Tsukuba English Studies (1986) vol.5, 123-166.

Inherent Case*

Toshifusa Oka

0. Recently GB theory has developed the idea that properties of categorial selection are derived from other lexical properties such as semantic selection, θ-marking and Case-marking. We extend here the mechanism of Case-marking to eliminate the notion of categorial selection entirely, at least from core grammar, and present some possible parameters in Case theory.

1. A review of Chomsky's Case theory.

Let us begin by reviewing Chomsky's (1986a) Case theory. Chomsky (1986a) makes a sharp distinction between structural Case and inherent Case. The former is assigned at S-structure independently of θ-marking, while the latter is assigned by an inherent Case-marker α to NP at D-structure if and only if α θ-marks NP. Structural Case includes objective Case assigned by verbs and nominative Case assigned by INFL (AGR). Inherent Case includes oblique Case assigned by prepositions and genitive Case assigned by nouns and adjectives. It is furthermore proposed that inherent Case is assigned at D-structure and realized at S-structure. In English genitive Case is realized by means of POSS-insertion or *of*-insertion:

(1) a. $[_{NP}$ ... [destruction [the city]]]

b. $[_{NP}$ [the city]'s destruction e]

c. $[_{NP}$ the [destruction [of [the city]]]

(2) a. $[_{AP}$ proud John]

b. $[_{AP}$ proud [of John]]

In (1a) *the city* is assigned genitive Case by *destruction*. If NP-movement is appled, Case is realized via POSS-insertion as in (1b). Otherwise an inserted semantically empty preposition *of* realizes Case on the NP, as shown in (1c). *Of* is not really a Case-marker, but rather it only assists an inherent Case-marker

to realize the Case it has assigned. In the case of (2) only *of*-insertion is applicable since POSS-insertion is unavailable in AP. Note that Chomsky argues that the rule of *of*-insertion is a "default case," applying only when there is no preposition available that inherently assigns the appropriate θ-role, as there is in such a construction as *our promise to John*.

Chomsky defines the uniformity condition, an essential property of inherent Case-marking, as follows;

(3) If α is an inherent Case-marker, then α Case-marks NP iff α θ-marks the chain headed by NP

Here Case-marking includes Case-assignment and Case-realization. The inherent Case assigned to an NP at D-structure must be realized on the NP, and not on its trace, at S-structure. That is, inherent Case is, in essence, assigned to a category rather than to a position. Thus on the general assumption that Case-marking applies under government, it follows (3) that an element assigned inherent Case at D-structure may not move to a position which is not governed by its Case-marker. See Chomsky (1986a) for some motivation of this principle.

Chomsky confronts a problem in (4):

(4) a. *John was given a book to e
b. who did you give the book to e

The uniformity condition (3) explains the ungrammaticality of (4a). *To* assigns oblique Case to *John* at D-structure, but cannot realize it on *John* since it does not govern *John* at S-structure, violating (3). But at the same time condition (3) incorrectly bars construction (4b), where *who* is assigned oblique Case but it is not governed by *to* at S-structure. Chomsky solves this problem, by restricting (3) to A-chains. In (4b) *to* Case-marks the A-chain containing just the trace, satisfying (3). He also suggests another possibility. If we assume that prepositions assign objective Case in English as Kayne (1981a, b) suggests, then Case-marking by prepositions is not subject to the uniformity condition, which allows us to avoid restricting it to A-

chains. We will adopt the latter alternative and discuss some consequences below.

2. Genitive Case in English.

It is an interesting question why English genitive Case is not realized on NP unless POSS-insertion or *of*-insertion is applied, as is stipulated in Chomsky (1986a). We will answer this question below, presenting alternative analyses of these rules.

Departing from Chomsky, we assume that Case-assignment and Case-realization apply at the same level even in the case of inherent Case-marking, and that structural Case-marking applies universally at S-structure, while the level of inherent Case-marking is parametrized among languages. In English inherent Case-marking applies at S-structure. To constrain inherent Case-marking, we propose the following Case-matching condition, which plays a significant role in Case theory:

(5) A category without a feature assigning structural Case can be assigned only structural Case

We will argue later that a parameter of this condition plays a role in distinguishing English from other languages. Condition (5) blocks the assignment of genitive Case to NP since NP has no feature assigning structural Case, which leads us to reconsider POSS-insertion and *of*-insertion.

First we consider POSS-insertion. We assume this rule to be an adjunction of the structural Case-marker POSS to NP. The precise representation of (1b) becomes (6):

(6) $[_{\alpha}\ [_{\beta}$ the city] POSS] destruction e

In terms of Chomsky (1986b), α and β are two segments constituting one category, which heads the chain terminating in the position occupied by the trace. POSS marks the inside segment β with structural Case, which we will call possessive Case to distinguish it from genitive Case. *Destruction* θ-marks the chain headed by the category in question, and therefore assigns geni-

tive Case to the category under government. It is the outside segment α that is actually assigned genitive Case, satisfying the Case-matching condition (5) on the assumption that the Case-assigning feature of the structural Case-marker POSS percolates up to α as if POSS is the head of β.

Let us now turn to *of*-insertion. We could analyse *of*-insertion in the same way as POSS-insertion. *Of* is adjoined to NP and assigns objective Case to the inside segment of the derived category consisting of two segments. The outside segment is assigned genitive Case by the head selecting the NP.[1]

Note that POSS-insertion does not apply in APs:

(7) a. $[_{AP}$ certain of John's victory]

b. *$[_{AP}$ [John's victory]'s certain e]

Possessive Case is restricted to the specifier position of NP. However, though no analogue to "passivization in NP" is available for adjectives, there is an analogue to verbal passivization in some constructions. Consider the following:

(8) a. Mary is certain of John's victory.

b. John's victory is certain.

We consider the D-structure of (8) to be (9):

(9) α is certain [John's victory]

We assume that *certain*, as a lexical property, optionally θ-marks an external argument. If an external θ-role is assigned, then α is an argument such as *Mary*, and *of*-insertion is applied to derive (8a). If no external θ-role is assigned, then α is not an argument, and *John's victory* moves to the position of α to receive Case. Here *certain* should not mark genitive Case, given the uniformity condition (3). To guarantee this we propose the following condition:

(10) A $[+V]^0$ with a complement assigns Case iff it assigns an external θ-role

This is an extension to adjectives of what Chomsky (1981, 1986a)

refers to as "Burzio's generalization," which seems to be a natural consequence of the extension of Case-marking to adjectives.[2]

There is an alternative analysis of *of*-insertion. We might eliminate *of*-insertion as a rule and consider the *of*-phrase to be "selected" by a zero-level category, in the same way as prepositions such as those in the following constructions are selected:

(11) a. happy with the results
b. anxious for happiness
c. angry at John
d. dependent on the efforts

We assume that the prepositions in (11) are selected by zero-level categories and are regarded as being of practically no semantic significance. This selection is optionally realized in syntax. That is, such prepositions need not appear in syntactic structures insofar as no principle is violated. *Of* is a default/unmarked option, which is selected by a zero-level category only if no particular preposition is specified in the lexicon. The *of*-phrase is θ-marked by its head, and *of* θ-marks its object in the same way as other prepositions. However, semantically empty prepositions, including *of*, make no semantic selection. The semantic selection of the category selecting such a preposition is indirectly satisfied by the object of the preposition. The semantic features of the object of a semantically empty preposition percolate up to the maximal projection of the preposition since the semantic content of a category is determined compositionally from its constituents. Thus in this approach, selecting an *of*-phrase is essentially equal to selecting an NP insofar as semantic selection is concerned. The appearance of *of* is completely predictable from Case theory, just as in the first approach where *of*-insertion is analysed as an adjunction. A difference between these alternatives is that *of* is present at D-structure in the second approach while it is absent at D-structure in

the first approach if adjunction of *of* is applied in the course of mapping from D-structure onto S-structure. In English this difference seems to entail no significant consequences since inherent Case-marking applies at S-structure. However, the decision between the alternatives would have serious consequences in a language different from English only in that it applies inherent Case-marking at D-structure. We will suggest later that French is such a language and in this language we would like to assign inherent Case to a PP of which a semantically empty preposition is the head. We will therefore adopt the second approach throughout the discussion below.

We have now extended inherent Case-marking to PP. This leads us to revise the uniformity condition (3) by eliminating the restriction to NP:

(12) If α is an inherent Case-marker, then α Case-marks β iff α θ-marks the chain headed by β

This extension makes the prediction that a PP argument cannot be moved outside the government domain of its inherent Case-marker. Consider the following example:[3]

(13) ?Of John's victory I am certain.

