b) *do*-support is properly selected. Then let us examine the LF representations of (101) and (102). (104) and (105) represent the LF constructions of (101) and (102), respectively:

(104) a. who$_i$ is$_j$ [$_{SC}$ t_i in the room]$_k$ t_j t_k

b. how many animals$_i$ are$_j$ [$_{SC}$ t_i in the zoo]$_k$ t_j t_k

(105) a. how many trains$_i$ did e arrive t_i at the station

b. what storm$_i$ did e arise t_i last night

In (105), e represents the position where *there* was present at S-structure.

Before examining (105), compare (104) with the illegitimate LF representation in (99), which is repeated below:

(106) a. who$_i$ does [$_{SC}$ t_i in the room]$_j$ seem to be t_j
[=(79a)=(99a), LF representation of (75a)=(98a)]

b. who$_i$ was [$_{SC}$ t_i in the room]$_j$ believed to be t_j
[=(79a)=(99b), LF representation of (75b)=(98b)]

As discussed above, t_i in (106) is never assigned structural Case, violating the VC, whence the deviancy of the structure. The more articulated LF representations of (104) and (106) are as follows:

(107) a. who$_i$ [$_V$ is AGR-O Tense AGR-S]$_j$ [$_{SC}$ t_i in the room]$_k$ t_j t_k [=(104a)]

b. how many animals$_i$ [V are AGR-O Tense AGR-S]$_j$ [$_{SC}$ t_i in the zoo]$_k$ t_j t_k [=(104b)]

(108) a. who$_i$ [does Tense AGR-S] [$_{SC}$ t_i in the room]$_j$ [$_V$ seem AGR-O]$_k$ t_k to be t_j [=(79a)=(99a)=(106a)]

b. who$_i$ [was Tense AGR-S] [$_{SC}$ t_i in the room]$_j$ [$_V$ believed AGR-O]$_k$ t_k to be t_j [=(79b)=(99b)=(106b)]

One should notice that even if *does* and the passive auxiliary *was* in (108) govern t_i, they lack the ability to assign structural Case in themselves.[46] *Does* is an element which was inserted at S-structure as a supporter of the affixal features of AGR-S and Tense, and *was* is a past form of passive *be*, which cannot be a structural Case assigner. Therefore, t_i in (108) is not assigned structural Case. On the other hand, t_i in (107) does indeed occupy a position where structural Case is available. Being existential *be*, *is*, and *are* in (107) can assign structural Case to the NPs they govern. It is plausible to consider small clauses to be 'transparent' for government, as has already been suggested. Therefore, t_i in (107) is assigned structural Case by the governing existential *be*.[47] In addition, the small clauses in (107), which head the A-chain composed of the small clause itself and its trace at LF, are assigned structural (nominative) Case by Tense under government from within the amalgam of V, AGR-O, Tense, and AGR-S.[48] The contrast between (109) and (110) results as a consequence:

(109) a. ?*Who does there seem to be in the room?

b. ?*Who was there believed to be in the room? [=(75)=(98), cf., (108)]

(110) a. Who is there in the room? [=(101a), cf., (107a)]

b. How many animals are there in the zoo? [=(101b), cf., (107b)]

Now let us return to the topic of (102), which Shlonsky's Case conditions failed to explain, and its LF representation (105). These are repeated below:

(111) a. *How many trains did there arrive t at the station?

b. *What storm did there arise t last night? [=(102)]

(112) a. how many trains$_i$ did e arrive t_i at the station [=(105), LF representation of (111a)]

b. what storm$_i$ did e arise t_i last night [=(105), LF representation of (111b)]

Again (111) meets the CF, so we must consider their LF representations in (112) to explain their ill-formedness. Shlonsky (1987:32), states that if expletive *there* fails to be replaced with some NP at LF, the sentence is ill-formed because of the expletive replacement hypothesis. Thus, t_i in (112) is forced to move to the position e, where expletive *there* was present at S-structure. If this movement were allowed, the derived constructions would be as follows:

(113) a. how many trains$_i$ did $\underline{t_i}$ arrive t_i at the station

b. what storm$_i$ did t_i arise $\underline{t_i}$ last night [=(107)]

[46] Note that the small clause selected by existential *be* such as in (108), though assigned no θ-role by *be* under Pollock's (1989) assumption, is transparent for government. Otherwise, *a man* in (i) below would fail to get a structural Case from *be*:

(i) There is [$_{SC}$ a man in the room]

[47] One might claim that t_i in (107) is doubly assigned structural Case at S-structure and at LF and thus violates the chain condition. Note, however, that the chain condition merely forbids the assignment of more than one structural Case at LF. This is because chains are composed at LF in the long run. Take (i) below for example. In (i), the chain $(Mary_i, t_i)$ is assigned two structural Cases, i.e., nominative Case and accusative Case, at LF, violating the chain condition.

(i) *Mary$_i$ is certain to perjure t_i.

In (107), on the other hand, the trace t_i forms a single-membered chain still at LF. Consequently, the chain is assigned only one structural Case at LF, and as a result, (107) meets the chain condition.

[48] In section 4, we will return with more emphasis to the issues of nominative Case assignment and realization.

The underlined trace $\underline{t_i}$ in (113) is an alleged trace to be left by the replacement of *there* with the trace t_i at LF. In (113), t_i, the head of the chain $(t_i, \underline{t_i})$, occupies a position where nominative Case is assigned. Then we fail to explain the ungrammaticality of (111) in terms of the Case conditions (92). This is an undesirable result. We need to find a way to account somehow for the ungrammaticality of (111). The point here is whether or not a trace which is made in the derivation from D-structure to S-structure is allowed to move somewhere in the derivation from S-structure to LF. If a trace is not allowed to move anywhere leaving a new trace, (113) cannot be derived from (112). In fact, there is empirical evidence which shows that a trace is not allowed to move:

(114) a. *Who was there kissed t by John?
(cf., Who was kissed t by John?)
b. *What was there given t to Mary?
(cf., What was given t to Mary?) [=(108)]

If the traces were allowed to replace *there* in (114), the resultant LF representations of (114) would meet the VC, just as in (113).

Hence, here I propose the following stipulation:

(115) Move-α never affects a trace.

Given this, (113) is no longer the LF representation of (111). Then, in (112) there is no NP to replace there at LF. Expletives which do not have their proper associates make sentences ill-formed. This results in the ill-formedness of (111).

One might raise an objection against (115), pointing out the following examples:

(116) a. There seems to be someone in the room. [S-structure]
b. [$_{\text{IP}}$ someone$_i$ [$_{\text{IP}}$ e seems to be t_i in the room]] [LF]

(117) a. Who$_i$ is there t_i in the garden? [S-structure]
b. who$_i$ is e t_i in the room [LF]

The structure in (116b) and (117b) are purported LF representations of (116a) and (117a), respectively. Then, in (116b) and (117b), non-replaced there, i.e., e, would make the sentences ill-formed, just as in (112). On the contrary, the sentences are, indeed, perfect.

As for (117), as has been discussed, when expletive *there* appears with existential *be*, it is replaced with the following small clause which existential *be* selects. The precise LF representation of (117a) is as in (118). We have already observed above why the construction in (118) is legitimate.

(118) who$_i$ is$_j$ [$_{\text{SC}}$ t_i in the room]$_k$ t_j t_k

As for (116), there is evidence which shows that (116b) is not the LF representation of (116a):

(119) a. There seems to his$_i$ friend to be someone$_i$ in the room.
b. [$_{\text{IP}}$ someone$_i$ [$_{\text{IP}}$ e seems to his$_i$ friends to be t_i in the room]]
c. [$_{\text{IP}}$ someone$_i$ [$_{\text{IP}}$ t'_i seems to his$_i$ friends to be t_i in the room]]

If *someone* were raised directly to the IP-adjunct position of the matrix clause by QR as illustrated in (119b), (119a) would show the weak-crossover violation. As (120) shows, a sentence is ill-formed when a quantifier coindexed with a non-c-commanding NP is moved over the coindexed NP by $\bar{\text{A}}$-movement. This is called a WEAK-CROSSOVER violation.

(120) a. *His$_i$ mother loves everyone$_i$
b. *Who$_i$ does his$_i$ mother love t_i

But (119a) is perfectly grammatical. Instead, suppose that someone first replaces *there* and then is raised to the IP-adjunct position by QR, as illustrated in (119c). It follows that the first step is an A-movement and that the next is an $\bar{\text{A}}$-movement. With this we can explain why (119a) does not show any weak-crossover violation. The following sentences support this claim:

(121) a. John$_i$ seems to his$_i$ friends to be t_i intelligent.

b. Who$_i$ seems to his$_i$ friends to be t_i intelligent?

(121) shows that movements to the subject position of *seem* do not invoke any 'weak-crossover' effect. Therefore, we conclude that the LF representation of (119a) is not (119b) but (119c). This leads us to conclude that the LF representation of (116a) is illustrated as in (122) below:

(122) [$_{IP}$ someone$_i$ [$_{IP}$ t'_i seems to be t_i in the room]]

In (122), *there* is replaced by *someone*, as required, and t'_i, the head of the A-chain (t'_i, t_i), occupies the position where nominative Case is assigned, satisfying the VC. Thus, (116a) meets both the modified Case conditions (92) and the expletive replacement requirement, whence its well-formedness.[49] [50]

3.4 Further Advantages of the Case Conditions

Here let us examine (74) above in conjunction with the modified Case conditions (92). (74) is a residual example which Shlonsky's Case conditions failed to explain.

