

**Compound and Non-compound reflexives:
A Generalized Binding Approach***

Jun Abe

0. Introduction

In the history of development of the binding theory, there have been two significant turning points in early 1980's. One is where, the two binding conditions proposed by Chomsky (1973, 1980) as the Tensed S Condition (TSC) and the Specified Subject Condition (SSC), were united into one with its relevant binding domain defined in terms of SUBJECT, which is AGR or a traditional subject. The other is where, contrary to Chomsky (1973, 1980), Chomsky (1981) confined the application of the binding theory to A-binding relation, i.e., the relation in which an anaphor is bound by its antecedent in A-position, and the phenomena with respect to A'-relation such as the one between a *wh*-phrase and its trace, which were explained under the binding conditions in Chomsky (1973, 1980) should be accounted for by another principle, i.e., the Empty Category Principle (ECP). On the other hand, Aoun (1981), following and extending the idea of Chomsky (1973, 1980), proposed that the binding theory should apply to A'-binding relation as well and consequently the ECP can be dispensed with. This theory is what Aoun (1981) calls the Generalized Binding Theory.

The purpose of this paper is to clarify general properties of anaphors such as reciprocals and reflexives on the basis of cross-linguistic observation made by Yang (1984) and to reconsider the organization of the binding theory. More specifically, I will propose that there should be two separate binding domains relevant to the binding principles: one is defined in terms of Agr or Tense and with this domain the binding principles have the same effect as the Tensed S Condition; the other is defined in terms of a subject, which I will argue should be replaced by predication proposed by Williams (1980), and the

effect of the binding principles with this domain corresponds to the Specified Subject Condition.

Especially, I will focus on how the latter condition serves to work properly in the whole system of the binding theory, since the two different reflexives which Pica (1984, 1985, 1987) calls compound and non-compound reflexives show the same behavior with respect to this condition as that of non-argumental vs. argumental *wh*-traces from the viewpoint of Aoun's (1986) Generalized Binding Theory, which suggests at least indirectly that the structural condition under which an anaphor can take its antecedent must be stated in a unified way with respect to A'-binding relation as well as A-binding relation. How this correlation should be captured in the grammar is another point in this paper. Here I will adopt Aoun's Generalized Binding Theory and modify it with respect to the determination of its relevant binding domains, as mentioned above, and show how this theory explains the above mentioned correlation.

1. Theoretical Background: the Generalized Binding Theory

In this section I will briefly outline the system of Aoun's Generalized Binding Theory; for further details, see Aoun (1985, 1986) and Aoun et al. (1987). The sense of "generalized" in this theory is that, whereas Chomsky's (1981) binding theory applies only to A-binding relation, Aoun's theory extends its application to A'-binding relation such as that of *wh*-phrases and their traces.

The binding principles that I adopt here is as follows:

- (1) (where X = A or A')
- A. An X-anaphor must be X-bound in its Domain.
 - B. An X-pronoun must be X-free in its Domain.
 - C. R-expression must be A-free.

(Aoun et al. (1987: 548))

Under this theory all empty NPs are anaphors in that they lack full phonetic matrices and need their antecedents according to

Aoun (1985). Thus *wh*-traces, for example, are anaphors as well as R-expressions and hence subject to both Principles A and C; namely, they must be A-free and A'-bound in their Domains. As for a Domain relevant to these principles, I will adopt the following only for expository purposes; I will later propose a different definition about a Domain.

- (2) A Domain for a given expression α is the first clause (S or S') or NP that contains an accessible SUBJECT for α .
- (3) A SUBJECT may be Agr, (NP,S), or (NP,NP) (ibid.: 548)
- (4) α is accessible to β iff β is in the c-command domain of α and coindexing of (α, β) would not violate the *i*-within-*i* Condition or Principle C of the binding theory. (Aoun (1985: 30))

This theory applies to A-binding relation in the same way as that of Chomsky (1981). Consider the following examples:

- (5) a. *Mary thought that (herself Agr was smart).
 b. *Mary expected (John to like herself).

In both sentences, the Domain for *herself* is the bracketed S since it is the first clause that contains Agr in (5a) and (NP, S) in (5b). In this domain, *herself* is not A-bound, violating Principle A of (1); hence the ungrammaticality of both sentences.

Next let us see how this theory applies to A'-binding relation. Consider the following examples:

- (6) a. Who_i do you think ((*that), t_i) t_i Agr read the book)?
 b. Who_i do you think (((that), t_i) Fay Agr saw t_i)?

(6a) can be accounted for under this theory in the same way as (5a); the Domain for the trace in subject position is the bracketed S' since it is the first clause that contains Agr, and

hence the trace in question is A'-bound by the intermediate trace when *that* is absent, and otherwise the presence of *that* prevents the former trace from being A'-bound by the latter. This labels (6a) as grammatical in the former case and ungrammatical in the latter. On the other hand, in (6b) the trace in object position, unlike the trace in subject position in (5b), does not appear to obey Binding Principle A since the sentence is grammatical regardless of the presence of *that*. Recall that *wh*-traces are subject to both Principles A and C. Thus, according to (4), neither the embedded subject nor Agr is not an accessible SUBJECT to the trace in question under the assumption that coindexing of a subject with an Agr under agreement is relevant to accessibility, as Chomsky (1981) assumes, since coindexing of the trace with either SUBJECT would result in the former being A-bound by the latter, violating Principle C. The same holds true for the case where the matrix subject or Agr is taken as SUBJECT. Therefore, there is no SUBJECT accessible to the trace and the binding theory does not work in this case; hence the grammaticality of the sentence regardless of the presence of *that* in the intermediate Comp.