This sentence is marginally acceptable. But note that the following contrast:

(14) a. John's victory she said you were certain of.
b. *Of John's victory she said you were certain.

In topicalization from a subordinate clause there is a sharp distinction between the case of preposition stranding and the case of preposition pied-piping, as is predicted. We will discuss preposition stranding later at some length. The situation reminds us of Hornstein and Weinberg's (1981) assumption that the processing of some sorts of simple sentences can bypass the grammar or, at least use it less robustly than in the processing of the corresponding complex sentences. If we follow their suggestion, we have to consider (14b) rather than (13) to faithfully reflect the grammar. (14b) is cor-

rectly ruled ungrammatical given the uniformity condition (12).

We might be able to attribute the marginality of (13) to an analogy with the preposing of adverbial PP as in (15):

(15) At that party John kissed Mary.

we are assuming that the PP-preposing in question makes use of a different syntactic process from the topicalization of PPs. Presumably PP-preposing is adjunction to an arbitrary maximal projection, as Baltin (1982) argues. We assume further that PP-preposing is clause-bounded while topicalization is unbounded. Note the following:

(16) At that party I believe that John kissed Mary.

At that party is moved out of the subordinate clause. Therefore the derivation here involves, not PP-preposing, but topicalization of PP. This consideration accounts for the reduction of acceptability in (14b).

Compare (13) with the following sentence:

(17)??Of John's victory I was certain at that time.

In (17) there is a true adverbial PP *at that time*, so that the analogical process mentioned above is less workable, reducing the acceptability of the sentence.

Note that PP-preposing can prepose a PP to the left of the *wh*-element in the initial position of a matrix sentence, while topicalization can prepose no element to such a position:

(18) a. At that time why did you say that John kissed Mary?

b. *That book why did you give to Mary?

In (18a) the reading where *at that time* is a modifier generated in the subordinate clause is unavailable for the reason just mentioned. Consider the following:

(19) a. *John's victory why were you so certain of?

b.?*Of John's victory why were you so certain?

The acceptability difference here suggests again that the analogical process is relevant.

Note that there is a redundancy in the theory as it now stands. Such a constructions as (13) does not only violate the uniformity condition (12) but also the θ-criterion, a well-motivated principle. We adopt Chomsky's (1986a) definition of the θ-criterion:[4]

(20) A CHAIN has at most one θ-position; a θ-position is visible in its maximal CHAIN

With regard to the visibility condition, Chomsky proposes the following definition:

(21) A CHAIN is Case-marked if it contains exactly one Case-marked position: a position in a Case-marked CHAIN is visible for θ-marking

The effect of the Case Filter is derived from the θ-criterion (20), given the visibility condition (21). Moreover, on the assumption that the mechanism of θ-marking does not refer to the categorial features of arguments, it follows from (20) along with (21) that not only NP arguments but also any other arguments (including PP arguments and CP arguments) must be associated with Case so long as it is associated to a θ-role.

Returning to (13), the chain headed by *of John's victory* has no Case-marked position since the trace cannot be assigned genitive Case by *certain* under the Case-matching condition (5), leading to a violation of the θ-criterion (20) under the visibility condition (21). The situation suggests that we should abandon the uniformity condition. Eliminating this condition, we propose the following inherent Case-marking condition:

(22) If a CHAIN is Case-marked by an inherent Case-marker α, then the CHAIN is θ-marked by α

Condition (22) does not block the derivation of (13). We assume that (22) is the fundamental property of inherent Case-marking. The reduction of the uniformity condition to condition (22) seems to us to be a step in the right direction, although the solution of some possible empirical problems must be left to future research.

3. Clausal arguments.

Let us consider the following contrast:

(23) a. Mary is certain *(of) John's victory. (=(8a))
b. Mary is certain (*of) that John will win.

We have already explained (23a). The next question is why the grammaticality is reversed in (23b). First consider the grammatical case, where *of* is absent. It is reasonable to assume that certain marks genitive Case in (23b) just as in (23a). Moreover the CP must be assigned Case to satisfy the θ-criterion (20). For the Case-matching condition (5) to be satisfied CP must have a feature assigning structural Case. Following Stowell (1981) we assume that the relevant feature is [+Tns], a potential assigner of nominative Case. C and I, which are in a relation something like head-head agreement in the sense of Chomsky (1986b), share the feature [+Tns], which percolates up to CP. This allows the clausal argument to be assigned genitive Case to satisfy the θ-criterion. Now we do not need to adopt Stowell's (1981) suggestion that such adjectives as *certain* assign a θ-role to a complement associated with no Case.

Next we turn to the case where *of* is present in (23b). We assume that Stowell's (1981) Case resistance principle is in essence on the right track to the solution:

(24) Case may not be assigned to a category bearing a Case-assigning feature

We, however, have to revise principle (28) in order for it to work satisfactorily in our framework. Moreover we could combine (24) with the Case-matching condition (5) as in (25):

(25) A. Structural Case may not be assigned to a category with a feature assigning structural Case
B. Inherent Case may not be assigned to a category without a feature assigning structural Case.

We will henceforth refer to (25) as the Case-matching principle to avoid confusion of terms. In (23b) condition (A) of the Case-matching principle (25) is violated since *of* assigns ob-

jective Case to the clausal argument. Now the asymmetry between NP and CP is explained away within Case theory.

Interestingly, a clausal argument behaves in the same way as an NP argument when it is topicalized:

(26) a. That John will win, I am certain *(of).
b. John's victory I am certain *(of).

In both cases in (26), if *of* is absent the trace cannot be assigned genitive Case under the Case-matching principle, leading to a violation of the θ-criterion, while if *of* is present then the trace is assigned objective Case by *of* and the *of*-phrase is assigned genitive Case by *certain*. These example suggest that there is no property of categorial selection, or at least, that such a property is not checked at D-structure. We assume the strongest position: that the grammar does not refer to the categorial features of arguments.

4. Case-marking properties of verbs.

In this section we extend inherent Case-marking to verbs, which makes it possible to eliminate the notion of categorial selection. We will restrict ourselves to verbs semantically selecting propositions in the following discussion.

First consider the following example:

(27) I persuaded John [of the importance of going to college]

Chomsky (1986a) argues that *persuade* assigns genitive Case to the second complement in (27). Following this assumption, we further propose that every lexical category is a potential assigner of inherent Case.

Next consider the following example:

(28) I persuaded John [that it was important to go to college]

It is reasonable to assume that here again *persuade* assigns genitive Case to its clausal complement. This is supported by the ungrammaticality of the following construction:

(29) *[that it was important to go to college] I persuaded John e

If *persuade* assigns structural Case rather than genitive Case, then the construction should be grammatical since the trace is properly assigned Case. Note also that a bare NP does not appear as the second complement:

(30) *I persuaded John [the importance of going to college]

This example too suggests that the second complement is not assigned objective Case, which is assigned to the first complement *John*. It is generally held that one particular kind of Case cannot be assigned to two different positions at the same time. It thus follows that there is no verb selecting more than two complements since verbs have the potential of assigning only two kinds of Case: objective Case and genitive Case, apart from the possibility of dative Case which we will simply leave out of consideration in this study. Furthermore, when a verb takes two complements, one is NP and the other is PP or CP.[5] Along the same line we can argue that nouns and adjectives cannot take more than one complement since they can assign only genitive Case. Supposing that these predictions are borne out, such information must be redundantly stipulated in the lexicon if the properties of categorial selection are incorporated in the grammar.

Let us consider verbs which take just one complement, such as in (31):

(31) a. John insisted that Mary was innocent.
b. John insisted on Mary's innocence.
c. *John insisted Mary's innocence.

(31) indicates that *insist* selects a proposition. That the CP in (31a) is actually a complement rather than an adjunct is indirectly supported by the following example:

(32) Who did you insist was innocent?

Assuming the version of bounding theory developed by Chomsky

(1986b), extraction of a subject out of a clause in a non-complement position leaves a trace which is not properly governed, leading to an ECP violation.[6] So the CP should be in the complement position of *insist* in (32).

The paradigm represented in (31) suggests that *insist* assigns genitive Case but not objective Case. The preposition *on* in (31b) functions like *of* in that it has virtually no semantic content. The entire *on*-phrase therefore denotes a proposition, satisfying the semantic selection of *insist*. The assumption that *insist* assigns genitive Case is supported by the impossibility of topicalization without *on*:

(33) a. That Mary was innocent, John insisted *(on).
b. Mary's innocence, John insisted *(on).