(123) a. Who did they allege t to be a pimp?

b. Who did John estimate t to weigh 250 pounds? [=(74)]

The constructions of (123) at S-structure and at LF are repeated in (124) and (125), respectively:

(124) a. Who$_i$ did [$_{IP}$ they [$_{AGRP}$ t_j[$_{VP}$ [$_V$ allege AGR-O$_j$] t_i to be a pimp]]]
[S-structure of (74a)=(123a)]

b. Who$_i$ did [$_{IP}$ John [$_{AGRP}$ t_j[$_{VP}$ [$_V$ estimate AGR-O$_j$] t_i to weigh 250 pounds]]]
[S-structure of (74b)=(123b)]

(125) a. Who$_i$ did [$_{IP}$ they [$_{AGRP}$ [$_V$ allege AGR-O]$_k$ [$_{VP}$ t_k t_i to be a pimp]]]
[LF representation of (74a)=(123a)]

b. Who$_i$ did [$_{IP}$ they [$_{AGRP}$ [$_V$ estimate AGR-O]$_k$ [$_{VP}$ t_k t_i to weigh 250 pounds]]]
[LF representation of (74b)=(123b)]

Regardless of whether or not *allege* and *estimate* assign accusative Case, all overt NPs in (124) have a realized Case; accordingly, (123) meets the CF. Recall that we assume, following Belletti and Rizzi (1988:332), that V is a structural Case assigner iff it has an external argument. We have, moreover, assumed that because of their lexical peculiarity *allege* and *estimate* preclude AGR-O from realizing a structural Case assigned to the NP that follows such verbs. Given this, it follows that t_i in (124) and (125), the head of an A-chain, is indeed assigned structural (accusative) Case by *allege* and *estimate*, though it is not realized. The VC (92b) requires that the head of an A-chain be assigned a structural Case, but not a realized Case. Thus, (125) meets the VC, too, whence the well-formedness of (123). Now we get the desired explanation for (123), which the former Case conditions failed to capture.

Furthermore, there is another example which shows the superiority of the hypothesis that Case realization is executed differently from Case assignment. As observed in section 2, the behavior of such peculiar verbs as *allege* and *estimate* with respect to Case is very similar to that of structures where a verb selecting an infinitival clause is separated from its argument by an intervening adverb.

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[49] Note that in (116a) *someone* is assigned partitive Case by existential *be* and that as a result, (116a) meets the CF.

[50] Koji Fujita (personal communication) has pointed out to me that the construction (119c), the LF representation for (119a), indeed represents the wide scopal domain of *someone*, but it is not sufficient to represent the narrow scopal domain of *someone*. To represent the narrow scope of *someone*, the LF construction should be as follows:

(i) [$_{IP}$ e seems to his friends [$_{IP}$ someone [$_{IP}$ to be t in the room]]]

To maintain the expletive replacement hypothesis, we must stipulate that in (ii) *someone* first moves up to e, the matrix IP-Spec position, replacing *there* and then moves down to the adjunct position of the lower IP. In addition, if we employ only the assumptions in the text, we need a special device to explain the ungrammaticality of such sentences as follows:

(ii) a. *There seems to be likely to be someone here.

b. *There seems to be likely to be a cat on the roof. (Davis 1984)

I leave the solution of these problems to future research.

(126) a. *They alleged John to be a pimp.
b. *He estimated his sister to weigh 250 pounds.
c. *He would prefer very much John to win.
d. *Bill believed sincerely John to be the best man.

(127) a. Who(m) did they allege t to be a pimp?
b. Who(m) did he estimate t to weigh 250 pounds?
c. Who(m) did you prefer very much t to win?
d. Who(m) did Bill believe sincerely t to be the best man?

(128) a. Who/?Whom don't you think they alleged t to be a pimp?
b. Who/?Whom don't you think he estimated t to weigh 250 pounds?
c. Who/?Whom don't you think he would prefer very much t to win?
d. Who/?Whom don't you think Bill believed sincerely t to be the best man?

As a matter of fact, there is a case in which the two phenomena diverge in behavior.

(129) a. He alleged there to be gambling going on in the back room.
b. I estimate there to be two million people in that valley. (Postal 1974:299–304)

(130) a. *John would prefer very much there to be many girls in the room.
b. *Bill believed sincerely there to be a unicorn in the world.

Whereas as in (130) verb-adverb pairs do not allow expletives to occur in the subject position of the embedded infinitival clause, 'peculiar' verbs do allow this as in (129). Let us bear in mind that at S-structure all indefinite NPs in (129) and (130) that follow existential *be* are assigned structural Case by *be* and that the Case is realized by AGR-O, which amalgamates with *be*.

(131) and (132) below illustrate the LF representations of (129) and (130) after there replacement and adverb-raising.[51]

(131) a. He $[_V$ alleged AGR-$O_1]_i$ $[_{VP}\, t_i$ $[_{IP}\, [_{SC}$ *gambling going on* in the back room$]_j$ to $[_V$ be AGR-$O_2]_k$ $[_{VP}\, t_k$ $t_j]]]$
b. I $[_V$ estimate AGR-$O_1]_i$ $[_{VP}\, t_i$ $[_{IP}\, [_{SC}$ *two million people* in that valley$]_j$ to $[_V$ be AGR-$O_2]_k$ $[_{VP}\, t_k$ $t_j]]]$

(132) a. John would $[_V$ prefer AGR-$O_1]_i$ $[_{VP}$ very much $[_{VP}\, t_i$ $[_{IP}\, [_{SC}$ *many girls* in the room$]_j$ to $[_V$ be AGR-$O_2]_k$ $[_{VP}\, t_k$ $t_j]]]$
b. Bill $[_V$ believed AGR-$O_1]_i$ $[_{VP}$ sincerely $[_{VP}\, t_i$ $[_{IP}\, [_{SC}$ *a unicorn* in the world$]_j$ to $[_V$ be AGR-$O_2]_k$ $[_{VP}\, t_k$ $t_j]]]$

Both in (131) and (132), t_k, the trace of the amalgam of existential *be* and AGR-O_2 of the embedded clause, assigns structural Case to t_j, the trace of the small clause replacing *there* at LF, and realizes the Case. This is because existential *be* can be a structural Case assigner, and the trace of Case assigners retains the Case assigning property, so AGR-O_2 can govern t_j at LF thanks to the government transparency corollary.

As noted above, all emphasized indefinite NPs in (131) and (132) have already been assigned a structural Case at S-structure by *be*, and this Case has already been realized by AGR-O_2 at S-structure. Moreover, in (131) and (132), t_i, the trace of the amalgam of the matrix verb and AGR-O_1 of the matrix clause, governs each small clause since the embedded IP is L-marked, and thus it does not count as a barrier. It follows that t_i in (131) and (132) assigns accusative Case under government to the small clause in the embedded IP-Spec position in (131) and (132). As was previously suggested, the Case assigned to the small clause may be transmitted to the NP in

[51] Here I assume, without any discussion, that *allege* and *estimate* take IP as their complement. Further I assume that *prefer* also takes IP as its complement at the latest at LF when the infinitival complementizer *for* is not present in its complement clause. For relevant arguments, see Haider (1988), Koster (1984, 1986), and Ura (1990b, 1990a). Furthermore, I ignore the effect of Tense and AGR-S on such sentences.

its subject position. As a result, all emphasized indefinite NPs in (131) and (132) receive another structural (accusative) Case at LF.

However, one should notice that although the emphasized NPs in (131) are assigned another structural (accusative) Case by t_i, the trace of the amalgam of *allege* or *estimate* and the matrix AGR-O_1, AGR-O_1 in (131) cannot realize the structural Case of the NPs assigned by t_i at LF because *allege* and *estimate* preclude AGR-O_1 from realizing Case. Hence, the emphasized NPs in (131), which head a single-membered A-chain, have only one realized structural Case, though they are assigned two types of structural Case.

On the other hand, in (132) the emphasized NPs are also assigned another structural (accusative) Case at LF by t_i, the trace of the amalgam of *prefer* or *believe* and the matrix AGR-O_1. Note, however, that in (132), unlike in (131), nothing prevents AGR-O_1 from realizing the structural (accusative) Case of the emphasized NPs assigned by t_i at LF because adverbs move up without leaving a trace. Thus, the emphasized NPs in (132) have two realized Cases.

Now, suppose that an unrealized Case, like an inherent Case, is exempted from the Chain condition (97). Then, it follows that while (131) meets both the modified Case conditions and the Chain condition, while (132) fails to meet the Chain condition, resulting in the ill-formedness of the sentences.

3.5 Accusative Case and Lexical Categories

Thus far, we have argued for the hypothesis that accusative Case realization is governed by AGR-O and accusative Case assignment by V, and we have also argued for the modified Case conditions (92), which we postulated in accord with the above hypothesis. In the present subsection, considering a more theory-internal issue about Case realization and Case assignment, I will defend this hypothesis.

We have assumed, introducing Belletti and Rizzi's (1988) idea, that V is a structural (accusative) Case assigner iff it has an external argument. And we have assumed, following Belletti (1988) and Shlonsky (1987), that V is also an inherent Case assigner when it has a suitable θ-role for the inherent Case. Chomsky (1986b) states that A (adjectives) and N (nouns) also have the ability to assign inherent Case to the NP to which they assign a θ-role. But there is, in fact, a decisive difference between V and the other lexical categories in inherent Case realization.

(133) a. There arrived *three trains.*
b. John resembles *his father.*
c. John gave *Mary* a doll.

(134) a. *the/*there's arrival *three trains*
b. *John's resemblance *his father*
c. *John's gift *Mary* (of a doll)

Each emphasized NP in (134) is assigned the same θ-role, and thus the same inherent Case as its counterpart in (133) is assigned by the lexical element that precedes it. While (133) meets the CF, (134) fails to meet it. This fact shows that the inherent Case assigned to the emphasized NPs in (134) is not realized. In fact, the sentences become well-formed if the unrealized inherent Case is realized by a 'last resort' operation such as insertion of a suitable preposition between the deverbal noun and the NP assigned a θ-role by the noun, as illustrated in (135):[52] [53]

[52] Another 'last resort' operation is available for this situation. It is the movement of an NP with no realized Case to a position where D, a functional category, governs it.

(i) a. John's arrival t
(cf., the arrival of John)
b. the city's destruction t
(cf., the destruction of the city)

Though we need to assume that D realizes the inherent (genitive) Case, this assumption is, of course, consistent with the hypothesis presented in this paper that Case is realized not by lexical categories but by functional categories.

[53] The assumption presented in footnote 50 leads to the question of how we explain the ungrammaticality of *there's arrival (of) three trains.* Shlonsky (1987) supplies us with the key to the question. He states that expletives are a space filler to satisfy the subject stipulation, which requires that every clause must have a subject. Hence, expletive replacements take place to satisfy the stipulation at LF. Although DP has many clause-like properties, it does not

(135) a. the arrival of three trains

b. John's resemblance to his father

c. John's gift to Mary (of a doll)

The same is true of adjectives. When adjectives assign their internal θ-role to the following NP, they require that a suitable preposition occur between them and the NP to which they assign the θ-role.

(136) a. *Mary is fond music.

b. *Mary is familiar linguistics.

c. *Mary was proud her son before.

(137) a. Mary is fond of music.

b. Mary is familiar with linguistics.

c. Mary was proud of her son before.