Furthermore, consider the following sentence:

- (7) Why_i did Fay say ((^{*}that)_i the boat Agr sank t_i)?
 (Aoun et al. (1987: 560))

This sentence indicates that the trace of a *wh*-adjunct is, unlike that of a *wh*-argument in (6b), subject to either the SSC or the TSC. In fact, as sentence (8a) suggests, it is subject to the SSC.

- (8) a. *how_i did John know (which car_j PRO to fix e_i e_j)
 b. which car_i did John know (how_j to fix e_i e_j)
 (Chomsky (1986b: 11))

Aoun (1986) attributes this difference between arguments and adjuncts to their difference in referentiality and applicability of Principle C. On the basis of the fact that when

quantification is applied to arguments, their values range over referential expressions, i.e., over individuals, but that when it is applied to adjuncts such as *how* or *why*, it is a quantification over predicates, he argues that "traces of adjuncts will not be treated as referential expressions, i.e., as name-like expressions (R-expressions)." (*ibid.*: 31)¹ If this is correct, then adjuncts will not be subject to Principle C. Thus, in (7) and (8a), the Domain for the adjunct trace is the bracketed S' since it contains Agr or *the boat* in (7) and PRO in (8a) as its accessible SUBJECT because of the irrelevance of Principle C in the case of adjunct traces. In this domain, the trace is not A-bound in (7) with the presence of *that* and in (8a), violating Principle A. This explains the ungrammaticality of these sentences.

2. Universal Properties of Lexical Anaphors

In this section we will see the behaviors of lexical anaphors such as reflexives and reciprocals with respect to the TSC and the SSC on the basis of cross-linguistic observation originally made by Yang (1984). For expository purposes, I will say that the TSC applies to an anaphor when its Domain in the sense of (2) is determined by AGR being taken as an accessible SUBJECT whereas I will say that the SSC applies to an anaphor when its Domain is determined by a traditional subject being taken as an accessible SUBJECT.

As for the TSC, the lexical anaphors of the languages which are assumed to have Agr are universally subject to this condition, as shown in (9) in English,

- (9) a. *Mary thought that herself was smart.
 b. *The boys thought that each other was smart.

although, according to Yang (1984),

- (10) AGR is parameterized for individual languages:
 (a) INFL of a finite clause for Russian, Hindi,

Norwegian, Gothic, Latin, etc.

(b) INFL of an indicative clause for Icelandic, Italian, etc.

(c) COMP for Dutch, etc. (*ibid.*: 204)

For detailed description and illustration, see Yang (1984). Of course, in the languages which lack Agr, for example, Japanese, Korean, etc., the lexical anaphors do not obey the TSC, as illustrated in (11) in Japanese.

(11) a. Mary-wa jibun(-jishin)-ga atama-ga i-i-to omot-
Mary-Top self -Nom smart -COMP think
te-i-ru.

Prog-Pres

(Mary_i thinks that self_i is smart.)

b. karera-wa otagai-ga atama-ga i-i-to omot-te-
they-Top each other-Nom smart -COMP think
i-ru.

Prog-Pres

(They think that each other is smart.)

As for the SSC, on the other hand, some lexical anaphors obey this condition, but others do not; for example, *-self* and *each other* in English are subject to it, as shown in (12), but *sebja* in Russian is not, as shown in (13a), although it obeys the TSC, as shown in (13b):

(12) a. Mary_i asked Jane_j (PRO_j to wash herself_{j, *i})

b. They_i asked them_j (PRO_j to wash each other_{j, *i})

(13) a. Professor_i poprosil assistenta_j (PRO_j chitat'
asked assistant read
svoji_{i, j} doklad).

self's report

(The professor_i asked his assistant_j to read
self's_{i, j} report.)

b. Vanja_i znaet chto Volodja_j ochen' ljubit

know that love very much

sebja_{j, *i}.

self

(Vanja_i knows that Volodja_j loves self_{j, *i} very
much.) (Rappaport 1982)

Note that this discrepancy in the applicability of the SSC is not attributed to variation in languages; the Japanese reflexives *jibun* and *jibun-jishin*, for example, behave differently in this regard, as shown below:

- (14) a. John_i-wa Bill_j-ga jibun-jishin_{j, *i}-wo nikun-de-
John-Top Bill-Nom one - self -Acc hate-Prog-
i-ru to omot-ta.
Pres COMP think-Past
(John_i thought that Bill_j hates himself_{j, *i}.)
- b. John_i-wa Bill_j-ga jibun_{i, j}-wo nikun-de-iru to
John-Top Bill-Nom self -Acc hate-Prog-Pres COMP
omot-ta.
think-Past
(John_i thought that Bill_j hates self_{i, j}.)

The Japanese reciprocal *otagai* behaves like *jibun-jishin* in that it obeys the SSC, as shown below:

- (15) a. karera-wa otagai-wo nikun-de i-ru.
they-Top each other-Acc hate-Prog-Pres
(They hate each other.)
- b. *karera-wa Bill-ga otagai-wo nikun-de i-ru
they-Top Bill-Nom each other-Acc hate-Prog-Pres
to omot-ta.
COMP think-Past
(They thought that Bill hated each other.)
(Ueda (1984: 6-7))

In fact, Pica (1984, 1985) observes that compound reflexives or reciprocals such as *herself*, *each other*, *jibun-jishin*, *otagai*, etc. are usually subject to the SSC while non-compound

reflexives such as *sebja*, *jibun*, etc. are not.² Interestingly, he attributes this difference to that between argument and non-argument anaphors; that is, compound reflexives or reciprocals are analyzed as non-argumental anaphors and as such obey the SSC whereas non-compound reflexives are analyzed as argumental anaphors and as such do not obey the SSC. This descriptive generalization is reminiscent of the difference in the applicability of the SSC between the traces of argumental *wh*-phrases such as *who*, *what*, etc. and non-argumental *wh*-phrases such as *why* and *how*, as discussed in Section 1. I will discuss this point in Section 4.