As expected, topicalization of the *on*-phrase is impossible:

(34) a. ?On Mary's innocence, John insisted.
b. *On Mary's innocence, I believe that John insisted.

Here again we assume that it is (34b) that faithfully reflects the grammar. The marginality of (34a) comes from analogy with PP-preposing, as argued with respect to the construction (13). Note also that there is a contrast between PP and CP/NP as shown in (34a) and (33), supporting an analysis in terms of analogy with PP-preposing.

It is no longer necessary to specify that *insist* selects a CP and a PP but not an NP. Since such a property is derived from the Case-marking property of *insist*, we need only the properties of θ-marking and semantic selection. In our framework it is expected that there be free variation between CP and PP in the complement position of verbs (and any other category in principle) selecting a proposition, assuming Chomsky's (1986a) proposal that the canonical structural realization of a proposition is CP and NP. When a verb which does not assign objective Case realizes a proposition as NP, a semantically empty preposition is generated and the semantic content of the NP percolates up to the PP. Here again *of* is a default value,

which is taken by such verbs as *think* and *persuade*. Some verbs take a particular preposition as *insist* selects *on*. This again makes categorial selection redundant.

There is a piece of apparent counter-evidence against our prediction:

(35) a. I believe [that Mary is honest]
b. I believe [(*α) John/the theory]

Suppose α is a preposition. We are restricting ourselves to the case where *believe* selects a preposition and *John/the theory* denotes a proposition. Thus such examples as (36) are irrelevant to the discussion here:

(36) I believe in John/the theory.

The fact that *believe* takes an NP complement indicates that *believe* assigns objective Case. This is also supported by the possibility of topicalization:

(37) a. That Mary is honest, I cannot believe.
b. Mary/That theory, I cannot believe.

How does construction (35a) satisfy condition (A) of the Case-matching principle (25)? One possibility is assume that *believe* optionally assigns objective Case or genitive Case. It assigns objective Case to an NP and a trace and assigns genitive Case to a CP. Note that optional assignment of inherent Case is allowed by the inherent Case-marking condition (22) though it is not allowed by the uniformity condition (12). The question then becomes: why does not *believe* take a PP complement and assign genitive Case to it. Note that *believe* selects the canonical structural realization of a proposition: that is, CP and NP. We interpret the selection of a semantically null preposition to be the last resort which is available when the requirement of the cannonical structural realization is not satisfied.

An alternative account for the grammaticality of the construction (35a) is proposed by Stowell (1981) in a framework where there is no possibility that verbs assign genitive Case.

He proposes that the CP argument moves rightward to an A'-position, and the trace in the D-structure position is assigned objective Case by *believe*, an assumption adopted by Chomsky (1986 a). However, consider the following example:

(38) Who do you believe will win the race?

For the same reason as is given with (32), the CP should be in the complement position in (38), which cannot avoid violating Stowell's Case resistance principle (24) (which is now reformulated as condition (A) of the Case-matching principle (25)).

Stowell should analyze construction (31a) in the same way as (35a). Even if the ECP problem is somehow resolved, the fact that *insist*, which should assign structural Case in his framework, selects PP and not NP, must be stipulated as a property of categorial selection. Moreover, it is problematic that it is impossible to topicalize the CP in (33a) unless *on* is present, while it should be able to move rightward.

Note also that on the assumption that the grammar incorporates no specification of categorial selection, Stowell's theory leads to the prediction that if a verb selecting a proposition takes a clausal complement then it takes an NP complement, and vice versa. But *resent*-type verbs provide counterevidence:

(39) a. John resented my going with Mary.
b. *John resented that I went with Mary.

If the complement is topicalized, both cases are grammatical:

(40) a. My going with Mary, John resented.
b. That I went with Mary, John resented.

To account for these observations, Stowell must not only assume categorial selection but also he must impose some stipulations on the mechanism of checking it. In our framework these facts are derived from Case-marking property of *resent*: that is, it assigns objective Case and not genitive Case. In (39b) the CP is assigned objective Case, violating the Case-matching principle (25). In (40) it is the trace that is assigned objec-

tive Case in both cases.

Though we reject Stowell's proposal discussed above, it does not mean that we deny the possibility of rightward movement of clausal arguments. Consider the following example:

(41) John insisted in the meeting that Mary was honest.

We assume that it is not a stylistic movement that moves the CP to the right. That syntactic movement is involved here is supported by the following example:

(42) *Who did you insist in the meeting was honest?

Compare (42) with (32). The contrast suggests that the rightward movement in question is a syntactic one, since the ECP is generally held to be a non-PF principle. We tentatively assume that the relevant movement is an adjunction to VP. Further we assume that *insist* assigns genitive Case to the moved CP under some version of government.[7] As expected under the Case-matching principle (25), a PP argument but not an NP argument can replace the CP argument in (41):

(43) John insisted in the meeting *(on) Mary's innocence.

Thus our approach can properly deal with rightward-movement constructions.

Next consider the case of *believe:*

(44) a. John believed at that time that Mary was honest.
b. John believed at that time the woman he loved.

Believe assigns genitive Case to the CP in (44a) while it assigns objective Case to the NP in (44b). We assume here that it is not the case that *believe* assigns objective Case to the trace in (44). Note the following contrast:

(45) a. John resented at that party my going with Mary.
b. *John resented at that party that I went with Mary.

If it is possible to assign objective Case to the trace here just as in (40), then (45a) as well as (45b) should be grammatical.

To explain the asymmetry between (45) and (40), we resort to Chomsky's (1986b) chain condition.

(46) 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

What is important to us is the second clause in (46). Chomsky further proposes that the condition is restricted to a maximal A-CHAIN.[8] In addition we accept Safir's (1985) assumption that the VP-adjoined position is a potential θ-position and therefore an A-position.[9] Rightward movement therefore creates an A-chain, while topicalization creates an A'-chain.

Returning to (44) and (45), if the trace is assigned objective Case, then the chain condition (46) is violated since the Case-marked position is not the initial position of the A-chain. This approach accounts for the well-known NP-CP asymmetry found in (47):

(47) I believe to be obvious to everyone *(the fact) that the earth is round.

Compare (47) with (48):

(48) a. I believe *(the fact) that the earth is round to be obvious to everyone.
b. (The fact) that the earth is round, I believe to be obvious to everyone.

(Kuno (1973))

(48a) indicates that *believe* assigns objective Case, not genitive Case, to the subject of the embedded clause, which is required by the inherent Case-marking condition (22). This property of Case-marking holds of (47) as well as (48b). In contrast with (48b), (47) will violate the chain condition (46) if the trace is assigned objective Case, assuming the argument to be in a VP-adjoined position heading an A-chain. Condition (A) of the Case-matching principle (25) allows only the NP argument to be assigned objective Case in the initial position of the chain.

Extending our discussion to adjectives, it is not unreasonable to assume that the AP-adjoined position is also an A-position. Consider the following examples:

(49) a. John was certain at that time that Mary was innocent.
b. John was certain at that time of Mary's innocence.

That the CP/PP argument is actually adjoined to AP is supported by the following examples:

(50) a. How certain at that time that Mary was innocent was John?
b. How certain at that time of Mary's innocence was John?

The CP/PP argument is assigned genitive Case in the position adjoined to the AP of which *certain* is the head.

Next consider the following asymmetry discovered by Baltin (1978):

(51) a. *John is believed to be certain by everybody that Fred is crazy.
b. It is believed to be certain by everybody that Fred is crazy.

In both cases the intervening *by*-phrase indicates that the CP is adjoined to a higher category than the AP, presumably to the VP of which *believed* is the head.[10] In (51a) the CP is not assigned Case since *certain* does not govern it. In (51b) *certain* does not assign Case in the first place, since it assigns no external θ-role (recall the discussion about condition (10)). The CP in (51b) is, however, linked to the expletive *it* in the matrix subject position, satisfying the chain condition (46) as well as the θ-criterion (20).

As expected, verbs as well do not permit their complements to move rightward out of their government domain:

(52) a. John is believed to have insisted (*by everyone) that Mary is innocent.

b. John is believed to have insisted (*by everyone) on Mary's innocence.
c. John was considered to believe (*by everyone) that Mary was honest.
d. John was considered to believe (*by everyone) the woman he loved.

Not only verbs and adjectives but any category in principle blocks rightward movement of a complement out of their government domains insofar as they must Case-mark their complements. The bondedness of rightward movement is thus guaranteed by the theory of Case-marking just discussed.