What makes only V, and not N nor A, able to realize Case? Given the hypothesis presented thus far that Case realization is governed not by lexical categories, but by functional categories, we can straightforwardly answer this question.

Consider the issue of adjectives. Needless to say, adjectives never have inflection in English. Whenever they appear as main clause predicates, they are accompanied by the copulative *be*. Furthermore, it is the copulative *be*, rather than the adjectives, that supports all inflections. This has as an immediate consequence that adjectives never incorporate with functional categories. It follows that AGR-O never merges with adjectives; rather, it merges with *be*. Therefore, AGR-O never realizes any Case beyond adjectives because of the minimality barrier induced by the adjectives. All examples in (136) are ill-formed because the emphasized NPs have no realized Case at S-structure, violating the CF.[54]

The same is true of nouns. Since D does not bear any affixal feature, it cannot move down onto N. Thus D cannot govern beyond N the NP which is assigned an inherent Case by that N. As a result, it cannot realize the Case of the NP that follows N. It needs a 'last resort' operation. That is, the NP needs to move up to the position which D governs, or a preposition needs to be inserted between N and the NP.

As for the realization of the inherent Case assigned by V to the NP which follows V, it is obvious that AGR-O can immediately realize the inherent Case under government from within the amalgam of V and AGR-O itself.

In this way, the difference between V and the other lexical categories in the realization of inherent Case follows as a natural consequence from the foregoing proposals.

3.6 Accusative Case and Passive Constructions

Before we conclude this section, let us briefly observe an implication and some problems of the Case conditions in (92). Let us first consider its implication to passive constructions. How are passive constructions analyzed under the hypothesis presented?

In recent studies on passive constructions in GB syntax such as Jaeggli (1986), Roberts (1986), and Baker, Johnson, and Roberts (1989), it is considered that passive morpheme *-en* absorbs the accusative Case to be assigned to the following NP. As a result, the NP which fails to get the accusative Case moves up to the IP-Spec position to get nominative Case.

Since we have hypothesized that the former Case-marking consists of two distinct processes, i.e., Case assignment and Case realization, to incorporate this into the studies cited above, we can

always have a subject. In fact, as Chomsky (1986b) suggests, PRO may or may not appear in the DP-Spec position. It follows that DP may not have a subject position. In other words, the subject stipulation need not apply to DP. Therefore, expletives in DP fail to be replaced, resulting in the ungrammaticality of the example above.

[54] Given that adjectives never merge with AGR-O, the uniformity condition on Case Assignment and Case Realization, which we have proposed in section 2, also prevents the Case realization for NPs selected as complement by adjectives. Thanks to Koji Fujita for pointing this out to me.

consider either that passive morpheme *-en* only blocks accusative Case assignment by V or that it only blocks Case realization by AGR-O.[55]

There is an example in which AGR-O, in fact, realizes Case even in passive constructions.

(138) a. John gave Mary a doll.

b. John sent Mary a letter.

(139) a. Mary$_i$ was given t_i a doll.

b. Mary$_i$ was sent t_i a letter.

Larson (1988) claims that in double object constructions the outer NP receives inherent Case, and the inner one structural Case. It is plausible that AGR-O governs both NPs from within the amalgam of AGR-O and V and that consequently it realizes the Case assigned to each NP. If *-en* blocked Case realization by AGR-O, the inherent Case assigned to the outer NP would fail to be realized, regardless of whether or not *-en* blocks accusative Case assignment. But the opposite is true, as (139) shows. In (139), the outer NPs still meet the CF even when *-en* attaches to the Vs assigning a θ-role to the NPs. This means that the (inherent) Case of the outer NPs is indeed realized. Thus, we conclude that *-en* does not block Case realization by AGR-O.

Incorporating an idea due to Jaeggli (1986) and Roberts (1986), we conclude that passive morpheme *-en* absorbs an accusative Case assigned by V. If the inner NP in (138) remains in the position following V, it fails to satisfy the CF, due to the lack of Case. Consequently, the inner NP moves to the IP-Spec position and gets structural (nominative) Case in that position, as illustrated in (139).

3.7 Prepositions and Their Case-related Property

As a matter of fact, there is a problem concerning the modified Case conditions (92). This involves the VC (92b) and the issue of inherent Case realized by preposition insertion. Consider the following examples:

(140) a. Mary is proud of *her son.*

b. Mary is familiar with *linguistics.*

In (140), each emphasized NP is assigned an inherent Case by the adjective, and the Case is realized by inserting a suitable preposition. Thus, (140) meets the CF (92a). On the other hand, the VC (92b) requires that at LF every head of an A-chain must be assigned a structural Case. Since probably no mapping rule from S-structure to LF changes the structures of (140), the emphasized NPs in (140), which head A-chains, must be assigned a structural Case in situ. No structural Case, however, is available for that position. Consequently, the failure of the VC results in (140).

To avoid this, we must make some stipulations. The substance of the visibility condition is that a θ-role is not available for a Caseless argument at LF. In other words, arguments require Case at LF to satisfy the θ-criterion. One should notice that inherent Case is assigned to an NP at the same time a θ-role is assigned to the NP. Thus, NPs which have inherent Case, regardless of whether it is realized or not, simultaneously have a θ-role. It is therefore possible to consider that the inherent Case assignment guarantees without the help of the Visibility condition that the NP which is assigned the inherent Case is assigned a θ-role. Given this, we make the following stipulation:

(141) The visibility condition does not apply to the head of an A-chain which is assigned inherent Case. (First approximation)

[55] Of course, it is logically possible to consider that *-en* blocks both Case assignment and Case realization. In fact, Baker, Johnson, and Roberts (1989:220) claim that *-en* is an argument and that as a result it needs to be assigned a θ-role and Case. If this were the case, one might conjecture that *-en* plays a role in absorbing the accusative Case realized by AGR-O because it must satisfy the modified Case conditions. I reject this view, however. The discussion in the text below argues against it. In Ura (in preparation), I will present another argument against this view, analyzing the French and Italian counterparts of *-en*. After clarifying the relation between Agreement and Case realization, I will present French and Italian examples which show that AGR-O still has the ability to realize Case even in passive constructions.

Given (141), the problem of (140) soon disappears. The emphasized NPs in (140) are assigned an inherent Case by adjectives, and the Case is realized by inserting a suitable preposition. It follows that (140) meets the CF. Since the VC does not apply to the emphasized NPs, (140) vacuously meets the VC. Thus, we can get the desired result. Besides, with (141), we can also get the correct predictions about (142) below:

(142) a. *Mary is proud her son.

b. *Mary is familiar linguistics.

Although (142) vacuously meets the VC, as does (140), because the inherent Case of *her son* and *linguistics* is assigned by adjectives, (142) violates the CF. This is because the inherent Case is not realized at S-structure in (142).

There arises a problem about (141), however. (141) rules in (143) erroneously.

(143) a. *Who is Mary proud t ?

b. *What is Mary familiar t ?

The inherent Case of the traces in (143) is assigned by the adjectives, though not realized. Since every trace vacuously satisfies the CF, we get the incorrect result that (143) meets both the CF and the VC. The fact is that the failure to make the trace in (143) Case-realized makes the sentences worse. Thus, we need to incorporate 'Case realization' into the stipulation in (141). For this reason I revise (141) as follows:

(144) The visibility condition does not apply to the head of an A-chain which has a realized inherent Case. (Revised)

Given (144), the traces in (143) do not escape the VC violation any longer because the inherent Case of the traces is never realized.

To sum up, we need to stipulate (144) to explain (140) and (143) if we are to adopt the Case conditions in (92).

Thus far, we have argued for the hypothesis proposed in section 2 that Case theory should be composed of two distinct notions, i.e., Case assignment and Case realization, and that Case realization is governed by functional categories. Through these arguments, we have modified Shlonsky's Case conditions as follows, in accord with the hypothesis:

(145) THE MODIFIED CASE CONDITIONS

a. THE CASE FILTER (APPLIED AT S-STRUCTURE)
Every overt NP in A-position must have a realized Case.

b. THE VISIBILITY CONDITION (THE CASE CONDITION ON A-CHAINS, APPLIED AT LF)
The head of an A-chain must be in a position where structural Case is assigned (or be PRO). [=(92)]

And with these Case conditions and other auxiliary assumptions, we have analyzed examples which are hard for the former Case theory to explain. Assuming that we have provided an adequate defense of the hypothesis, we will concern ourselves in section 4 with more theory-internal issues on the interaction among nominative Case assignment/realization, head-movement of functional categories, and the VP internal subject hypothesis.

4 NOMINATIVE CASE AND FUNCTIONAL CATEGORIES

Thus far we have discussed the hypothesis that Case realization is governed by certain functional categories, and we have defended this hypothesis through analyses mainly concerned with the assignment and realization of accusative Case and inherent Case. In this section, we will consider nominative Case.

In section 1, we observed some problems pertaining to the interaction between head-movement and the VP internal subject hypothesis. Let us consider them once more from the viewpoint which has been established in the preceding sections.

According to the VP internal subject hypothesis, the VP internal subject which is generated in the VP-Spec position moves up to the IP-Spec position in order to get nominative Case from AGR-S at S-structure. However, if we follow the general assumption that nominative Case is assigned (and realized) by AGR-S, the VP internal subject need not move up to the IP-Spec position at S-structure because AGR-S can govern the VP-Spec position from within the amalgam of V and the other functional categories, i.e., AGR-S, T, and AGR-O. (See section 1 for the detailed discussion.)

In fact, we can hardly tell whether or not the subject which is generated in the VP-Spec position remains in situ at S-structure in declarative affirmative sentences. That is to say, the word order is the same regardless of whether the subject is Case-marked at the VP-Spec position as illustrated in (146b), or at the IP-Spec position as illustrated in (146c).