Furthermore, Pica observes that non-compound reflexives have the property that they must take subjects as their antecedents (which we will call the Subject Antecedent Condition), as shown in (16), while compound reflexives or reciprocals need not, as shown in (17).

- (16) Bill₁-wa Mary₁-ni jibun_{1,1}-no shashin-wo mise-ta.
 Bill-Top Mary-Dat self -Gen picture-Acc show-Past
 (Bill₁ showed Mary₁ self_{1,1}'s picture.)
- (17) a. karera₁-wa Bill to Mary₁-ni otagai_{1,1}-no
 they-Top Bill and Mary-Dat each other-Gen
 shashin-wo mise-ta.
 pictures-Acc show-Past
 (They₁ showed Bill and Mary₁ each other_{1,1}'s pictures.)
- b. Jane₁-wa Mary₁-ni jibun-jishin_{1,1}-no shashin-wo
 Jane-Top Mary-Dat herself -Gen picture-Acc
 mise-ta.³
 show-Past
 (Bill₁ showed Mary₁ her own_{1,1}'s picture.)

Interestingly, however, even compound lexical anaphors do obey the Subject Antecedent Condition where they are what Giorgi (1984) calls long distance anaphors, as illustrated below:

- (18) a. They_i knew that each other_i's pictures were on sale.
 b. *I told them_i that each other_i's pictures were on sale. (Yang (1984: 204-205))
- (19) a. karera_i-wa Bill to Mary_j-ni otagai_{i, j}-no
 they -Top Bill and Mary-Dat each other-Gen
 musume -ga itiban utukushi -i to it-ta.
 daughter-No_m most be beautiful-Pres COMP say-Past
 (They_i told Bill and Mary_j that each other_{i, j}'s daughters were the most beautiful.)
 (Ueda (1984: 11))
- b. Jane_i-wa Mary_j-ni jibun-jishin_{i, j}-no musume -ga
 Jane-Top Mary-Dat herself -Gen daughter-No_m
 itiban utukushi -i to it-ta.
 most be beautiful-Pres COMP say-Past
 (Jane_i told Mary_j that her_{i, j} own daughters were the most beautiful.)

To sum up, we have observed in this section, following Pica that there are two types of reflexives (one including reciprocals) which are different with respect to the applicability of the SSC although both of them obey the TSC. It seems that this observation casts a serious doubt on the unification of the TSC and the SSC in terms of SUBJECT proposed by Chomsky (1981). In the next section, I will propose, abandoning the idea of such unification, that the two conditions apply at different levels, namely that the TSC applies at S-Structure while the SSC applies at LF.

Moreover, these two types of reflexives behave differently with respect to the applicability of the Subject Antecedent Condition. This property will follow naturally by answering the question of why one type of reflexives is subject to the SSC though the other is not, within a generalized binding approach.

Finally, I have referred to "long distance anaphors," which observe the Subject Antecedent Condition regardless of their

types. To capture this property, I will resort to the notion of predication proposed by Williams (1980) as relevant to the decision of binding domains at LF.

As a result, we will have the following organization of the binding theory:

- (20) a. The binding principles in (1) apply both at S-Structure and at LF.
 b. At S-Structure, a Domain is determined by Agr.
 c. At LF, a Domain is determined by predication.

3. Two Domains

Chomsky (1981) unifies the TSC and the SSC into one by determining its relevant domain in terms of SUBJECT, which includes both Agr and a traditional subject. This is a very desirable move. However, it is conceptually unclear whether the notion SUBJECT is a really genuine or spurious one. Furthermore, we have seen in the previous section that one type of lexical anaphors, i.e., non-compound ones, obeys the TSC but not the SSC, although the other type of lexical anaphors, i.e., compound ones, obeys both conditions. Thus, it seems that, though Chomsky's system of the binding theory can account for the latter type's behavior in locality quite successfully, it has great difficulty in dealing with the former type's behavior.

Here I simply abandon the attempt to unify the two conditions and assume that there are two Domains relevant to the binding principles in (1), which apply at different levels, as sketched in (20). These Domains are:⁴

- (21) Domain I (at S-Structure)⁵
 A Domain of α is the minimal maximal projection containing an Agr accessible to α .
- (22) Domain II (at LF)
 A Domain of α is the minimal maximal projection which is predicate-opaque and accessible to α .

As for (21), it says the same content as (2) in relevant respects, so the readers should refer to Section 1 as to how it works in the system of the Generalized Binding I propose here. In what follows, I will turn to (22) and make clear the notion of *predicate-opacity*.

3.1. Movement of Lexical Anaphors at LF

Before turning to the notion of *predicate-opacity*, I will assume here, along the lines of an idea suggested by Lebeaux (1983), Chomsky (1986a) and Pica (1987), that lexical anaphors can move at LF. To support this claim, Lebeaux (1983) notices the ambiguity of the following sentences:

- (23) John and Mary knew that they liked each other.
 a. John and Mary knew that they each liked the other.
 b. John and Mary each knew that self liked the other.
 (Lebeaux (1983: 728))

This sentence is ambiguous in the (a) and (b) readings. To represent this ambiguity, he assumes *each-movement* and assigns the following LF representations to this sentence.