Let us turn to another consequence of the assumption that verbs assign inherent Case. Endo (1986a) observes the following contrast:

(53) a. The wall sprayed with paint easily.
b. *The bread spread with butter easily.
(54) a. John sprayed the wall (with paint).
c. John spread the bread *(with butter).

We assume that the lexical process responsible for activo-passivization is the thematization of the external argument. The sentences in (53) have the following S-structure representations:

(55) a. $[_{\alpha}$ the wall $]_i$ sprayed e_i $[_{\beta}$ with paint] easily
b. $[_{\alpha}$ the bread $]_i$ spread e_i $[_{\beta}$ with butter] easily

What is crucial here is whether β is an obligatory element or not. As indicated in (54), β is optional in (55a) while it is obligatory in (55b). That is, *spray* θ-marks only α, with β being a modifier which is semantically interpreted as functioning as instrument/material. In contrast with *spray*, *spread* θ-marks β along with α. Since there is no external argument, *spray/spread* does not assign Case under condition (10). α moves to a Case-marked position to satisfy the θ-criterion (20). But β remains to be not Case-marked, so that the θ-criterion is violated in (55b) while vacuously satisfied in (55a).

Interestingly, it is observed by Levin and Rappaport (1985)

that in the case of adjectival passives there is no constraint such as the one in the case of activo-passives just discussed:

(56) a. Stack the rack *(with dishes).
b. The rack remained stacked with dishes.

On Levin and Rappaport's assumptions, *the rack* is an external argument and *with dishes* is an internal argument in (56b), though *stack* internally θ-marks both *the rack* and *with dishes* in (56a). Under condition (10) *stacked* assigns genitive Case to *with dishes*, satisfying the θ-criterion.

Endo (1986a) also observes that there is no preposition stranding in activo-passive constructions:

(57) a. *John depends on easily.
b. John was depended on.

Here again the ungrammaticality of (57a) is explained within Case theory. There are two violations of the θ-criterion in the construction. The PP of which *on* is the head is not Case-marked for reasons now familiar to us, leading to a violation of the θ-criterion. The chain headed by *John* has two Case-marked positions: the subject position of the matrix clause and the object position of *on*, leading to another violation of the θ-criterion. The grammaticality of (57b) suggests that verbal passivization involves a different derivation from activo-passivization. We will develop later a new analysis of verbal passivization.[11]

5. Stranding and Pied-piping of prepositions.

In this section we will discuss some possible parameters in Case theory. As for preposition stranding in passive constructions, we will leave it to the next section.

First consider the following examples:

(58) a. What claim did you insist on?
b. Which hammer did you strike Mary with?
c. What time did you eat an apple at?

Although our informant takes all of the sentences as acceptable, it has been pointed out in the literature that there is a sharp distinction between (58a, b) and (58c): the former are grammatical and the latter is ungrammatical. We believe that the grammar creates this distinction. A possible factor which makes less clear the grammatical judgement here is that the processing is much easier in simple sentences, as already argued. Moreover it is possible that the processing of *wh*-constructions provides another effecting factor. We can eliminate these possible factors to give (59):

(59) a. That claim I believe he insisted on.
b. That hammer I believe he struck Mary with.
c. *That time I believe he ate an apple at.

Now we have got the observations we want from our informant.

Since prepositions are assumed to assign objective Case at S-structure, the ungrammaticality of (59c) is not explained Case-theoretically as in Hornstein and Weinberg (1981), where it is necessary to make use of a rule of reanalysis as well as a filter which rules out a trace assigned oblique Case. We do not resort to the ECP on the assumption that prepositions are not propergovernors, as is proposed by Kayne (1981a, b) who makes use of the co-superscripting, which has the effect of reanalysis. Actually there is evidence that the ECP is irrelevant in (59c):

(60) a. I wonder what to eat at what time.
b. I wonder what to eat when.

Chomsky's (1986b) bounding theory predicts that a *wh*-adjunct cannot be left in situ, as in (60b). This is because movement of an adjunct at LF leaves a trace which is not properly governed, violating the ECP. If *at* is pied-piped by LF *wh*-movement in (60a), then the ECP is violated just as in (60b). Therefore *at* is stranded at LF in (60a), whose grammaticality suggests that the ECP is satisfied not only in (60a) but also in (59c) since the ECP does not distinguish syntactic movement

from LF movement. Thus the ECP account is refuted.[12] Now we have no reason to stipulate that prepositions are excluded from the class of proper governors.

We will present an alternative account of preposition stranding, appealing to the subjacency condition.[13] Note that it is assumed that syntactic movement obeys the subjacency condition while LF movement does not. The grammatical difference between (59c) and (60a) follows from this assumption.

The question is: how does the subjacency condition distinguish between (59a, b) and (59c)? In other words, what structures do they have? Consider the following:

(61) a. *John insisted on that claim, and Mary did so on another claim.
b. John struck Mary with that hammer, and Bill did so with another hammer.
c. John ate an apple at 3 o'clock, and Mary did so at 5 o'clock.

The *do so* test shows that the PP is dominated by the V' node in (61a), while the PP is out of the V' in (61b, c). Then the derivation of (69a) is represented as follows:

(62) $\ldots[_{CP}\ e'''\ [_{IP}$ he $[_{VP}\ e''\ [_{VP}\ [_{V'}$ insist $[_{PP}$ on e $]]]]]]$

With no barriers crossed, the construction is perfectly grammatical.

Next consider the following:

(63) a. *I thought that John would strike Mary with that hammer, and he did with it.
b. I thought that John would eat an apple at that time, and he did at that time.

VP deletion reveals that the PP in question must be dominated by the VP node in (63a) but not in (63b). Thus the derivation of (59b) is represented as follows:

(64) $\ldots[_{CP}\ e'''[_{IP}$ he $[_{VP}\ e''\ [_{VP}[_{V'}$ hit Mary$][_{PP}$ with e $]]]]]$

Movement crosses the PP which is a barrier since it is not L-marked, if we assume that adjunction to PP is impossible.[14] This is only a weak violation of the subjacency condition, so the construction is grammatical.

Finally consider the ungrammatical case of preposition stranding. In consideration of the grammaticality of (63b) we tentatively assume that the PP is adjoined to I' in (59c). The derivation is as follows:

(65) $\ldots[_{CP}\ e''\ [_{IP}\ he\ [_{I'}\ [_{I'}\ ate\ an\ apple\ ][_{PP}\ at\ e\ ]]]$

The PP is a barrier since it is not L-marked. The IP is also a barrier by inheritance of barrierhood from the PP. Hence movement crosses two barriers. This is a strong violation of the subjacency condition, so the construction is ruled ungrammatical. However, note the following example:

(66) I thought that John would eat an apple at 3 o'clock, and eat one at that time he did.

This suggests that there is at least the option where the PP is adjoined to the VP in (59c). In this case the derivation is represented as (67), if adjunction to VP is blocked here:[15]

(67) $\ldots[_{CP}\ e''\ [_{IP}\ he\ [_{VP}\ [_{VP}\ eat\ an\ apple\ ][_{PP}\ at\ e\ ]]]$

Here again the derivation produces a strong violation of the subjacency condition. We hope that though we depend on some unjustified assumptions in the discussion above, the subjacency account of preposition stranding will be proved to be in essense on the right track in the course of developing the theory of barriers.

A rule of reanalysis (and Kayne's cosuperscription) is now unnecessary. Moreover it even causes a serious problem. Consider the following example:

(68) *John insisted on in the meeting Mary's innocence.

In a reanalysis approach it must somehow be guaranteed that reanalysis is inapplicable in case of rightward movement.

Stowell (1981) imposes on reanalysis a requirement to the effect that the antecedent of the trace in the complement position of a complex word formed by reanalysis must be to the left of the trace. But this is a merely a stipulation. In our framework the ungrammaticality of (68) is explained away in exactly the same manner as we explained the boundedness of rightward movement in the previous section. In (68) the chain headed by *Mary's innocence* must be Case-marked in the initial position: namely, the position adjoined to the VP of which *insist* is the head. However, this position is not governed and therefore not Case-marked by the Case-marker *on*.