(146) a. John hit Mary.

b. [$_{\text{IP}}$ *e* t_i [$_{\text{TP}}$ t_i [$_{\text{AGRP}}$ t_i [$_{\text{VP}}$ John [$_{\text{V}'}$ [$_{\text{V}}$ hit AGR-O T AGR-S] Mary]]]]]

c. [$_{\text{IP}}$ John$_j$ t_i [$_{\text{TP}}$ t_i [$_{\text{AGRP}}$ t_i [$_{\text{VP}}$ t_j [$_{\text{V}'}$ [$_{\text{V}}$ hit AGR-O T AGR-S] Mary]]]]]

(146b) would be preferred in terms of economy of derivation. But when we consider negative sentences, we realize that the subject does indeed move up to the IP-Spec position.[56]

(147) a. *[$_{\text{IP}}$ *e* [$_{\text{AGR-S}}$ did AGR-S t_i] [$_{\text{TP}}$ t_i [$_{\text{NegP}}$ not [$_{\text{AGRP}}$ t_j [$_{\text{VP}}$ John [$_{\text{V}'}$ [$_{\text{V}}$ hit AGR-O$_j$] Mary]]]]]]

b. *Did not John hit Mary.

c. [$_{\text{IP}}$John$_k$ [$_{\text{AGR-S}}$did AGR-S t_i] [$_{\text{TP}}t_i$ [$_{\text{NegP}}$not [$_{\text{AGRP}}t_j$ [$_{\text{VP}}t_k$ [$_{\text{V}'}$[$_{\text{V}}$hit AGR-O$_j$] Mary]]]]]]

d. John did not hit Mary.

If the subject, which is generated in the VP-Spec position, can receive nominative Case in its original position, as in (147a), the undesirable word order illustrated in (147b) results. As (147c,d) show, the VP internal subject moves up to the IP-Spec position at S-structure, at least in negative sentences. Of course, we cannot conclude merely on the basis of (147) that the VP internal subject in declarative affirmative sentences does indeed move up to the IP-Spec position. There is, however, evidence that the subject occupies the IP-Spec position even in declarative affirmative sentences.

Jackendoff (1972:50) has pointed out that adverbs such as *completely* and *easily* can occur only in auxiliary and final position within the clause. In fact, employing recent notions about the internal structure of IP, Iatridou (1990:557) states that an adverb like *completely* can be generated only at a position adjoined to the main VP. Thus, the fact that subjects in declarative affirmative sentences occur outside such adverbs, as illustrated in (148), shows that the subjects move up to the IP-Spec position at S-structure in declarative affirmative sentences.

(148) a. Stanley completely ate his Wheaties.

b. *Completely Stanley ate his Wheaties. (Jackendoff 1972:50)

We thus conclude that in English the subject which is generated in the VP-Spec position moves up to the IP-Spec position in declarative sentences.[57]

Then questions such as the following soon arise: *(a)* What makes the VP internal subject move up to the IP-Spec position? *(b)* Is it true that AGR-S does not assign (or realize) the nominative Case of the VP internal subject at S-structure in declarative affirmative sentences though it governs the subject in the VP-Spec position at S-structure? In this section, we will concern ourselves with these issues.

4.1 Minimality Barrier for A-Movements

As mentioned in the foregoing discussion, it has generally been assumed that nominative Case is assigned by AGR$_{[+\text{Tense}]}$, what we call AGR-S. Following this assumption, I tentatively assume that AGR-S assigns nominative Case and realizes it under government. This assumption immediately nullifies the explanation under the VP internal subject hypothesis as to why the subject generated in the VP-Spec position moves up to the IP-Spec position. This circumstance gives rise to the first

[56] Following Chomsky (1989), I assume that NegP, which is headed by *not*, occurs between TP and AGRP.

[57] For discussions of the surface subject position in other languages under the VP internal subject hypothesis, see Koopman and Sportiche (1988) and Guilfoyle, Hung, and Travis (1989), among others.

question posed above, i.e. *(a)*. Let us now come to grips with this question: What makes the VP internal subject move up to the IP-Spec position?

In section 3, we exploited Shlonsky's (1987) mechanism of *there* replacement to a large extent. According to Shlonsky *there* replacement is induced by the subject stipulation below:[58]

(149) THE SUBJECT STIPULATION

Every clause must have a subject.

Given (149), we can answer question *(a)*. Regardless of whether the VP internal subject which is generated in the VP-Spec position can be assigned nominative Case in situ by AGR-S at S-structure, the IP-Spec position must be filled by some argument at S-structure.[59] Now, let us consider why this makes only the subject generated in the VP-Spec position move up to the IP-Spec position. First, let us observe simple transitive affirmative sentences. (150a) is the D-structure of such sentences, and (150b,c) are S-structures which seem to be derivable from (150a):

(150) a. $[_{IP}\, e$ AGR-S $[_{TP}$ T $[_{AGRP}$ AGR-O $[_{VP}$ *Subj.* $[_{V'}$ V *Obj.*]]]]]

b. $[_{IP}$ *Subj.*$_i$ t_j $[_{TP}\, t_j$ $[_{AGRP}\, t_j$ $[_{VP}\, t_i$ $[_{V'}$ $[_{V}$ V AGR-O$_j$ t_j AGR-S$_j$] *Obj.*]]]]]

c. *$[_{IP}$ *Obj.*$_i$ t_j $[_{TP}\, t_j$ $[_{AGRP}\, t_j$ $[_{VP}$ *Subj.* $[_{V'}$ $[_{V}$ V AGR-O$_j$ t_j AGR-S$_j$] t_i]]]]]

(150b) is, of course, the legitimate S-structure of (150a). Since we are tentatively assuming that AGR-S assigns and realizes nominative Case, *Subj.* in (150b,c) has a realized structural (nominative) Case. And *Obj.* in (150b,c) also has a realized structural (accusative) Case. In (150b,c), each argument moves to the IP-Spec position not because it needs Case, but because the subject stipulation compels the movement. Then, why is it that while (150b) is legitimate, (150c) is not?

Rizzi's (1990) relativized minimality framework, which is also adopted in section 2, precludes the derivation in (150c). Rizzi (1990:92) proposes a chain formation rule which requires that in a chain $(\alpha_1, \ldots, \alpha_n)$, α_i antecedent-govern α_{i+1} for $1 < i < n$. Under the relativized minimality framework, in (150c), *Obj.*$_i$ cannot antecedent-govern its trace, t_i, because of the minimality barrier induced by *Subj.* in the VP-Spec position. Thus, the ill-formedness of (150c) results.[60] On the other hand, in (150b), *Subj.*$_i$ properly antecedent-governs t_i, the trace of *Subj.*$_i$ in the VP-Spec position, because there is no c-commanding element in A-specifier position between *Subj.*$_i$ and its trace t_i in (150b). Therefore, we come to the conclusion that in transitive affirmative sentences, the NP which is generated in the VP-Spec position, and no other argument, must move to the IP-Spec position. Obviously, this is also true of intransitive affirmative sentences, which have no arguments other than the VP internal subject.

Next, let us consider sentences in which there are some arguments other than the VP internal subject and the object.[61]

(151) a. *The table$_i$ can you put the ball on t_i

b. *$[_{IP}$ the table$_i$ can $[_{VP}$ you $[_{V'}$ put the ball on t_i]]]

c. You can put the ball on the table.

d. $[_{IP}$ you$_i$ can $[_{VP}\, t_i$ $[_{V'}$ put the ball on the table]]]

Again the failure of antecedent-government results in (151b) because of the minimality barrier induced by you. Indeed, the fact can be generalized as follows: No A-movement from within V′ to the IP-Spec position is allowed because of the minimality barrier induced by the VP internal subject generated in the VP-Spec position.[62]

There seems to be a counterexample to this generalization:

[58] Shlonsky states that the subject stipulation may be deducible from more general principles, such as the Extended Projection Principle (Chomsky 1981) or the Principle of Predication (Rothstein 1983).

[59] Here I tentatively follow the general assumption that the IP-Spec position is an A-position. Accordingly, at S-structure no non-argument can occupy the IP-Spec position. We will, however, observe cases in which non-arguments indeed occupy that position.

[60] Granting that the AGRP-Spec position is an A-position and that *Obj.*$_i$ in (150c) lands at that position on its way to the IP-Spec position, it cannot yet antecedent-govern its original trace, because *Subj.* still blocks antecedent-government. If *Obj.*$_i$ in (150c) were attached to V′ on its way, it could antecedent-govern its original trace. However, such a derivation is an illicit NP movement, i.e., A–Ā–A-movement, and thus is not allowed.

[61] Because of its irrelevancy here, I ignore movement of functional categories for the moment.

[62] The extension of Rizzi's relativized minimality framework of Ā-dependencies to A-dependencies such as sketched above is also pursued by Fujita (1990), in which very interesting analyses on binding dependencies under such an approach are provided to explain cross-linguistic phenomena concerning the binding theory.

(152) a. Three trains have [$_{VP}$ [$_{V'}$ arrived t] at the station]

b. A strong storm [$_{VP}$ [$_{V'}$ arose t]] last night

The unaccusative subjects in (152) are indeed generated within V' and then move to the IP-Spec position. Note, however, that there is no NP generated in the VP-Spec position in clauses whose predicates are unaccusative verbs such as *arrive* or *arise* (Perlmutter 1978, Burzio 1986). This is also true of passive constructions. According to Jaeggli (1986), Roberts (1986), and Baker, Johnson, and Roberts (1989), the passive morpheme *-en* absorbs the subject θ-role. In light of the Projection Principle, we may consider that there is no NP generated in the VP-Spec position in passive constructions as well as in unaccusative constructions, as in (152). Thus, the objects in passive sentences are allowed to move up to the IP-Spec position without interference from the minimality barrier induced by the VP internal subject, as illustrated in (153):

(153) a. Mary was [$_{VP}$ kissed t] by John

b. John is [$_{VP}$ believed t to be the best man]

Hence, the facts in (152) and (153), which seemed to be counterexamples, conversely turn out to reinforce the claim above.

Then, let us consider sentences involving A-movement from outside V', as in (154) below:[63]

(154) a. *The gate can you see a girl behind t

b. *[$_{IP}$ the gate$_i$ can [$_{VP}$ you [$_{V'}$ see a girl]] [$_{PP}$ behind t_i]

c. You can see a girl behind the gate.

d. [$_{IP}$ you$_i$ can [$_{VP}$ t_i [$_{V'}$ see a girl]] [$_{PP}$ behind the gate]

In (154b), there is no minimality barrier between *the gate* and its trace. Note, however, that *the gate* still cannot antecedent-govern its trace, because the PP headed by *behind* blocks any government from outside. This is because the PP is never L-marked and thus counts as a (normal) barrier (Chomsky 1986a). Consequently, we get the generalization that an NP which is generated in the VP-Spec position must move to the IP-Spec position in declarative sentences.