- (23') a. John and Mary_i knew that they_i (v_F each_i (v_F liked (t_i other)))
 b. John and Mary_i (v_F each_i (v_F knew that they_i liked (t_i other)))

Furthermore, I assume *self-movement* in the case of reflexives, along the lines of Pica's (1984, 1985, 1987) idea that it is the element *self* of *himself* and not the whole NPs, that are anaphors in English. Then sentence (24a) will be given LF representation (24b).

- (24) a. John likes himself.
 b. John_i (v_F self_i (v_F likes (him t_i)))

Moreover, I assume successive adjunction and the following

constraint on adjunction, along the lines of an idea proposed by Chomsky (1986b):⁵

- (25) Adjunction is possible only to a maximal projection that is a predicate.

A predicate means any projection of a head which assigns its own θ -role(s); for example, any projections of V or P. Then the (b) reading of (23) can be represented as follows:

- (23b^{*}) John and Mary_i (_{v_P} each_i (_{v_P} knew that they_i (_{v_P} t_i (_{v_P} liked (t_i other))))

Note that in (23b^{*}) *each* moves across the embedded tensed sentence which contains Agr, apparently violating the TSC. This problem does not arise in my system of the binding theory, however, since Domain I in the sense of (21), which is roughly determined by the presence of Agr, is not relevant at LF but rather relevant at S-Structure, where movement of lexical anaphors does not take place. Thus relevant in LF representation (23b^{*}) is only Domain II in the sense of (22), whose decisive notion is *predicate-opacity*. I will mention this notion in the next section.

3.2. Predicate-opacity

Let us turn now to the notion of *predicate-opacity*, which plays a crucial role in determining a binding domain, as mentioned in (22):

- (22) Domain II (at LF)
A Domain of α is the minimal maximal projection which is *predicate-opaque* and accessible to α .

Williams (1980) claims that the SSC should be reduced to a condition on predication, which he calls the *Predicate Opacity Condition*. I agree with him on the conceptual idea that predication takes part in determining a binding domain, but technically I adopt a quite different mechanism.

Let us represent predication with indices, along the lines of Williams (1980), but, to distinguish them from indices for co-reference and A- or A'-chain, let us use an italicized index for a P(predication)-index and moreover use the notation x/x , where the left x stands for an index for coreference and A- or A'-chain and the right one for a P-index. The relevant representation of (24a) will then be as follows:

(24b') John_{*i*} / *i* (ν_{P_i} self_{*i*} (ν_{P_i} likes (him t_i)))

I assume the following convention on P-indices:

(26) Any P-index percolates down to any projections unless these projections have no indices.

Furthermore, let us assume that the following two relations also participate in P-indexation:

- (27) a. a head and its projections
b. SPEC-head agreement in the sense of Chomsky (1986)

With these assumptions, I define *predicate-opacity* as follows:⁷

(28) α is *predicate-opaque* for β iff α dominates β and α bears a P-index different from β .

4. Theoretical Implications

Let us see how my system of the Generalized Binding Theory works to explain the relevant data. First consider the following paradigm of sentences:⁸

- (29) a. *Who_{*i*} do you think that (t_i Agr read the book)?
b. Who_{*i*} do you Agr think that Fay Agr saw t_i ?
c. Which car_{*i*} did John know how PRO to fix t_i ?
d. *Why_{*i*} did Fay say that (t_i the boat Agr sank t_i)?
e. *How_{*i*} did John know which car (t_i PRO to fix t_i)?

At the level of S-Structure, (29a) is ruled out, since the

Domain of the empty anaphor t_i is the embedded IP, which is the minimal maximal projection containing Agr, and in this category t_i is not A'-bound, violating Principle A. On the other hand, in (29b), neither the embedded nor matrix Agr is not accessible to t_i under the assumption that their coindexing with their subjects under agreement is relevant to accessibility, since such coindexing would result in t_i being A-bound by either of the subjects, violating Principle C. Hence t_i has no relevant Domain, and Principle A simply does not apply. However, when t_i is an adjunct, as in (29d), its Domain is the same as that of t_i in (29a), since it is not referential and hence not subject to Principle C. Therefore, (29d) is ruled out in the same reason as (29a).

Next, at the level of LF, (29b,c,e) will have the following representations (irrelevant details are omitted):

- (29') b. Who_i (IP_j do you_j/_j Agr_j (VP_j think (CP_j that (IP_k Fay_k/_k Agr_k (VP_k saw t_i))))))?
- c. Which car_i (IP_j did John_j/_j Agr_j (VP_j know (CP_j how_i (IP_k PRO_k/_k to_k (VP_k fix t_i t_i))))))?
- e.*How_i did John know which car_k (IP_j PRO_j/_j to_j (VP_j t_i (VP_j fix t_k t_i))?)