An interesting question arises concerning preposition stranding. Why do almost all languages other than English resist preposition stranding? The assumption that prepositions do not assign structural Case is not sufficient to block preposition stranding. In German, for instance, prepositions can assign accusative Case like verbs, but preposition stranding is not observed, as Besten (1981) reports. We actually take the position that prepositions are unversally both potential structural Case-markers and potential inherent Case-markers. We assume that the mechanism of Case-marking universally refers to two levels: D-structure and S-structure (and in the next section we will propose an extension to LF). English is a highly marked language, the Case-marking system in part broken. That is, D-structure plays no role in English. Furthermore we assume that universally prepositions assign Case at D-structure and realize it at S-structure independent of what Case they mark, while the other Case-markers assign and realize Case at the same level. Assuming that Case assigned at D-structure is moved away by Move-α along with all other features, it follows that when the object of a preposition moves, it cannot move to a non-Case-marked position since the preposition cannot realize the moved Case under government. This consideration covers every ungrammatical case except for passivization, which we will discuss in the next section. Thus the impossibility of stranding prepositions is reduced to the Case-marking property of the

preposition. In the case of English, Prepositions Case-marks at S-structure just as other Case-markers do, since D-structure is entirely unavailable. Moreover prepositions assign objective Case (they could not assign inherent Case, at least to NP). Thus English can strand prepositions.

Let us turn to preposition pied-piping. Consider the following examples:

(69) a. *On that claim, I believe he insisted.
b. With that hammer, I believe he struck Mary.
c. At that time, I believe he ate an apple.

The ungrammaticality of (69a) is already explained away with resort to the θ-criterion (20) along with the visibility condition (21). In (69b, c) the topicalized PPs are adjuncts as argued above. Thus they do not head a θ-chain, and therefore do not need to be associated with Case. This is the reason why preposition pied-piping is possible in (69b, c). In the discussion below we will restrict the term *preposition pied-piping* to the case of pied-piping of the preposition which is the head of a complement PP. Keep in mind that the possibility of preposition pied-piping implies the possibility to move CP arguments selected by inherent Case-markers out of their government domains.

We will now present a rather speculative proposal concerning parameters in Case theory. First we assume that the level where inherent Case-marking applies is parametrized while structural Case-marking is universally applied at S-structure. This does not hold of Case-marking by prepositions, since it necessarily makes use of two levels: D-structure and S-structure. Furthermore we assume that the level where condition (B) of the Case-matching principle (25) applies is also parametrized while condition (A) applies invariantly at S-structure. Four possibilities arise.

One possibility is that inherent Case-marking applies at D-structure and condition (B) of the Case-matching principle applies at S-structure. In this case the assignment of inherent Case to NP is possible and pied-piping is allowed. We suspect

that German selects these options. This language reveals Case-declension on nouns and seems to permit the fronting of categories assigned inherent Case. Note the following example observed by Kohrt (1975):

(70) Paul hörte, wie Peter den Mann zu gestehen zwang,
Paul heard how Peter the man to confess forced
daß er den Wagen gestohlen hatte.
that he the car stolen had
"Paul heard how Peter forced the man to confess that he had stolen the car."

We assume that the S-structure of (70) is represented as follows:

(71) $\ldots[_{VP}\ldots[_{VP}\ e_i$ gestehen $]\ldots$ zwang $]\ldots\ [_{CP_i}$ daß $\ldots]\ldots$

Here a clausal argument is moved out of the government domain of its head. The corresponding structure is ruled out in English, as argued. In (71) the CP is assigned inherent Case by *gestehen* at D-structure and is adjoined to the higher VP. The derived structure satisfies the chain condition (46), interpreting a Case-marked position to be the position occupied by a Case-marked category.[16] Thus German rightward movement is not clause-bounded, contrasting with its English counterpart.

The second possibility is that both inherent Case-marking and condition (B) of (25) apply at S-structure. In this case neither the assignment of inherent Case to NP nor Pied-PIping (and generally, the fronting of any category selected by an inherent Case-marker) is possible, as in English. However, it is not the case that, in a language selecting these options, prepositions necessarily Case-marks at S-structure as in English, since setting the parameters in this way does not mean that D-structure is entirely unavailable for Case-marking. Thus there should be a language which differs from English only in that it does not permit preposition stranding. But such a language causes serious inconvenience since it prohibits both preposition pied-piping and preposition stranding. Furthermore the language pressures prepositions to assign structural Case only, since no NP can be assigned inherent Case. These seem to be the factors

which led English to break in part the Case-marking mechanism, getting rid of D-structure. Old English seems to be of the first type, as German is. Historically speaking, the shift from OE to Modern English can be considered to be the shift of the level of inherent Case-marking, consequently eliminating reference to D-structure entirely.

The third possibility is that inherent Case-marking applies at S-structure while condition (B) of (25) applies at D-structure. In this case inherent Case can be assigned to a trace as well as to NP. Thus nouns reveal Case declension and pied-piping is allowed. In this respect a language selecting these options behaves like a language of the first type, though it behaves differently in passivization, to which we will return in the next section. Japanese might be of this type. Note the following:

(72) a. John-ga Mary-o nagu-tta
John-NOM Mary-ACC hit-PAST

b. John-ga Mary-ni oitsui-ta
John-NOM Mary-DAT catch-up-with-PAST

c. John-ga Mary-to kekkonsi-ta
John-NOM Mary-with get-married-PAST

d. John-ga Mary-kara nige-ta
John-NOM Mary-from run-away-PAST

We distinguish Case particles *o* and *ni* (72a, b) from true postpositions *to* and *kara* (76c, d), which are selected by verbs. The former are a kind of appendix to NP and take the place of morphological declension. Observe the following:

(73) a. Mary-o [John-ga e nagu-tta]

b. Mary-ni [John-ga e oitsui-ta]

c. Mary-to [John-ga e kekkonsi-ta]

d. Mary-kara [John-ga e nige-ta]

We are assuming here that scrambling is really A'-movement. (73) shows that the complement of an inherent Case-marker can move out of the government domain of the head, just as the complement of a structural Case-marker can. In any case, it is the trace that is assigned Case.

The fourth possibility is that both inherent Case-marking and condition (B) of the Case-matching principle apply at D-structure. Preposition pied-piping is allowed while the chain headed by NP is not marked with inherent Case, which consequently forces prepositions to assign only structural Case. We suspect that French selects these options. This language permits preposition pied-piping and reveals no Case declension of nouns, apart from clitic-like dative pronouns. As has been pointed out in the literature, French does not permit preposition stranding, which shows that in French prepositions mark structural Case, they assign it at D-structure and realize it at S-structure, the unmarked option.

Summarizing, our theory predicts that if a language associates inherent Case with NP then it permits preposition pied-piping, though the reverse is not necessarily true. This explains the strong tendency for the word order to be rather free in a language with a rich Case system. In terms of language acquisition, if a child has found that nouns decline for Case the he/she has learned that prepositions can be pied-piped. Furthermore, if the reduction of prepositional Case-marking as found in English is possible only in a language of the second type, then we are led to another prediction: no language permitting preposition pied-piping permits preposition stranding.

6. Case-stealing.

In this section we will consider verbal passivization. Chomsky (1981) assumes that passive morphology does not assign Case and that the subject is dethematized in passives. However Case is assigned in some constructions such as the following:

(74) John was given a book.

In (74) *given* does assign Case to *a book*. And Roeper (1983) presents evidence against Chomsky's second assumption:

(75) The fact was mentioned to prove a point.

He argues that the rationale phrase is controlled by an implic-

it agent in (75). We will present below an analysis of passivization compatible with these observations, and discuss some interesting consequences.

We propose that the passive morpheme EN is INFL, functioning as an argument.[17] (76), for example, has the D-structure (77a) and the derived structure (77b):[18]

(76) John was killed.

(77) a. $[_{IP}$ e $[_{I'}$ $[_{VP}$ be $[_{IP}$ EN $[_{VP}$ kill John]]]]]

b. $[_{IP}$ $John_i$ $[_{I'}$ was_j $[_{VP}$ e_j $[_{IP}$ $kill\text{-}EN_k$ $[_{VP}$ e_k e_i]]]]]

There are three movements here: *John* is moved to the matrix subject position, *be* is attached to the matrix INFL and *kill* is attached to EN.[19] EN, an argument outside the VP of which *kill* is the head, is assigned an external θ-role by *kill* (or, compositionally by the VP). EN must be associated with Case to satisfy the θ-criterion (20). We propose another way of Case-marking:

(78) α steals Case from β at LF

Just like Case-assignment and Case-realization, Case-stealing applies under government and α is restricted to a zero-level category. We will later discuss some motivation for placing Case-stealing in LF. In (77b) EN steals from the trace of *John* the Case assigned and realized by *kill*. If *John* remains in situ, then it violates the θ-criterion after Case-stealing.[20] Therefore movement of *John* to a Case-marked position is obligatory. In (74) EN steals Case not from *a book* but from the trace of *John*, assuming it is assigned structural Case. In (75) EN acts as a controller of the PRO of the rationale clause. As for the agentive *by*-phrase, we simply interpret it as a modifier, as argued in Zubizarreta (1985).[21]

To justify our analysis, first consider the pseudo-passive construction. Observe the following:

(79) a. That claim was insisted on.

b. *Mary was sung with.