In this subsection, we have presented arguments without considering whether or not the VP internal subject is assigned nominative Case in situ. As has been discussed above, the grammaticality of the examples in this subsection, however, depends on whether or not the antecedent-government relation in an A-chain holds. Case is irrelevant in these instances. We thus conclude that the reason that the subject generated in the VP-Spec position moves to the IP-Spec position involves not Case, as has been assumed in much literature, but what has been discussed above. This is the answer to question *(a)*.[64]

Returning to question *(b)* in the following subsection, we will consider whether AGR-S can assign and realize the nominative Case of the VP internal subject in situ at S-structure.

4.2 The Realization of Nominative Case

In subsection 4.1, we observed that the NP generated in the VP-Spec position, if any, must move to the IP-Spec position regardless of whether or not it is assigned nominative Case and has that Case realized in situ before it moves up to the IP-Spec position. Now, let us struggle with question

[63] Here I assume that PPs such as *behind the gate* are adjoined to VP or I'.

[64] Akira Watanabe (personal communication) pointed out to me that sentences such as those in (i) may raise a problem if the Case of the VP-internally generated subjects is to be assigned (and possibly realized) by AGR-S:

(i) *[$_{IP}$ there [$_{VP}$ John [$_{V'}$ smiles]]]

In (i), at S-structure the subject stipulation is satisfied by *there*, and the Case filter is met; however, the subject stipulation is violated at LF, because nothing can be replaced with *there* at LF. According to Shlonsky (1987), *there* can be replaced only by an indefinite NP or a small clause. There is no indefinite NP or small clause in (i). The ungrammaticality of (ii) below is attributed not to the violation of the subject stipulation at LF, but to the illegitimate movements of the small clause *Mary beautiful* in (ii a) and to the indefinite NP *a man* beyond the other A-Specifier argument *John* at LF:

(ii) a. *[$_{IP}$ there [$_{VP}$ John considers [$_{SC}$ Mary beautiful]]]

b. *[$_{IP}$ there [$_{VP}$ John hit a man]]

(b) as to whether the nominative Case of the VP internal subject is assigned (and, if so, realized) in situ before it moves up to the IP-Spec position.

Let us take a simple intransitive (unergative) sentence, for example, for we want to concern ourselves with the relation between the VP internal subject and AGR-S. We will observe more complicated sentences involving accusative Case and other functional categories below. Example (155) below represents the configuration of such sentences at the stage before the VP internal subject moves up to the IP-Spec position:

(155) $[_{\text{IP}}\, e\ t_i\ [_{\text{VP}}\, \textit{Subj.}\ [_{\text{V}}\, \text{V AGR-Si}]]]$

As we have observed in section 1, AGR-S can govern *Subj.* in the VP-Spec position from within the amalgam of V and the functional categories including AGR-S itself. Since we are tentatively assuming that AGR-S assigns nominative Case, *Subj.* in (155) is assigned nominative Case in situ. Moreover, the nominative Case of *Subj.* is realized by AGR-S thanks to the hypothesis that AGR realizes the Case of the NP it governs. If this is the case, *Subj.* in (155), after having its nominative Case realized, moves up to the IP-Spec position, as illustrated in (156):

(156) $[_{\text{IP}}\, \textit{Subj.}_j\ t_i\ [_{\text{VP}}\, t_j\ [_{\text{V}}\, \text{V AGR-S}_i]]]$

Since the movement of *Subj.* from the VP-Spec position to the IP-Spec position is obligatory owing to the subject stipulation, as discussed in section 4.1, the chain $(\textit{Subj.}_j, t_j)$ in (156) violates the chain condition. The chain condition, though not applicable to the chains whose feet are assigned inherent Case or have unrealized structural Case, as discussed in section 3, prohibits the foot of an A-chain from having a realized structural Case. We therefore conclude that the nominative Case of the VP internal subject is never realized at least at the VP-Spec position.

The Case filter, on the other hand, requires that every NP have a realized Case at S-structure. Then, the nominative Case of *Subj.* in (156) must be realized somehow. What mechanism guarantees that AGR-S in (156) will realize the nominative Case of *Subj.* in the IP-Spec position? Moreover, it is generally considered that AGR-S also agrees with the IP-Spec position, materializing subject Agreement. What mechanism guarantees this Agreement? To explore these issues, we must clarify the relation between Case realization and Agreement.

4.3 Case Realization and Agreement

In syntactic theory, we may consider that Agreement is a device very similar to Case in that languages use both devices to express grammatical relations at S-structure. Marantz (1984) states the following:

> When A and B stand in some relation at S-structure, where A is the operator, then the surface counterparts of A and B, A′ and B′, can stand in surface structure relations such that A′ bears some morphology associated with B′ or B′ bears some morphology associated with A′. When the surface counterpart to the operator bears the morphology, the relation is one of agreement; where the operand bears the morphology, the relation is called case marking. (Marantz 1984:72)

It is assumed in much recent literature that AGR governs Agreement. Since Marantz's concern in the above statement falls on the morphological manifestations of Case and Agreement, we may regard 'case marking' in the above statement as 'Case realization' in our terms. Following Marantz's statement, I will take the position in what follows that, in principle, Agreement and Case realization are executed by the same categories (Lapointe 1980, Lefebvre 1988, Marantz 1984). This leads to the hypothesis that both Agreement and Case realization are executed by AGR, or more specifically AGR-S and AGR-O.

Returning to the topic of Agreement, we may observe that Agreement itself has been given much less attention than Case in GB syntax. Under the stimulus of Pollock (1989) and Chomsky (1989), there have recently emerged some papers discussing Agreement rather intensively (Mahajan 1989, Shlonsky 1989).

Mahajan (1989), observing agreement phenomena in Hindi, which has an object agreement system as well as an subject agreement system, explores the mechanism of how Agreement takes place. He convincingly shows that Agreement always takes place between AGR, the head of AGRP, and an NP located in the Spec of AGR. Note that Mahajan claims that Agreement, unlike Case

realization, is never executed under government. That is to say, Agreement does not take place under the elemental relation, i.e., government; rather, it takes place under the positional relation, i.e., the head-Spec agreement.

Thus, I assume here that Case realization and Agreement, both of which are governed by the functional category AGR, play the same role in syntactic theory, to license arguments. Agreement between an argument and AGR manifests itself when the head-Spec relation between them is materialized. Case realization of an argument is executed by AGR if and only if the AGR itself governs the argument. The visible (morphological) effect of the former licensing device appears on AGR; that of the latter appears on the argument.

Bearing this in mind, let us return to (156):

(157) $[_{\text{IP}}\, \textit{Subj.}_j\ t_i\ [_{\text{VP}}\, t_j\ [_{\text{V}}\, \text{V AGR-S}_i]]]$ [=(156)]

In (157), AGR-S cannot realize the nominative Case of *Subj.* at the VP-Spec position, as discussed in the previous subsection.[65] If $\textit{Subj.}_j$ in (157) did not have a realized Case, (157) would violate the CF. But since IP is the maximal projection of AGR-S (see Chomsky (1989) and section 1 in this paper), the head-Spec relation between $\textit{Subj.}_j$ and t_i, the trace of AGR-S, is materialized in (156). Then, subject Agreement manifests itself in (157).

Furthermore, Koopman and Sportiche (1988:16) claim that nominative Case is assigned under government by INFL or under head-Spec agreement in IP.[66] Taking into consideration the argument discussed above that Agreement and Case realization play the same role in syntactic theory, we may restate their claim as follows: Nominative Case is realized under government by AGR-S or under the head-Spec agreement.[67] Given this, although it is not entirely clear whether or not AGR-S in (156) governs *Subj.* in the IP-Spec position, the nominative Case of $\textit{Subj.}_j$ in (157) is realized as required. Hence, (157) meets the CF.

To sum up, AGR-S does not realize the nominative Case of the subject generated in the VP-Spec position under government. This Case is realized at the IP-Spec position by head-Spec agreement between the original position of AGR-S and the subject which has moved to the IP-Spec position.[68]

4.4 The Assignment of Nominative Case

We have hitherto been assuming that nominative Case is assigned by AGR-S. We have observed that AGR-S also realizes nominative Case at the IP-Spec position by means of head-Spec agreement between the original position of AGR-S and the IP-Spec position. If we preserve this position, AGR-S plays a role in both assigning and realizing nominative Case. This is reminiscent of the assumption, which has been forsaken in sections 2 and 3, that V assigns and realizes accusative Case. In this subsection, let us address ourselves to the question of how and where nominative Case is assigned.

Presenting some interesting evidence, Pesetsky (1989), who owes one of his arguments to Watanabe's analysis of the interaction between Topicalization and *wh*-movement, convincingly argues that while embedded clauses are CP, (non-exclamative) matrix clauses are IP.[69] On the basis of the same assumption, Watanabe (1989a, 1989b) further claims, through an analysis of sentences involving subject-aux inversion, that nominative Case is assigned by T(ense). The clause structure that Watanabe assumes is similar to ours. Watanabe's structure is as illustrated in (158) below:

(158) $[_{\text{IP}}[_{\text{I}'}\, \text{AGR}\ [_{\text{TP}}\, \text{T}\ ([_{\text{NegP}}\, \text{not})\ [_{\text{VP}}\, \text{NP}\textit{Subj.}\ [_{\text{V}'}\, \text{V NP}\textit{Obj.}]](])]]]$

The difference between Watanabe's structure and ours centers around the presence or absence of AGR-O.

Watanabe's argument for the assumption that T, rather than AGR-S, assigns nominative Case is as follows. Consider the paradigm in (159), which Watanabe (1989a) quotes from Baltin (1982):

[65] Here I am not considering where the nominative Case of *Subj.* comes from. It is irrelevant to the argument here where the Case comes from. We will return in the following subsection to the topic of where and how the nominative Case of *Subj.* is assigned.

[66] They do not distinguish Case assignment and realization and divide INFL into AGR-S, T, and AGR-O.

[67] In Ura (in preparation), I will discuss the relation between accusative Case and object Agreement, analyzing object Agreement phenomena observed in French and Italian passive and unaccusative constructions.

[68] For further discussions about Agreement and Case realization, see Ura (in preparation), where I will intensively discuss the issue.

[69] To save space, I proceed without introducing Pesetsky's arguments for the assumption. See Pesetsky (1989), and also Watanabe (1989a, 1989b) for discussion.

(159) a. *Will, after John comes home, Sally take a shower?

b. Will Sally, after John comes home, take a shower?

c. After John comes home, will Sally take a shower?