In (29'b,c,e), the subjects are coindexed with their predicates under predication and with Agr's under SPEC-head agreement. Agr's, in turn, are coindexed with their maximal projections. The categories with an index j or k are predicate-opaque to the trace t_i , but these indices are not accessible to t_i , since its coindexing with j or k would lead it to be A-bound by either the embedded or matrix subject, so it has no accessible Domain; hence the grammaticality of the sentences. On the other hand, the adjunct trace t_i in (29'e) has its Domain, which is the embedded VP (by definition, the upper VP), since it is not subject to Principle C according to its non-referentiality. In this domain it is A'-bound by t_i . Let us assume, following Aoun et al. (1987), that intermediate traces are also subject to the binding

clause-mate elements as their antecedents.):

- (30') c. Professor_{i/i} (VP_i svoj_i (VP_i poprosil asistentu_j
(CP_i (IP_j PRO_{j/j} (VP_j t'_i (VP_j chitat' (NP_i t_{i/i}
doklad_i))))))
e.*Mary_{i/i} (VP_i self_i (VP_i asked Jane_j (CP_i (IP_j
PRO_{j/j} to_j (VP_j t'_i (VP_j wash (NP_i her t_i))))))

In (30'c,e), the subjects are coindexed with their predicates under predication and with Infl's under SPEC-head agreement. Infl's, in turn, are coindexed with their maximal projections. CP_i's bear its index through percolation according to (26).

Let us assume here following Pica (1984, 1985) that the anaphors *self* and *each* of the compound reflexives and reciprocals form only their parts and hence occupy non-argument positions in themselves, though the compound elements are in argument positions as a whole. This means that, like the adjuncts *why* and *how*, these anaphors do not have their own referential values and hence that, even when they move at LF, their traces are not subject to Principle C. On the other hand, since non-compound reflexives are anaphors in themselves, they occupy argument positions, bearing their own referential values, and hence, when they move at LF, their traces obey Principle C.

Keeping these assumptions in mind, let us turn to representations (30'c) and (30'e). In (30'c), the Domain of the trace t_i is the embedded VP, which is the minimal maximal categories with an index(j) different from t_i . In this domain, it is A'-bound by t'_i , observing Principle A. We are assuming here that:

- (31) a. An r-expression must be A-free in the domain of its operator
b. An r-expression must be A-free.

(Chomsky (1986a: 86))

(31a) applies to variables, (31b) to nonvariables. Though the argumental trace t_i is A-bound by PRO, PRO is not in the domain of t'_i , and hence the index j is accessible to t_i . As for t'_i ,

the categories with an index j are predicate-opaque to the trace t'_i , but this index is not accessible to t'_i , since its coindexing with j would lead it to be A-bound by PRO_j , so it has no accessible Domain; hence the sentence is ruled in.

On the other hand, the non-argumental trace t'_i in (30'e) has its Domain, which is the embedded IP, since it is not subject to Principle C according to its non-referentiality. In this domain it is not A'-bound by $self_i$, violating Principle A; hence the ungrammaticality of the sentence.

We have mentioned in the last paragraph of section 3.1. that in (23b"), repeated here, each moves across the embedded tensed sentence which contains Agr, apparently violating the TSC, and that this is allowed in my system of the binding theory, since Domain I in the sense of (21), which is roughly determined by the presence of Agr, is not relevant at LF but rather at S-Structure, where movement of lexical anaphors does not take place. ¹²

(23b") John and Mary_i (v_P each_i (v_P knew that they_i (v_P t'_i (v_P liked (t_i other)))

Let us see how this representation observes the binding principles at LF. Its more accurate LF representation will be as follows:

(32) John and Mary_{i/I} (v_{PI} each_i (v_{PI} knew (c_{PI} that (i_{PI} they_{i/I} Infl_i (v_{PI} t'_i (v_{PI} liked (n_{PI} t_i other))))

In (32), the subjects are coindexed with their predicates under predication and with Infl's under SPEC-head agreement. Infl's, in turn, are coindexed with their maximal projections. CP_i bears its index through percolation according to (26). In this representation, neither t_i nor t'_i has its Domain, since there are no categories with different indices, and hence the binding theory does not apply in this case.

Further consider the following sentence, which has the (a) reading, but do not have the (b) reading:

- (33) John and Mary knew that Bill said that they liked each other.
- a. John and Mary knew that Bill said that they each liked the other. (narrow scope interpretation)
- b. *John and Mary each knew that Bill said that self liked the other. (wide scope each impossible)
- (Lebeaux (1983: 728))

At S-Structure of (33), the Domain of *each* is the embedded IP, which is the minimal maximal projection containing Agr. In this domain, *each* is A-bound by *they*, observing Principle A. In the mapping from S-Structure to LF, *each*-movement takes place to represent logically possible readings. Then to see why *each* cannot take such a wide scope as shown in (33b), let us see the detailed LF representation of (33b), which will be as follows:

- (33b') John and Mary_{i/i} (vP_i each_i (vP_i knew (cP_i that (iP_j Bill_{j/j} Infl_j (vP_j t_i' (vP_j said (cP_j that (iP_i they_{i/i} Infl_i (vP_i t_i' (vP_i liked (NP_i t_i other))))

Since *each* is in a non-argument position, it and its traces are not subject to Principle C. t_i' and t_i'' are offending traces, since their Domains are the embedded CP and the intermediate IP, respectively, which are the minimal maximal categories with different indices. In these domains, they are not A'-bound, violating Principle A.

5. The Subject Antecedent Condition

We have seen in Section 2 that non-compound reflexives have the property that they must take subjects as their antecedents, whereas compound reflexives and reciprocals do not, as illustrated in (16) and (17), repeated here as (34) and (35).

- (34) Bill_i-wa Mary_j-ni jibun_{i, *j}-no shashin-wo mise-ta.
 Bill-Top Mary-Dat self -Gen picture-Acc show-Past
 (Bill_i showed Mary_j self_{i, *j}'s picture.)