These examples are represented at LF as follows:

(80) a. that $claim_i$ was $[_{IP}$ insist-EN_j $[_{VP}$ e_j $[_{PP}$ on e_i]]]

b. $Mary_i$ was $[_{IP}$ sing-EN_j $[_{VP}$ e_j $[_{PP}$ with e_i]]]

As argued in the previous section, the PP is in the complement position of *insist* in (80a). Therefore it is L-marked and is not a barrier for EN to govern the trace of *that claim*. Satisfying government requirements in (78), EN steals Case assigned to the trace by *on*. In (80b) the *with*-phrase is a modifier just as in (59b), which permits preposition stranding in A'-movement. For EN to govern the trace of *Mary*, there are two barriers: the PP which is not L-marked and the VP which inherits barrierhood from the PP. Thus EN cannot steal Case under government, violating the θ-criterion. In our framework some condition on reanalysis to distinguish the complement PPs and modifier PPs is not only unnecessary, but we do not need reanalysis itself. Moreover, that preposition stranding is more severely constrained in the case of passivization than in the case of A'-movement, as shown by the contrast between (59b) and (79b) is explained for nothing. Note that a language which blocks preposition stranding in the case of A'-movement does not permit it in passivization either, since in such a language traces have no Case to be stolen.

Next consider the following contrast observed by Endo (1986b):

(81) a. John was taken advantage of.

b. *John was taken pictures of.

We assume that the sentences in (81) have the following structure:

(82) $John_i$ was $[_{IP}$ take-EN_j $[_{VP}$ e_j $[_{NP}$ $[_{N'}$ α $[_{PP}$ of e_i]]]]]

Here EN does not govern the trace of *John* since the N' is a barrier by virtue of the minimality condition proposed in Chomsky (1986b) (note 22), so Case-stealing is inapplicable. If the N' is skipped in (82) (see note 19) then EN can steal Case from the trace of *John*. We assume that the referentiality of

NP depends on the specifier. Presenting some evidenceto show that *pictures* is referential while *advantage* is non-referential, Endo concludes that *pictures* has a covert specifier while *advantage* has no specifier. Then in the case where α =*picture* the N' cannot be skipped, blocking Case-stealing. In the case where α =*advantage* the N' is skipped, permitting Case-stealing. (Endo actually analyzes the string *take advantage of John* as $[_{VP}\ V[_{N'}N\ PP]]$.) Here again no special device is needed.

Let us turn to the following constructions:

(83) a. John gave a book to Mary.
b. A book was given to Mary.
c. *Mary was given a book to.

(84) a. John gave Mary a book.
b. Mary was given a book.
c. *A book was given Mary.

In both (83) and (84) only the first complement can be passivized. We propose the adjacency condition on Case-stealing (85) and define the adjacency in question as (86):

(85) A category which steals Case from α is adjacent to α

(86) α is adjacent to β if and only if there is no interposing sister of β or a category dominating β

The adjacency condition of structural Case-marking is reflected in condition (85). Consider the following German examples:

(87) a. Der Junge schenkte dem Mädchen den Hund.
the boy gave the girl the dog
NOM DAT ACC

b. Der Junge schenkte den Hund dem Mädchen.
NOM ACC DAT

c. Der Hund wurde dem Mädchen gegeben.
NOM was DAT given

Examples (87a, b) show that in German the word order of complements is rather free, so the adjacency condition (85) plays no significant role. Thus an accusative object can be freely passivized as in (87c), contrasting with the English example (84c).

It is well-known that in German (and Dutch) the complement

of an inherent Case-marker does not undergo passivization. Consider the following German examples:

(88) a. Der Lehrer lobte den Schüler.
the teacher praised the student
NOM ACC

b. Der Schüler wurde gelobt.
NOM was praised

(89) a. Der Lehrer half dem Schüler.
NOM helped DAT

b. *Der Schüler wurde geholfen.
NOM was helped

(90) a. Der Lehrer gedachte des Schülers.
NOM remembered GEN

b. *Der Schüler wurde gedacht.
NOM was remembered

In (88b) the trace of *der Schüler* is assigned Case by *loben*, and the Case is stolen at LF. In (89b) and (90b) the traces are assigned no Case since inherent Case is assigned at D-structure in German. Though *der Schüler* is assigned nominative Case at S-structure, the implicit arguments cannot steal Case, violating the θ-criterion (20).

Compare these German examples with the following Japanese examples:

(91) a. John-ga Mary-o nagu-tta. (=(72a))
John-NOM Mary-ACC hit-PAST

b. Mary-ga nagur-are-ta.
Mary-NOM hit-PASS-PAST

(92) a. John-ga Mary-ni oitsui-ta. (=(72b))
John-NOM Mary-DAT catch-up-with-PAST

b. Mary-ga oitsuk-are-ta.
Mary-NOM catch-up-with-PASS-PAST

Here the complement of the inherent Case-marker is passivized as well as the complement of a structural Case-marker. Remember that Japanese, contrasting with German, assigns inherent Case (and applies condition (B) of the Case-matching principle (25)) at S-structure, an assumption made in the previous section. In (92b) as well as in (91b) the trace of *Mary* is assigned Case at S-structure and the Case is stolen by the im-

plicit argument at LF, satisfying the θ-criterion.

English exhibits the same pattern as German with respect to the passivization of a complement of an inherent Case-marker, though English assigns inherent Case at S-structure. Consider the following:

(93) That Mary was innocent was insisted *(on).

Following Stowell (1981), we assume that a clausal subject moves to the topic position (in our framework, the SPEC position of CP) from the true subject position (which is category-neutral), to avoid assigning nominative Case to the CP. (93) is represented as follows:

(94) a. [that Mary was innocent][e' was insisted on e]
b. [that Mary was innocent][e' was insisted e]

In (94a) the trace in situ is assigned objective Case by *on* and the Case is stolen by EN. In (94b) the trace in situ cannot be assigned genitive Case by *insist* at S-structure. There is no Case to be stolen by EN, violating θ-criterion. Thus the contrast found in (93) is explained Case-theoretically. We need not refer to categorial selection or to stipulate that the subject is NP, as traditional theories should.

Next compare (93) with the following:

(95) It was insisted (on) that Mary was innocent.

The structure of (95) are as in (96):

(96) a. it_i was insisted on e_i [that Mary was innocent $]_i$
b. it_i was insisted [that Mary was innocent $]_i$

In (96a) the CP is moved to the VP-periphery to avoid being assigned objective Case, given condition (A) of the Case-matching principle (25). The trace is assigned objective Case by *on* and EN steals the Case. Expletive *it* head the CHAIN (*it*, CP, *e*), satisfying the θ-criterion (20) as well as the chain condition (46). In (96b) the CP is assigned genitive Case by *insist*, whether or not it is noved to the VP-periphery. EN steals Case

from the CP, which is linked to expletive *it*, satisfying the θ-criterion. The contrast between (93) and (96) is explained away.

Let us now turn to the following contrast which has been discussed in the literature:

(97) a. That John will win is certain.
b. *That John will win seems.

(97) has the following structures:

(98) a. [that John will win][e' is certain e]
b. [that John will win][e' seems e]

In both cases the chain (CP, *e'*, *e*) is Case-marked in the position occupied by *e'*, satisfying the θ-criterion. Assume that while *certain* optionally assigns an external θ-role (experiencer) to an external argument, *seem* assigns an external θ-role to an implicit argument contained in it. In (98b) the implicit argument cannot be associated with Case since the trace in situ has no Case to be stolen. If *seem*, containing an implicit argument, steals Case from the trace in the subject position (which is governed by *seem* after V-raising to INFL), then the chain headed by the CP violates the θ-criterion.[23]

We have been assuming that Case-stealing applies at LF rather than at S-structure after Case is assigned and realized. There is indirect evidence to support our decision. Chomsky (1986a) points out the following interesting contrast:[24]

(99) a. Mary considers it to be certain that John will win.
b. *Mary considers it to seem that John will win.