(160) Will Sally take a shower? (Baltin 1982:32)

Since Watanabe and Pesetsky dispute the existence of I-to-C movement in matrix clauses because of the lack of C in them, they presume that the modal auxiliary will in (159) occupies the AGR position in (158), i.e., the AGR-S position. (160), the basic sentence of (159), is the sentence resulting from the derivation from (161a) to (161b) below:[70]

(161) a. [$_{IP}$ *e* AGR-S [$_{TP}$ will-T [$_{VP}$ Sally [$_{V'}$ take a shower]]]]

b. [$_{IP}$ *e* [AGR-S will-Ti-AGR-S] [$_{TP}$ t_i [$_{VP}$ Sally [$_{V'}$ take a shower]]]]

Watanabe (1989a) claims that the assignment of nominative Case by T to *Sally* in (160) takes place at an intermediate stage of its derivation, which is similar to (161a). That is to say, *will*-T in (161a) governs and is adjacent to *Sally* in the VP-Spec position, resulting in the nominative Case assignment to *Sally*. Furthermore, *will*-T is subsequently raised to the AGR-S position and *Sally* remains in the VP-Spec position, as illustrated in (161b).[71] Let us return to (159); Watanabe claims that *Sally* in (159b,c) is adjacent to *will*, and thus nominative Case assignment is materialized. However, in (159a), an adverbial clause intervenes between *Sally* and *will*, so nominative Case assignment cannot be materialized, resulting in the ill-formedness of (159a).

In fact, Watanabe's argument is very intriguing, but in light of the assumptions which have been made hitherto in this paper, we must ascertain whether his argument that T is the nominative Case assigner is consistent with our theory. Following Shlonsky (1987), Torrego (1984), and Stowell (1989), we have argued earlier that the trace of a Case assigner retains the Case-assigning ability of its antecedent.[72] Given this, if the adverbial clause is attached to VP and intervenes between the original position of T and *Sally* in (159a), Watanabe's explanation for the ill-formedness of (159a) holds true, because *will*-T in (161a) is not adjacent to *Sally* due to the intervention of the adverbial clause. However, note that in (159a) T(ense) can assign nominative Case to *Sally* in the VP-Spec position if the adverbial clause is not attached to VP in (159a).

Furthermore, in interrogative sentences with subject-aux inversion, unlike the declarative sentences observed in the previous subsection, the nominative Case of the subject, if assigned anyhow, is never realized as long as the subject lingers in the VP-Spec position at S-structure as Watanabe

[70] Following Pollock (1989), I assume that modal auxiliaries are generated under the position of T(ense). Further Watanabe also assumes the VP internal subject hypothesis. I ignore AGR-O because of its irrelevancy here.

[71] Although Pesetsky (1989) does not divide INFL into several functional heads as in Watanabe (1989a, 1989b), Pesetsky nonetheless states that in interrogative sentences nominative Case is assigned to the VP internal subject in situ, and thus the subject remains in the VP-Spec position, as Watanabe claims. Watanabe (1989a) states that in declarative sentences, the VP internal subject, after being assigned nominative Case in situ with the mechanism sketched in the text, moves up to the IP-Spec position to agree with AGR-S. If the VP internal subject can remain in situ at S-structure, the subject stipulation introduced in subsection 4.1 is immediately violated. This raises a serious problem for us. Pesetsky (1989) claims that in interrogative sentences the question morpheme Q appears under the AGR-S position and that accordingly the Spec of AGR-S, i.e., the IP-Spec position, becomes an Ā-position. Thus *wh*-phrases, if any, are attracted by Q, and consequently they move to the IP-Spec position, which is now an Ā-position, as illustrated in (i):

(i) [$_{IP}$ what$_i$ [$_{I}$ can] [$_{VP}$ Bill do t_i]] (Pesetsky 1989:20)

Given this, there are two possible solutions to the problem: *(a)* Supposing that even in interrogative sentences without *wh*-phrases, a covert operator occupies the IP-Spec position. Provided that this covert operator is, say, an interrogative element denoting what happened (we may further conjecture that it is equivalent to an event argument in the Davidsonian sense (Higginbotham 1985:548), we may illustrate the structure of (160) as in (ii) below, which satisfies the subject stipulation.

(ii) [$_{IP}$ Op. [$_{AGR\text{-}S}$ will-T-AGR-S] [$_{TP}$ *t* [$_{VP}$ Sally [$_{V'}$ take a shower]]]]

(b) We reinterpret the subject stipulation as follows: the topmost A-position must be filled with some argument. As we will observe later, the VP internal subject must move up to the TP-Spec position at lowest, when it cannot move up to the IP-Spec position. If so, the subject stipulation reinterpreted as above is satisfied. Of course, these stipulations want more satisfactory arguments. Incidentally, the problem does not arise if we follow Chomsky's (1989) assumption that Q appears in C position in the matrix clauses.

[72] As a matter of fact, Baker (1988:121) explicitly claims that traces cannot assign Case to an NP which they govern. For the present, I cannot examine whether the examples he explains with that condition can be explained with the opposite condition which we preserve in the text.

(1989a, 1989b) (and also Pesetsky (1989)) assumes. This will be clarified if we take AGR-O into consideration. Compare (161b) with (162) below:

(162) $[_{IP}\, e\ [_{AGR\text{-}S}$ will-T_i-AGR-S$]\ [_{TP}\, t_i\ [_{AGRP}\, t_j\ [_{VP}$ Sally $[_{V'}\, [_{V}$ take AGR-$O_j]$ a shower$]]]]]$

Since AGR-O in English is 'opaque,' take in (162) cannot move up to AGR-O, and it cannot move farther beyond AGR-O because of the HMC (which is deducible from the ECP). AGR-O in (162), in turn, must move down to and merge with V in order to realize the accusative Case of *a* shower at S-structure (see sections 2 and 3 of this paper). (Incidentally, this amalgam of V and AGR-O moves up to the position of t_j in (162) in order to avoid the ECP violation at LF (Chomsky 1989).) AGR-S and T have an affixal feature and as a result must merge with an element which has a phonological content. The modal auxiliary *will* is generated under T and moves up to AGR-S position amalgamating with T and AGR-S. In this way, the structure illustrated in (162) is derived.[73]

Although AGR-S in (162) can govern everything that *will*-T governs from its original position, thanks to the government transparency corollary, AGR-S does not govern *Sally* in (162) because of the minimality barrier induced by t_j, the trace of AGR-O. Thus, *Sally* in (162) needs to move up at least to the AGRP-Spec position where it is governed by AGR-S thanks to the government transparency corollary. Or at most it may move up to the TP-Spec position where AGR-S can govern it from its original position. Since in interrogative clauses the IP-Spec position is regarded as an Ā-position (Pesetsky 1989), *Sally* in (162) cannot move up to this position.

Given that in interrogative clauses the VP internal subject moves up to the AGRP-Spec position or TP-Spec position in order to have its Case realized, we can discern what category actually assigns nominative Case to the subject. Suppose that the adverbial clause in (159a) is not attached to VP.[74] Then the adverbial clause is attached either to AGRP or TP. Take for example the case in which it is attached to TP.[75] The construction is as illustrated in (163):

(163) $[_{IP}\, e\ [_{AGR\text{-}S}$ will-T_i-AGR-S$]\ [_{TP}$ AdvP $[_{TP}$ Sally$_k\ [_{T}\, t_i]\ [_{AGRP}\, t_j\ [_{VP}\, t_k\ [_{V'}\, [_{V}$ take AGR-$O_j]$ shower$]]]]]$

Note that, as discussed above, the VP internal subject *Sally* cannot get nominative Case if it lingers in situ, regardless of whether T or AGR-S is the assigner of nominative Case. *Sally* moves up to the TP-Spec position to satisfy the subject stipulation (see footnote 71), as illustrated in (163), because it cannot move to the IP-Spec position, which is an Ā-position in interrogative clauses. Now, recall that the trace of a Case assigner retains the ability of its antecedent to assign Case. If T is the assigner of nominative Case, *Sally* in (163) can be properly assigned nominative Case because t_i in (163), the trace of T, governs and is adjacent to *Sally* in the TP-Spec position. However, the nominative Case of *Sally* is not properly realized by AGR-S, the realizer of nominative Case. This is because the adjacency requirement of Case realization is not met between AGR-S and *Sally* in

[73] Of course, interrogative sentences with modal auxiliaries other than *will* and *do*-support are derived the same way as this. As for interrogative sentences with the aspectual auxiliaries *have*, *be*, and passive *be*, they need an auxiliary explanation. There is theoretical evidence that such aspectual auxiliaries are generated between T and AGR-O. If they were generated between AGR-O and V as illustrated in (i), AGR-O could not govern the object NP and, as a result, could not realize the Case of the object unless V merges with such aspectual auxiliaries and AGR-O at S-structure. But V evidently never merges with them.

(i) $*[_{IP}$ AGR-S $[_{TP}$ T $[_{AGRP}$ AGR-O $[_{ASPP}$ ASP $[_{VP}$ V NP$]]]]]$

If they were generated at a higher position than T, they would precede modal auxiliaries which are generated under T in sentences involving both. But this is not the case, as (ii) shows:

(ii) *They have must hated it.
(cf., They must have hated it.)

Given that such aspectual auxiliaries are generated between T and AGR-O, we conclude that the S-structure of interrogative sentences involving aspectual auxiliaries are illustrated as follows:

(iii) $[_{IP}\, e\ [_{AGR\text{-}S}$ ASP_i-T_i-AGR-S$]\ [_{TP}\, t_i\ [_{ASPP}\, t_i\ [_{AGRP}\, t_j [_{VP}$ *Subj.* $[_{V'}\, [_{V}$ V-AGR-$O_j]$ *Obj.*$]]]]]]$

Incidentally, Ouhalla (1990) reaches the same conclusion from another observation that ASPP is generated between TP and AGRP. He further concludes that ASPP is generated between NegP and AGRP.

[74] There arises no problem if the adverbial clause in (159a) is attached to VP. If so, we correctly explain the facts concerning Case assignment/realization of the VP internal subject. But, in that case, we cannot discern which category actually assigns nominative Case to the subject.

[75] Obviously, the VP internal subject moves up to the AGRP-Spec position when the adverbial clause is attached to AGRP. But the discussion to be made in the text holds true for the case in which the adverbial clause is attached to AGRP.

(163) because of the intervention of AdvP. This leads us to the conclusion that (159a) is imperfect with respect to nominative Case. This is a desirable result.