- (35) a. *karera_i-wa Bill to Mary_j-ni otagai_{i,j} -no*
 they-Top Bill and Mary-Dat each other-Gen
 shashin-wo mise-ta.
 pictures-Acc show-Past
 (They_i showed Bill and Mary_j each other_{i,j}'s pic-
 tures.)
- b. *Jane_i-wa Mary_j-ni jibun-jishin_{i,j} -no shashin-wo*
 Jane-Top Mary-Dat herself -Gen picture-Acc
 mise-ta.
 show-Past
 (Bill_i showed Mary_j her own_{i,j}'s picture.)

This difference can be attributed to that of their argumental status ; i.e., *jibun* is in an argument position, while *jishin* of *jibun-jishin* and the counterpart of *each* in *otagai* are in non-argument positions. Hence the former is subject to Principle C, but the latter are not.

With this in mind, let us see why *jibun* cannot take *Mary* as its antecedent. The relevant LF representation will be as follows (irrelevant details are omitted):

- (34') *Bill-wa (v_F jibun_i-no (v_F Mary_i-ni (t_i shashin-wo)
 mise-ta))

Since the trace of *jibun* is in an argument position, it is subject to Principle C. However, it is A-bound by *Mary* in the domain of *jibun*, violating this principle; hence the ungrammaticality of the sentence.¹³ Note that, when *jibun* takes *Bill* as its antecedent, its trace is not A-bound in the domain of *jibun*, i.e., the VP. Thus the argumental traces of non-compound reflexives cannot coindex with any arguments inside VP because they obey Principle C, and as a result, these reflexives can only take subjects in the sense relevant to predication as their antecedents.¹⁴

On the other hand, since *jibun* of *jibun-jishin* and the counterpart of *each* in *otagai* is in non-argument positions,

their traces do not obey Principle C. Therefore, nothing prevents these traces from coindexing with any arguments inside VP, so that these reflexives and reciprocals need not take subjects as their antecedents.

We have, furthermore, seen in Section 2 that even compound lexical anaphors do obey the Subject Antecedent Condition where they are what Giorgi (1984) calls "long distance anaphors," as shown in (18) and (19). Let us take up (18), repeated here as (36):

- (36) a. They_i knew that each other_i's pictures were on sale.
 b. *I told them_i that each other_i's pictures were on sale.
 (Yang (1984: 204-205))

At S-Structure of (36a,b), the Domain of *each* is not the embedded IP, since its coindexing with the embedded Agr would violate the *i*-within-*i* Condition and hence this Agr is not accessible to *each* (cf. (4)).¹⁵ Thus the Domain of *each* is the matrix IP, in which it is A-bound by *they* in (36a) and *them* in (36b), observing Principle A.

At LF, (36a,b) will have the following representations:

- (36') a. They_{i/i} (VP_i each_i (VP_i knew (CP_i that (IP_j (NP_{j/j} (t_i other_i)'s pictures) were on sale))))
 b. *I_{k/k} (VP_k each_i (VP_k told them_i (CP_k that (IP_j (NP_{j/j} (t_i other_i)'s pictures) were on sale))))

In (36'a,b), the Domain of *t_i* is neither NP_j nor IP_j, since coindexing of (*t_i*, NP_j or IP_j) would violate the *i*-within-*i* Condition and hence the index *j* is not accessible to *t_i*. In (36'a'), then, *t_i* has no accessible Domain, so the binding principles are not applicable. In (36'b'), on the other hand, the Domain of *t_i* is CP_k, which is the minimal maximal projection with an index(*k*) different from *t_i*'s index. In this domain, it is not A'-bound, violating Principle A; hence the sentence is ruled out.

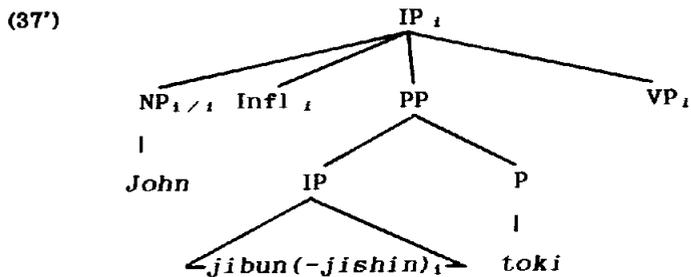
6. Further Consequences

In this section, we will see further consequences of using predication as a decisive factor of determining Domain II in (22). To concentrate on the consideration of Domain II, I will take up Japanese, since this language does not have Agr, and hence shows no TSC effects which Domain I in (21) is involved in.

Consider the following sentences:¹⁶

- (37) a. *John_i-wa (Bill-ga jibun(-jishin)_i-wo mi-ta
 John-Top Bill-Nom self -Acc see-Past
 toki) hon-wo yon-de i-ta.
 when book-Acc read-Prog-Past
 (John_i was reading when Bill saw himself_i.)
 (Kuroda (1965: 140))
- b. *John_i-wa (jibun(-jishin)_i-ga Bill-wo mi-ta
 John-Top self -Nom Bill-Acc see-Past
 toki) hon-wo yon-de i-ta.
 when book-Acc read-Prog-Past
 (John_i was reading when himself_i saw Bill.)

Let us suppose that the *when*-clauses in (37) are outside the matrix VP. (37a,b) will then have the following LF representation:¹⁷



Let us assume that a category without any index also forms a predicate-opaque domain, and then the definition of predicate-opacity, given in (28), will be modified as follows:

- (38) α is predicate-opaque for β iff α dominates β and α bears either P-index different from β or no index.