Departing from Chomsky, we suspect that the significant difference here between *certain* and *seem* is that *certain* does not assign Case while *seem* assigns inherent Case to its complement and steals the realized Case from it. Suppose that an exceptional Case-marking verb demands that the subject position of its propositional complement is occupied by an argument, and this selection is checked under government at LF.[25] To satisfy this requirement, the CPs move into the subject position occupied by expletive *it* at LF. The representations after LF-move-

ment are as follows:

(100) a. Mary considers [[that John will win] to be certain e]
b. Mary considers [[that John will win] to seem e]

In (100b), just as in (98b), there is no Case for *seem* to steal, assuming that Case-stealing applies after LF-movement. As expected, a similar contrast is observed in the case of verbal passivization:

(101) John considers it to have been insisted *(on) that Mary was innocent.

The constructions in (101) are represented as follows:

(102) a. John considers [[that Mary was innocent] to have been insisted e]
b. John considers [[that Mary was innocent] to have been insisted on e e']

The contrast found in (101) is explained along the same lines as the explanation of (93). These considerations suggest that we are correct in positioning Case-stealing at LF.[26]

7. Summary.

In this study we developed a multi-leveled Case-marking system incorporating parameters. Structural Case-marking universally applies at S-structure, while inherent Case-marking applies at D-structure or at S-structure, depending on how the relevant parameter is fixed. Parametrizing the Case-matching principle (25) we consequently have four possible classes of languages. We extended Case-marking to LF, which explains certain differences in passivization among languages.

We explained at the same time the existence of *of*- and POSS-insertion and the restricted nature of preposition pied-piping in English. As for preposition stranding, it is a by-product of the marked nature of English Case-marking system. Furthermore we need no rule of reanalysis. We succeeded in

eliminating the notion of categorial selection by enriching the Case-marking properties of verbs, and Chomsky's (1986a) uniformity condition (3)/(12) is reduced to the more fundamental condition (22). We hope that our theory not only describes far-reaching English phenomena but also presents a possible approach toward explaining how languages differ with respect to Case-marking.

NOTES

* I would like to thank the following people, with whom I talked at various stages of this work, and whose suggestions, criticism and encouragement helped me to further my understanding of the topic: Yoshio Endo, Shosuke Haraguchi, Wayne Lawrence, Minoru Nakau, Shinji Saito, Masaki Sano and Hiroaki Tada. I owe my deepest gratitude to Wayne Lawrence for lending me his intuition and assisting me in finishing this paper.

[1] Chomsky (1986b) stipulates that Move-α cannot adjoin a category to an argument in θ-position. We simply assume that such a constraint is imposed only on Move-α and therefore neither *of*-insertion nor POSS-insertion is subject to the constraint.

[2] Chomsky (1986a) defines "Burzio's generalization" as follows:

(i) A verb with a complement assigns Case iff it θ-marks its subject

[3] We will make explicit some assumptions concerning the phenomena of topicalization as in:

(i) Mary, John loves.

We assume that topicalization is of the same derivational class as *wh*-movement. Thus topicalization obeys the same constraints as *wh*-movement and is therefore not clause-bounded.

Here we assume Chomsky's (1986b) version of X-bar theory. He defines the X-bar schemata as follows:

(ii) a. $X' = X\ X''^*$
b. $X'' = X''^*\ X'$

The order is parametrized; the coices here are for English. X"* stands for zero or more occurrences of some maximal projection and X stands for some zero-level category. X" in (iia) is referred to as the complement of X (or X') and X" in (iib) as the specifier (henceforth, SPEC) of X (or X', or X"). X" is conventionally replaced by the symbol XP. Chomsky furthermore extends the schemata (ii) to the nonlexical categories I(NFL) and C(omplementizer). Then the clausal structure is represented as in (iii):

(iii) $[_{CP}$ SPEC $[_{C'}$ C $[_{IP}$ SPEC $[_{I'}$ I VP]]]]

Following Stowell (1981), we assume the SPEC position of IP to be category-neutral.

Chomsky (1986b) proposes that *wh*-movement is analyzed as movement to the SPEC position of CP. If topicalization makes use of the same mechanism as *wh*-movement, then (i) has the following derivation:

(iv) a. $[_{CP}$ $[_{C'}$ C $[_{IP}$ John loves Mary]]]

b. $[_{CP}$ $Mary_i$ $[_{C'}$ C $[_{IP}$ John loves e_i]]]

Move-α maps the D-structure representation (iva) onto the S-structure representation (ivb), where an intermediate trace is omitted. There is much contrversy about where topicalized elements appear, but even if we are proved to be wrong in this respect, our discussion below will remain intact in essence, as long as topicalization creates an A'-chain.

[4] The definition of CHAIN includes two cases: the chain and the expletive-argument pair. The latter case is exemplified in (i):

(i) a. it_i seems [that John is honest]$_i$

b. $there_i$ is [a book]$_i$ on the table

Expletives *it* and *there* are linked (coindexed) to the arguments *that John is honest* and *a book* respectively. Chomsky furthermore proposes the following D-structure condition:

(ii) A D-structure A-position is occupied by α, α non-empty, iff α is linked to an argument

Condition (ii) constraints the linking of expletives and arguments to apply at D-structure.

[5] There are apparent counter-examples:

(i) a. John talked to Mary about himself.
b. John explained to Mary that he was late because of the bus strike.

The verbs in (i) seem to have two complements. The *to*-phrases should be assigned inherent Case (presumably, dative Case). However, there are constructions where NPs seem to be assigned dative Case:

(ii) a. John gave Mary a book.
b. John bought Mary a doll.

For a possible analysis of dative constructions such as (ii), see Stowell (1981), who has recourse to the mechanism of word formation.

[6] The ECP requires traces to be properly governed. We assume that proper government includes antecedent government (government by a member of the same chain) and θ-government(, though Chomsky (1986b) eliminates θ-government from the definition proper government, at least for traces governed by verbs). See note 13 for the definition of relevant terms.

[7] See note 13 for the definition of government.

[8] Chomsky (1986b) further restricts the chain condition to maximal A-chains, without justification.

[9] The assumption that the VP-adjoined position is an A-position has effects on the analysis of A-movement. See note 26 for an empirical consequence.

[10] We will present a precise analysis of passive morphology in section 6.

[11] Such a construction as (57a) could be (or should be) ruled out by some other principles. Activo-passives as well as nominal passives are more severely constrained than verbal

passives:

(i) a. The theory is believed.
b. That the earth is round is believed.
c. It is believed that the earth is round.
(ii) a. *The theory believes easily.
b. *That the earth is round believes easily.
c. *It believes easily that the earth is round.
(iii) a. *the theory's belief (passive reading)
b. *that the earth is round's belief
c. *its belief that the earth is round

In (iii) examples (b) and (c) might be ruled out Case-theoretically as well. (iiia) has the reading "what the theory believes" but not the reading "that the theory is believed." It migh be that activo-passives and nominal passives must meet a condition defined in terms of some notion such as agentivity. We could impose on relevant operations the following constraints: that only the agent-role is dethematized in activo-passivization and that only the agent-role is made implicit in nominal passivization. Alternatively, we could resort to the notion of affectedness. See Fiengo (1980), who develops a theory incorporating the feature [±affect] to explain the behavior of activo-passives and nominal passives. If such an approach is justified then the ungrammaticality of (57a) might be explained independently of Case-theoretic consideration.

[12] For another piece of motivation going against the ECP account, see Aoun (1985) where it is argued that preposition stranding is allowed at LF in French, a language which never permits a stranded preposition at the surface.

[13] We follow in essence Chomsky's (1986b) bounding theory, which incorporates the following:

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

(ii) M-command
α m-commands β iff α does not dominate β and every maximal projection that dominates α dominates β

(iii) Domination (Inclusion)
α dominates β if every segment of α dominates β

(iv) Exclusion
α excludes β if no segment of α dominates β

(v) Barrier
α is a barrier for β iff (a) or (b):
a. α is a blocking category for β, α ≠ IP
b. α immediately dominates γ, γ a blocking category for β

(vi) Blocking category
α is a blocking category for β iff α is not L-marked and α dominates β

(vii) L-marking
α L-marks β iff α is a lexical category and β agree with the head of γ that is θ-governed by α

(viii) θ-government
α θ-governs β iff α is a zero-level category that θ-marks β, and α, β are sisters

(ix) Subjacency condition
If (α_i, α_{i+1}) is a link of a chain $(\alpha_1,\ldots,\alpha_n)$, then α_{i+1} is 1-subjacent to α_i

(x) N-subjacency
β is n-subjacent to α iff there are less than n+1 barriers for β that excludes α

Following Chomsky, we assume that the movement crossing just one barrier creates only a weak violation of the subjacency condition. In this case the derived construction is grammatical, satisfying condition (ix).