In the cases in which the adverbial clause *after John comes home* does not intervene between AGR-S and the TP-Spec position, i.e., in (159b,c) and (160), T governs and is adjacent to the TP-Spec position. Therefore, the subject is properly assigned nominative Case by T. Then the nominative Case is properly realized by AGR-S under government if the subject moves up to the TP-Spec position. Note that the TP-Spec position is adjacent to AGR-S position. If we further assume that subject Agreement coincides with the realization of nominative Case by AGR-S regardless of whether the realization is executed by head-Spec agreement between the AGR-S position and the IP-Spec position or by government by AGR-S, we explain under what mechanism subject Agreement takes place in interrogative sentences. This point is neglected in Watanabe (1989a, 1989b) and Pesetsky (1989).

(164) a. Does John study Spanish?

b. [$_{IP}$ *e* [$_{AGR\text{-}S}$ does-AGR-S-T$_i$] [$_{TP}$ John$_k$ [$_T$ t_i [$_{AGRP}$ t_j [$_{VP}$ t_k [$_{V'}$ [$_V$ study-AGR-O$_j$] Spanish]]]]]

To summarize, as illustrated in (164), the subject which is generated in the VP-Spec position is assigned nominative Case by T at an A-position which T can govern. Further, the nominative Case of the subject which has already been assigned by T is realized by AGR-S under government at the position adjacent to AGR-S, i.e., the TP-Spec position. In addition, this assumption is obviously consistent with the uniformity condition on Case assignment and Case realization, which was proposed in section 2.

In the following subsection, we will examine the validity of the arguments presented above through the analyses of several types of sentences.

4.5 Analyzing Several Patterns of Nominative Case Assignment and Realization

First, let us consider under what mechanism the nominative Case of the subject is assigned and realized in simple declarative affirmative sentences.

(165) a. John studies Spanish.

b. John has studied Spanish.

(166) a. [$_{IP}$ John$_i$ t_j [$_{TP}$ t'_i t_j [$_{AGRP}$ t_k [$_{VP}$ t_i [$_{V'}$ [$_V$ study AGR-S$_j$ t_j AGR-O$_k$] Spanish]]]]] [=(165a)]

b. [$_{IP}$ John$_i$ [$_{AGR\text{-}S}$ has$_j$ t_j AGR-S] [$_{TP}$ t'_i t_j [$_{ASPP}$ t_j [$_{AGRP}$ t_k [$_{VP}$ t_i [$_{V'}$ [$_V$ study AGR-O$_k$] Spanish]]]]]] [=(165b)]

As observed in sections 2 and 3, AGR-O moves down to V, amalgamating with it in order to realize the Case of the object. In clauses without any head capable of supporting the affixal feature of AGR-S and T, AGR-S and T move down to V and merge with the amalgam V-AGR-O, as illustrated in (166a) (Pollock 1989, Chomsky 1989). If there is a head available which is able to support the affixal feature, the head successively moves to AGR-S position amalgamating with T and AGR-S, as illustrated in (166b). In both cases, the subject which was generated in the VP-Spec position moves to the IP-Spec position to satisfy the subject stipulation. Note, however, that if the subject directly moved up to the IP-Spec position in (166a), the subject could not be assigned nominative Case by T under government. Then, suppose that the subject first lands at the TP-Spec position to get assigned nominative Case by the trace of T and then moves up to the IP-Spec position to satisfy the subject stipulation. At the IP-Spec position, the nominative Case of the subject assigned by T at the TP-Spec position is realized by head-Spec agreement between the IP-Spec position and the AGR-S position, resulting in the manifestation of subject Agreement on AGR-S.[76]

[76] The following problem may arise: In the representation (i) below, an intermediate stage of the derivation from the D-structure to the S-structure of (165a), why is it that T cannot assign nominative Case to the object *Spanish* and *study* cannot assign accusative Case to the subject *John* in the VP-Spec position? These 'crazy' Case assignments could occur because in (i) AGR-S and *study* indeed govern *Spanish* and *John*, respectively.

(i) [$_{IP}$ *e* t_j [$_{TP}$ t_j [$_{AGRP}$ t_k [$_{VP}$ John [$_{V'}$ [$_V$ study AGR-S$_j$ t_j AGR-O$_k$] Spanish]]]]]

Next, let us observe declarative negative sentences.[77]

(167) a. John does not study Spanish.

b. [$_{IP}$ John$_i$ [$_{AGR\text{-}S}$ does-AGR-S-T$_j$] [$_{TP}$ t'_i t_j [$_{NegP}$ not [$_{AGRP}$ t_k [$_{VP}$ t_i [$_{V'}$ [$_{V}$ study AGR-O$_k$] Spanish]]]]]]

Since the negative head *not* has no affixal feature, it need not merge with any phonetically realized element. But, being a head, it precludes AGR-S and T from moving to V beyond it in order to support their affixal feature. If nothing happens, AGR-S and T have no supporter for their affixal feature, resulting in ill-formedness. Then, *do*-support, a language-particular rule in English, is invoked, and as a result *do* is inserted into AGR-S position to support their affixal features, as illustrated in (167b) (Chomsky 1989). The subject *John* first moves to the TP-Spec position to get assigned nominative Case by T and then moves up to the IP-Spec position to get the nominative Case realized by AGR-S. If *John* does not move up and lingers in situ, the resultant sentence is ill-formed, as expected:

(168) *Did not John study Spanish.

The ungrammaticality of (168) remains the same even if we try to interpret (168) as an interrogative sentence, as in (169a):

(169) a. *Did not John study Spanish?

b. Didn't John study Spanish?

c. Did John not study Spanish?

(170) a. [$_{IP}$ e [$_{AGR\text{-}S}$ does-AGR-S-T$_j$] [$_{TP}$ t_j [$_{NegP}$ not [$_{AGRP}$ t_k [$_{VP}$ John [$_{V'}$ [$_{V}$ study AGR-O$_k$] Spanish]]]]]] [=(169a)]

b. [$_{IP}$ e [$_{AGR\text{-}S}$ does-AGR-S-T$_j$-not$_j$] [$_{TP}$ John$_i$ t_j [$_{NegP}$ t_j [$_{AGRP}$ t_k [$_{VP}$ t_i [$_{V'}$ [$_{V}$ study AGR-O$_k$] Spanish]]]]]] [=(169b)]

c. [$_{IP}$ e [$_{AGR\text{-}S}$ does-AGR-S-T$_j$] [$_{TP}$ John$_i$ [$_{T}$ t_j] [$_{NegP}$ not [$_{AGRP}$ t_k [$_{VP}$ t_i [$_{V'}$ [$_{V}$ study AGR-O$_k$] Spanish]]]]]] [=(169c)]

As illustrated in (170a), *not* in (169a) blocks government of *John* by T and AGR-S, whence the ill-formedness of (169a). Note that government by T and by AGR-S is necessary for the assignment and realization of nominative Case. Thus even if *John* in (170a) moves up to the AGRP-Spec position, the result is the same. In contrast, as (170b) and (170c) show, T and AGR-S can govern and be adjacent to *John* if not incorporates into the amalgam including T and AGR-S (as in (170b)) or if *John* moves up to the TP-Spec position beyond *not* (as in (170c)). Consequently these sentences are well-formed.

The same is true of interrogative sentences with *wh*-phrases. In such sentences, *wh*-phrases occupy the IP-Spec position, which is an Ā-position in interrogative sentences (Pesetsky 1989). The mechanism of Case assignment/realization and of subject Agreement is the same in other constructions observed above, as illustrated in (171):

(171) a. What does John study t ?

b. [$_{IP}$ what$_k$ [$_{AGR\text{-}S}$ does-AGR-S-T$_i$] [$_{TP}$ John$_k$ [$_{T}$ t_i [$_{AGRP}$ t_j [$_{VP}$ t_k [$_{V'}$ [$_{V}$ study-AGR-O$_j$] t_k]]]]]

Before concluding this subsection, it is interesting to observe under what mechanism the nominative Case of the subjects which do not come from the VP-Spec position is assigned and realized. We immediately recall passive and unaccusative constructions as typical examples of such sentences.

In (i), the nominative Case of *Spanish* could be realized by AGR-S under government and the accusative Case of *John* could be realized by AGR-O under government. Moreover, the subject stipulation would be satisfied if the subject *John* with a realized accusative Case moves to the IP-Spec position after the Case is realized by AGR-O. I postpone considering this issue until the following subsection.

[77] In section 2, I dealt with *not* as an operator introducing Rizzi's (1990) framework. Here I am dealing with it as a head. There seems to be a contradiction, which may disappear if we assume that *not* is a head generated between TP and AGRP. However, because of its semantic character, it induces an operator which binds it at LF. This assumption seems to me to be plausible and tenable. In fact, Ouhalla (1990) advances a similar conclusion.

(172) a. Mary was kissed t

b. Mary has arrived t (at the station)

(173) a. [IP Mary$_i$ [AGR-S was$_j$-T$_j$-AGR-S] [TP t'_i t_j [ASPP t_j [AGRP t_k [VP e [V' [V kiss-en AGR-O$_k$] t_i]]]]]] [=(172a)]

b. [IP Mary$_i$ [AGR-S has$_j$-T$_j$-AGR-S] [TP t'_i t_j [ASPP t_j [AGRP t_k [VP e [V' [V arrive-en AGR-O$_k$] t_i]]]]]] [=(172b)]

As discussed in section 3, the passive morpheme *-en* blocks the accusative Case assignment of V, and unaccusative verbs lack the ability to assign accusative Case.[78] Then, *Mary* in (172a,b) cannot get any Case if it remains in the object position.[79] It needs to move somewhere to be assigned Case. On the other hand, the subject stipulation requires that the IP-Spec position be filled with an argument at S-structure in declarative sentences. In passive and unaccusative constructions, the VP-Spec position is null, and as a result nothing induces any minimality barrier for the movement of the NP from within V′ to the IP-Spec position (see subsection 4.1). Hence, *Mary* in (172a,b) first moves up to the TP-Spec position to get assigned nominative Case by T and then moves up to the IP-Spec position to satisfy the subject stipulation, as illustrated in (173a,b). At the IP-Spec position, the nominative Case *Mary* assigned at the TP-Spec position by T under government is realized by head-Spec agreement between the AGR-S position and the IP-Spec position.

Thus far we have observed that nominative Case is assigned by T and realized by AGR-S, and we have considered how nominative Case assignment and realization are executed by T and AGR-S, respectively. In the following subsection, we will struggle with the problem of how AGR-S and AGR-O, both of which are responsible for Case realization, get on well with each other without interfering in each other's Case realization.