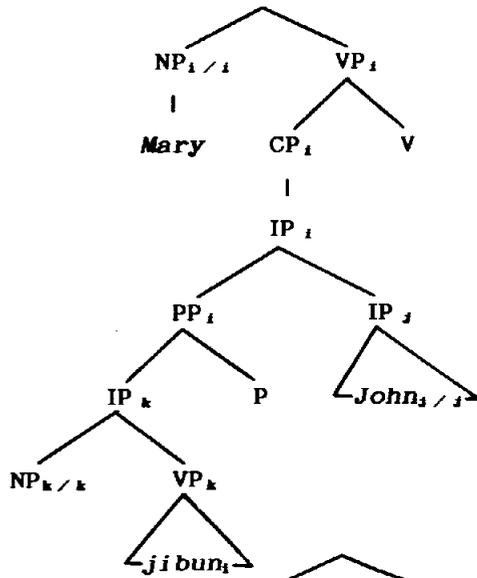
Then LF representation (37') is ruled out; when *jibun(-jishin)* remains inside the PP, it is not A-bound by *John*, since its Domain is the PP; when it moves across the PP, at least one of its traces is not A'-bound by it, since the Domain of the trace is again the PP. Note that, since the PP has no index, accessibility is not involved in this case, so that the non-compound *jibun* and the compound *jibun-jishin* behaves alike in such environment.

Interestingly, when sentences (37a,b) are embedded in another clause, *jibun(-jishin)* can take the matrix subject as its antecedent, as illustrated below:

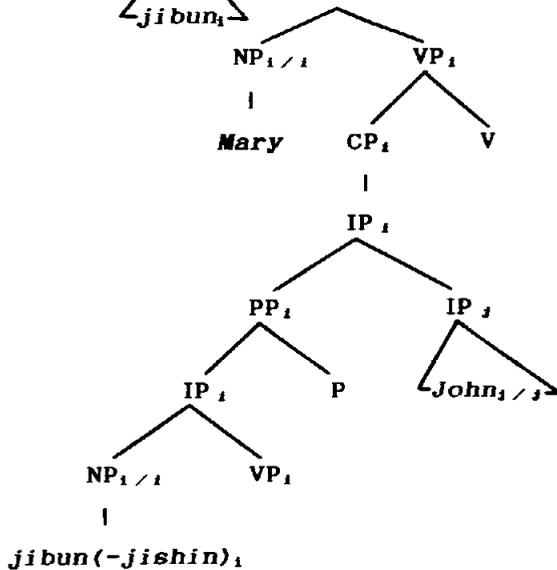
- (39) a. *Mary_i-wa ((Bill-ga jibun_{i,*j}-wo mi-ta toki) Mary-Top Bill-Nom self -Acc see-Past when John_j-ga hon-wo yon-de i-ta to) it-ta.¹⁴ John-Nom book-Acc read-Prog-Past COMP say-Past (Mary_i said that John_j was reading a book when Bill saw self_{i,*j}.) (Giorgi (1985: 316))*
- b. *Mary_i-wa ((jibun(-jishin)_{i,*j}-ga Bill-wo mi-ta Mary-Top self -Nom Bill-Acc see-Past toki) John_j-ga hon-wo yon-de i-ta to) when John-Nom book-Acc read-Prog-Past COMP it-ta. say-Past (Mary_i said that John_j was reading when self_{i,*j} saw Bill.)*

(39a,b) will have the following LF representations:

(39') a.



b.



In this case, the *when*-clauses are dominated by the matrix VP, so that the latter's index can percolate down into PP_i through IP_i and CP_i. In both representations, *jibun(-jishin)* cannot take *John* as its antecedent, simply because it is not c-commanded by *John*. In (39a'), if *jibun* is adjoined to the matrix VP, its trace has no Domain, since the index *k* is not accessible to it; its indexing with *k* would lead the trace to be A-bound by PRO_k. Thus the binding principles are not applicable, so nothing

prevents *jibun* from taking *Mary* as its antecedent. In (39b'), if *jibun(-jishin)* is adjoined to the matrix VP, its trace has no Domain, since every maximal category dominating it has the same index as the trace. Hence *jibun(-jishin)* is allowed to take *Mary* as its antecedent.

7. Concluding Remarks

In this paper, I have claimed, on the basis of cross-linguistic observation of reflexives and reciprocals, made by Yang (1984), that, contrary to Chomsky's (1981) proposal, there are two Domains relevant to the binding principles, which apply at different levels. One Domain is determined by Agr and applies at S-Structure. The other Domain is determined by *predicate-opacity*, along the lines of an idea proposed by Williams (1980), and applies at LF.

Furthermore, we have observed that the two different reflexives, which Pica (1984, 1985) calls compound (including reciprocals) and non-compound reflexives, show the same behavior with respect to the Specified Subject Condition as that of non-argumental vs. argumental *wh*-traces. We have captured this parallelism within a Generalized Binding approach by assuming LF movement of lexical anaphors.

NOTES

* I am indebted to those who attended a weekly workshop on Japanese, where I presented an earlier version of this paper last February. Especially, I would like to thank Toshifusa Oka for his valuable comments and criticism. I am also grateful to Minoru Nakau and Yukio Hirose for their comments from a semantic viewpoint. Finally I express my thanks to Hiroaki Tada for his insightful suggestions. All remaining inadequacies are, of course, my own.

¹ Not all adjuncts correspond to non-referential expressions, however; Aoun (1986) claims that there are referential

adjuncts such as non-subcategorized *where* and *when*, which behave like arguments with respect to their possibility of fronting. Consider the following sentences:

- (i) a. who remembers where we bought what?
- b. who remembers what we bought when?
- (ii) a. *who remembers what we bought why?
- b. *who remembers what we bought how?