Note that definition (i) blocks a VP-adjoined category from being governed by a category inside VP, which is incompatible with our assumption that a verb assigns Case to its complement

adjoined to the VP of which the verb is the head. In Chomsky's framework a VP-adjoined trace should not be governed by the trace in the D-structure position. If this case of government is blocked on some general grounds, we can easily incorporate head-government of the adjoined position into the core cases, for example, by revising the definition of m-command which enters into the definition of government as follows:

(xi) α m-commands β iff α does not dominate β and every maximal projection that dominates α does not exclude β

This formulation of m-command is essentially the same as Chomsky's (1981) definition of c-command.

[14] Chomsky (1986b) suggests the possibility of adjoining an NP argument (but not a PP argument or an adjunct) to an adjunct PP which dominates a clause or a gerund.

[15] To block VP-adjunction in this case, we tentatively assume that a category α cannot be adjoined to a category β to which a category dominating α is adjoined.

[16] Even if German moves a CP rightward to an A'-position, the chain condition is vacuously satisfied.

[17] Roberts (1985) presents a similar analysis. He proposes that EN is a feature complex contained in INFL and functions as a subject clitic.

[18] The IP of which EN is the head has no SPEC and the I' node is skipped, following Chomsky's (1986b) assumption that if the specifier position is missing in a maximal projection X" then the X' node is skipped. In the cases of VP, AP and PP the X' nodes are always skipped since they have no subjects.

[19] Following Chomsky (1986b), we will refer to the movement of verbs to INFL as V(erb)-raising, which has the same effect as affix hopping.

[20] More precisely, it is a complex of EN and *kill* derived by V-raising that actually steals Case. Henceforth we will conventionally refer to EN as the Case-stealer in passivization.

[21] Roberts (1985) proposes that the *by*-phrase is an argument linked to EN which behaves as a clitic.

[22] Chomsky (1986b) defines the minimality condition as follows:

(i) α is a barrier for β if α is the immediate projection of γ, a zero-level category distinct from β

Condition (i) holds of government and not movement. Further I' is stipulated to be not subject to (i).

[23] There is some indirect evidence to support the idea that a zero-level category contains an implicit arguments. Note the following:

(i) John took Mary's pictures of himself.

The sentence has been treated as ungrammatical in the literature. But our informant takes it as acceptable if *Mary* is understood to be the possessor of the pictures taken by *John*. We assume that *pictures* contains an implicit argument and assigns it an external θ-role. It is this implicit argument that actually binds *himself* in its governing category. See Williams (1985) and Saito (1986) for somewhat similar approaches to such sentences as (i).

A question is how the implicit argument is associated with Case to satisfy the θ-criterion. One possibility is that the Case assigned to the NP of which *pictures* is the head percolates down to *pictures*, which contains the implicit argument. Alternatively, *pictures* might steal possessive Case from *Mary* on the assumption that *Mary* behaves as a modifier rather than as an argument so that it does not need Case to satisfy the θ-criterion at LF.

[25] Chomsky (1986a) actually offers the following examples:

(i) a. John believes [it to be obvious that S]
b. *John believes [it to seem that S]

[26] These considerations reasonably extend to small clause constructions.

[27] A question arises concerning exceptional Case-marking constructions: how are IP arguments Case-marked? For example, consider the following:

(i) John considers $[_{IP}$ Mary to be intelligent]

In (i) the IP receives a θ-role from *consider*, and therefore must be associated with Case. As for *Mary*, it is assigned objective Case by *consider* though it is assigned an external θ-role indirectly by *intelligent*. Chomsky (1986b) argues that INFL agrees with its SPEC (and with its maximal projection by general convention). Therefore IP agrees with its SPEC. We propose that the Case assigned to the SPEC of IP percolates up to the IP through the agreement relation. Thus the Case assigned to *Mary* is percolated up to the IP of which *Mary* is the SPEC, satisfying the θ-criterion. The mechanism of Case percolation extends to small clauses as found in (ii):

(ii) John considers $[_{\alpha}$ Mary $[_{\beta}$ intelligent]]

The small clause α is θ-marked by *consider* and therefore needs Case. Chomsky (1986a) argues that the subject of a small clause and its head are in agreement. Thus the Case assigned to *Mary* by *consider* percolates up to the entire small clause through agreement.

Next consider the raising constructions as found in (iii):

(iii) John seems $[_{\alpha}$ e to be considered $[_{\beta}$ e to be intelligent]]

In (iii) both α and β need Case, and the one available Case is assigned to *John* in the matrix subject position. Therefore Case percolation should be defined to make use of Case inheritance through chains. We will here leave open the precise definition of Case percolation. Consider the case of "super-raising" as in (iv):

(iv) *John seems $[_{\alpha}$ that it is considered $[_{\beta}$ e to be intelligent]]

Here both α and β must be associated with Case. However, Case percolation applies to β but not to α, leading to a θ-criterion violation. Chomsky (1986b) rules out construction (iv) by the ECP. To see his argument, consider the following:

(v) a. John seems to be intelligent.

b. $John_i$ [seem-I]$_j$ [$_{VP}$ e_j [$_{IP}$ e_i to be intelligent]]

Chomsky argues that an index is shared in SPEC-head agreement and that it is the same index that appears in a chain. So in (v) i = j, and the trace of *John* is coindexed with and therefore antecedent-governed by the trace of *seem*, satisfying the ECP. In (iv) the trace of *John* is not governed by the trace of *seem*, and therefore remains to be not properly governed, violating the ECP. If the option of adjunction to VP is available in NP-movement, then the trace of *John* in (iv) is antecedent-governed by the trace adjoined to the VP of which *consider* is the head. In Chomsky's framework where the VP-adjoined position is an A'-position, if there remains a trace in a VP-adjoined position then the binding principle is violated, since the trace in the D-structure position is locally A'-bound and at the same time A-bound. However, in our framework the VP-adjoined position is an A-position, so the ECP violation is avoided. This could eliminate Chomsky's stipulations concerning SPEC-head agreement.

REFERENCES

Aoun, J. 1985. *A grammar of anaphora*. Cambridge, Mass.: MIT Press.

Baltin, M. 1978. *Toward a theory of movement rules*. Ph.D. dissertation, MIT.

———. 1982. "A landing site theory of movement rules," *Linguistic Inquiry* 13:1. 1-38.

Besten, H. den. 1981. "A Case filter for passives," in *Theory of Markedness in Generative Grammar*. 65-122. Pisa: Scuola Normale Superiore di Pisa.

Chomsky, N. 1981. *Lectures on government and binding*. Dordrecht: Foris.

———. 1986a. *Knowledge of language: Its nature, origin, and use*. New York: Praeger.

———. 1986b. *Barriers*. Cambridge, Mass.: MIT Press.

Endo, Y. 1986a. "A constraint on English activo-passives," in this volume.

———. 1986b. "On English idiom passives," to appear in *Gengo Bunka*. Meiji Gakuin University.

Fiengo, R. 1980. *Surface structure*. Cambridge, Mass.: Harvard University Press.

Hornstein, N. and A. Weinberg. 1981. "Case theory and preposition stranding," *Linguistic Inquiry* 12:1. 55-91.

Kayne, R. 1981a. "ECP Extensions," *Linguistic Inquiry* 12:1. 93-133.

———. 1981b. "On certain differences between French and English," *Linguistic Inquiry* 12:3. 349-371.

Kohrt, M. 1975. "A note on bounding," *Linguistic Inquiry* 6:1. 167-171.

Kuno, S. 1973. "Constraints on internal clauses and sentential subjects," *Linguistic Inquiry* 4:3. 363-385.

Levin, B. and M. Rappaport. 1985. "The formation of adjectival passives," Lexicon Project Working Papers Number 2, Center for Cognitive Science, MIT.

Roberts, I. 1985. *The representation of implicit and dethematized subjects*. Ph.D. dissertation, USC.

Roeper, T. 1983. "Implicit thematic roles in the lexicon and syntax," unpublished manuscript, University of Massachusetts.

Safir, K. 1985. *Syntactic chains*. Cambridge: Cambridge University Press.

Saito, S. 1986. "On control into NP," in this volume.

Stowell, T. *Origins of phrase structure*. Ph.D. dissertation, MIT.

Williams, E. 1985. "PRO and subject of NP," *Natural Language and Linguistic Theory* 3:3. 297-315.

Zubizarreta, M. L. "The relation between morphophonology and morphosyntax: The case of Romance causatives," *Linguistic Inquiry* 16:2. 247-289.

Institute of Literature and Linguistics
University of Tsukuba