4.6 Some Problems Involved in the Interaction between AGR-S and AGR-O and Their Solution

The problem to which we will address ourselves in this subsection pertains to the construction exemplified by (174) below:

(174) [IP t_i [TP t_i [AGRP t_i [VP *Subj.* [V' [V V AGR-O$_i$ t_i AGR-S$_i$] *Obj.*]]]]]

As was previously mentioned, we need some means to prohibit *Subj.* and *Obj.* from being assigned accusative Case and nominative Case, respectively. In fact, in (174), V indeed governs *Subj.* in the VP-Spec position, and T governs *Obj.* in the following position. If these Case assignments had taken place in (174), the resultant construction would be perfectly well-formed with respect to Case theory. This is so because the nominative Case of *Obj.* assigned by T would be realized by AGR-S under government, and the accusative Case of *Subj.* assigned by V would be realized by AGR-O under government.

Recent studies of word order variations among languages in GB syntax such as, among others, Chomsky (1986b), Koopman (1984), Y.-H. A. Li (1990b) and Travis (1984, 1989) convincingly claim that the Case assignments in English are always executed rightwards. Given this, V in (174) no longer assigns accusative Case to *Subj.* in the VP-Spec position. Then, unless T assigns nominative Case to *Subj.*, *Subj.* cannot survive at S-structure because of the Case filter. Now that V assigns accusative Case to *Obj.* and the trace of T assigns nominative Case to *Subj.* we are no longer bothered by the above problem.

However, another problem immediately arises along with the introduction of the directionality of Case assignment. How and where is *Subj.* in (174) assigned nominative Case by T? Obviously, *Subj.* can get nominative Case neither when it lingers in the VP-Spec position nor when it moves up to the IP-Spec position. This is because neither position is to the right of T itself at S-structure. Now, take the trace of T into consideration. In (174), t_i, the trace of T, is not yet to the right of the IP-Spec position. Moreover, although the trace of T occupies the position to the right of

[78] Note that *-en* in (173b) is not a passive morpheme; rather, it is a perfective morpheme. Accordingly, it does not block Case assignment, though *Mary* is, in fact, never assigned any Case by *arrive* in (173b). But see Cowper (1989) for an argument to the effect that both *-en*s are the same thing in principle.

[79] Note that although unaccusative verbs such as *arrive* can assign inherent (partitive) Case to the following NP, *Mary* in (172b) is not an indefinite NP and thus cannot receive partitive Case (Belletti 1988).

the VP-Spec position, it does not govern the VP-Spec position because of the minimality barrier induced by the trace of AGR-O. Therefore, we need another explanation.

Suppose that nominative Case assignment is always executed by T under government at the Spec position of a maximal projection that T selects. It follows that when T immediately dominates AGRP, the nominative Case assignment takes place at the AGRP-Spec position, as illustrated in (175a); when T immediately dominates ASPP, the nominative Case assignment takes place at the ASPP-Spec position, as in (175b); when T immediately dominates NegP, the nominative Case assignment takes place at the Neg-Spec position, as in (175c). In all the cases, the nominative Case assignment is executed by T under government from its original position.[80]

(175) a. $[_{\text{IP}}\ \textit{Subj.}_k\ t_i\ [_{\text{TP}}\ (t''_k)\ [_{\text{T}}\ t_i]\ [_{\text{AGRP}}\ t'_k\ t_i\ [_{\text{VP}}\ t_k\ [_{\text{V}'}\ [_{\text{V}}\ \text{V AGR-O}_i\ t_i\ \text{AGR-S}_i]\ \textit{Obj.}]]]]]$

b. $[_{\text{IP}}\ \textit{Subj.}_k\ [_{\text{AGR-S}}\ \text{AGR-S}\ t_i\ \text{ASP}_i]\ [_{\text{TP}}\ (t''_k)\ [_{\text{T}}\ t_i]\ [_{\text{ASPP}}\ t'_k\ t_i\ [_{\text{AGRP}}\ t_j\ [_{\text{VP}}\ t_k\ [_{\text{V}'}\ [_{\text{V}}\ \text{V AGR-O}_j]\ \textit{Obj.}]]]]]$

c. $[_{\text{IP}}\ \textit{Subj.}_k\ [_{\text{AGR-S}}\ \text{AGR-S}\ t_i]\ [_{\text{TP}}\ (t''_k)\ [_{\text{T}}\ t_i]\ [_{\text{NegP}}\ t'_k\ \text{not}\ [_{\text{AGRP}}\ t_j\ [_{\text{VP}}\ t_k\ [_{\text{V}'}\ [_{\text{V}}\ \text{V AGR-O}_j]\ \textit{Obj.}]]]]]$

This implies that all the Spec positions of functional categories may be A-positions.

There is evidence which shows that the subject which was generated in the VP-Spec position does indeed land at the Spec position of each functional category and then moves up to the IP-Spec position. Sportiche (1988) and Pesetsky (1989) claim that so-called 'quantifier-floating' actually shows 'quantifier stranding' in the position where subjects land. Given this, we can expect that a 'floated' (or 'stranded') quantifier occurs in each Spec position of functional categories. As (176) shows, this is the case:

(176) a. The students must all have submitted their homework.

b. $[_{\text{IP}}$ The students$_i$ must$_j$ $[_{\text{TP}}\ t_j\ [_{\text{ASPP}}\ t'_i$ all$]_h$ have $[_{\text{AGRP}}\ [_{\text{VP}}$ th $[_{\text{V}'}$ submitted their homework$]]]]]]$

c. The students must have all submitted their homework.

d. $[_{\text{IP}}$ The students$_i$ must$_j$ $[_{\text{TP}}\ t_j\ [_{\text{ASPP}}$ have $[_{\text{AGRP}}\ t'_i$ all$]_h\ t_k\ [_{\text{VP}}$ th $[_{\text{V}'}\ [_{\text{V}}$ submitted AGR-O$_k]$ their homework$]]]]]]$

e. The students have all not submitted their homework yet.

f. $[_{\text{IP}}$ The students$[_{\text{TP}}\ t_j\ [_{\text{ASPP}}$ have $[_{\text{NegP}}\ [t'_i$ all$]_h$ not $[_{\text{AGRP}}\ [_{\text{VP}}$ th $[_{\text{V}'}$ submit their homework yet$]]]]]]$

As observed in the previous subsection, ASPP, which is headed by an aspectual auxiliary such as perfective *have* or progressive *be*, is generated between TP and AGRP. NegP, which is headed by data not, is generated between ASPP and AGRP, as in (176a,e). Then, the fact that the quantifier *all* can be floated (or stranded) between a modal auxiliary and *have* or between *have* and *not* indicates that the subject lands at the Spec position of each functional category on its way to the IP-Spec position.

In this section, we have considered under what mechanism nominative Case is assigned and realized, especially concerning ourselves with the interaction between this and the VP internal subject hypothesis. Then we concluded that T is the assigner of nominative Case and AGR-S is the realizer of nominative Case. In addition, we have explored the interaction between nominative and accusative Case assignment/realization which seems to raise an intricate problem when we assume the VP internal subject hypothesis together with recent studies of head-movement and the theoretical framework that we have defended in this paper.

[80] To ensure that T governs the Spec position of a maximal projection that it selects, we must adopt Baker's (1988) definition of barrier as follows:

(i) Let D be the smallest maximal projection containing A. Then C is a barrier between A and B iff C is a maximal projection that contains B and excludes A, and either:

a. C is not selected, or

b. the head of C is distinct from the head of D and selects some WP equal to or containing B.(Baker 1988:56)

5 Conclusion

In this paper, we have considered the mechanisms that handle the assignment and the realization of abstract Case, which includes both structural Case and inherent Case. We have also theorized that Case assignment and Case realization should be distinguished and, moreover, that they are executed by different mechanisms.

The main claim made in this paper is that the particular functional category AGR governs the manifestations of grammatical relations—namely, abstract Case and Agreement. Although the argument concerning Agreement has not been exhausted, we have, I believe, succeeded in defending this position to a reasonable extent. Extending the idea of government by AGR to Agreement, I will expand on this theme in Ura (in preparation) and in future research.

Turning to concrete problems, in section 2 we observed some striking examples that show a surprising asymmetry. These examples demonstrate the necessity of maintaining the syntactically clear distinction between Case assignment and Case realization, both of which have been treated in the same syntactic manner in much of the literature, although they have been distinguished conceptually. If we continue to treat them in the same manner as before, the examples presented in the section 2 remain unexplained. Adopting Rizzi's (1990) framework, we have concluded that the realization of accusative Case is governed by AGR-O. We have also been convinced that the realization of accusative Case is executed under government by AGR-O.

In section 3, exploiting the conclusion obtained in section 2, we have proposed new conditions on Case. We have constructed these conditions in accordance with new Case theory that the present work attempts to construct. Modifying Shlonsky's (1987) Case conditions, we have concluded that it is necessary to have two conditions on Case applying at different levels of representation. One requires that every overt NP in an A-position must have a realized Case; the other requires that the head of an A-chain must be in a position where structural Case is available. The former is regarded as the Case filter; the latter as the visibility condition. The necessity of maintaining both the Case filter and the visibility condition has recently been defended in Epstein (1990). In section 3 we have also shown the advantages of the modified Case conditions by successfully analyzing various examples which would fail to be explained without those conditions.

In section 4, in light of the hypothesis defended through the present work that Case assignment/realization should be distinguished and that Case realization is executed by AGR, we have considered the mechanism of how and where nominative Case assignment and realization are executed. Through this analysis, we have reached the conclusion that nominative Case is assigned by T and realized by AGR-S. We have also observed that the assignment and realization of nominative Case take place in different positions, just as in the case of the assignment and realization of accusative Case. The other consequence of section 4 is that we have obtained evidence against the general assumption made in much literature on the VP-internal subject hypothesis that the subject generated in the VP-Spec position moves up to the IP-Spec position for the purpose of getting Case. We have observed that the movement of the subject from the VP-Spec position to the IP-Spec position is a manifestation of entangled phenomena.

Of course, there remain many problems in the present work. To build a complete theory of Case, we must observe many types of languages other than English. Notwithstanding, in this paper I was not able to provide a minute examination of the mechanisms of abstract Case in any other languages. In future research, I plan to examine and refine the theory presented in this paper by observing ergative languages, agglutinative languages, and especially isolating languages such as Chinese, which has no overt manifestation of Case and Agreement. I hope that the work presented here will lay part of the foundation for the study of Case in the theory of syntax and grammar.