Aoun attributes the difference of grammaticality between (i) and (ii) to that of whether the traces of these *wh*-phrases are subject to Principle C or not. For detailed explanations of these sentences, see Aoun (1986).

² The distinction between compound and non-compound reflexives does not seem to be genuinely morphological one, since the Japanese reciprocal *otagai* cannot be considered to be morphologically complex. Judging from the fact that reciprocals, in general, show the same behavior as compound reflexives, a semantic factor is also relevant to the distinction between compound and non-compound, since reciprocals are always interpreted as composing of *each-part* and *the other-part*, as shown in (i), where (a) can be paraphrased by (b).

- (i) a. They liked each other.
- b. They each liked the other(s).

³ Some native speakers judge that *jibun-jishin* can only take *Jane* as its antecedent, and not *Mary* in this sentence. I speculate that these speakers take *jibun* as well as *jishin* to be an independent anaphor, so that *jibun-jishin* as a whole shows an intersecting property: i.e., $P(jibun) \cap P(jishin)$. For further investigation about what follows from this assumption, I will leave it to future research.

⁴ I assume throughout this paper that, in a structure such as (i), where α is adjoined to X,

- (i) (x_1 α (x_2 ... t_1 ...))

the minimal maximal projection containing t_1 is not X_2 , but X_1 .

⁵ For the claim that Case is involved in determining a binding domain, see Abe (1987) and Kitagawa (1986).

⁶ Baltin (1982) proposes that topicalization involves adjunction to S, pointing out that there are cases where embedded topicalization is possible, as shown in (i).

- (i) the man to whom liberty we could never grant

If this is the case, we must allow S-adjunction in Syntax. For related matters, see note 10.

May (1985) suggests that Quantifier Raising (QR), as an instance of the general rule of Move α , can be adjoined to any position at LF, and exemplifies S-, VP-, and NP-adjunction. I speculate that, while *wh*-phrases are determined to move to Comp position, perhaps for a scopal reason (cf. Chomsky (1986b)), quantifier phrases (QPs) are free to move to any position, and that constraint (25) applies to their intermediate adjunction, aside from S-adjunction in Syntax (cf. note 10). For further detailed consideration, I will leave it to future research.

⁷ I assume, following May (1985), that:

- (i) α is dominated by β only if it is dominated by every segment of β .

⁸ I assume the following X'-schema of S and S' in what follows.

- (i) a. $S = I'' = (NP_{I'} \cdot (v_P \ V \ \dots))$
 b. $S' = C'' = (\dots C \ I'')$ (Chomsky (1986b: 3))

I refer to the maximal projections C'' and I'' as CP and IP, respectively.

⁹ I assume, following Aoun et al. (1987) and contrary to Aoun (1986), that the argumental vs. non-argumental status of *wh*-phrases carries over to their traces, so that all traces of an argumental *wh*-phrase obey Principle C whereas those of a non-argumental *wh*-phrase do not.

¹⁰ The present system of the binding theory cannot account for the grammaticality of the following sentences.

- (i) a. who_i do you think ($\text{c}_F t_i'$ ($\text{I}_F t_i$ Agr read the book))
 b. why_i did Fay say ($\text{c}_F t_i'$ (I_F the boat Agr sank t_i))

In both sentences, the Domain of t_i is the embedded IP, which is the minimal maximal projection containing Agr. In this domain, however, t_i is not A'-bound, violating Principle A.

We have mentioned in note 6 that topicalization involves adjunction to IP, as Baltin (1982) claims. If IP-adjunction is permitted in Syntax, then the sentences in (i) will have the following representations:

- (ii) a. who_i do you think ($\text{c}_F t_i'$ ($\text{I}_F t_i'$ ($\text{I}_F t_i$ Agr read the book)))
 b. why_i did Fay say ($\text{c}_F t_i'$ ($\text{I}_F t_i'$ (I_F the boat Agr sank t_i)))

In this case, t_i is A'-bound by t_i' (by definition, the upper IP), observing Principle A. As for t_i' , it seems that the embedded Agr is not accessible to t_i' due to the violation of the c-command requirement, for, in the following sentence, where *himself* is topicalized in the embedded sentence, the Domain of *self* appears to be the matrix IP, judging from the grammaticality of the sentence.

- (iii) John thinks that himself_i , Mary likes t_i .

(Lasnik and Saito (forthcoming))

Thus the Domain of t_i' is the matrix IP, in which it is A'-bound by t_i' , and hence these sentences are marked grammatical.

Furthermore, suppose that IP-adjunction is only allowed in Syntax, but not at LF, and that, as suggested in note 6, constraint (25) applies to intermediate adjunction. We, then, explain naturally why non-referential *wh*-phrases, such as *why* and *how*, cannot remain *in situ*, as shown in (i), without recourse to Comp-indexing mechanism.

(iv) *who left why?

Assuming that *wh-in-situ* expressions move to Comp at LF, its relevant LF representation will be as follows:

(iv') *(who_j, why_i) (IP_j t_j/_j Agr_j (VP_j t_i' (VP_j left t_i)))

The Domain of t_i is the embedded VP, which is the minimal maximal projection with a different index(j). In this domain, it is A'-bound by t_i'. But t_i' is an offending trace, since its Domain is the embedded IP, in which it is not A'-bound, violating Principle A. Hence (iii) is ruled out.

¹¹ It seems that Principle C applies to the trace of a *wh*-phrase, but does not apply to the trace of a topicalized phrase, as illustrated below:

(i) a.*Who_i does he_i think t_i is intelligent?

b. Himself_i, John_i likes t_i.

Let us suppose that Principle C does not apply in Syntax, but rather at LF, although it is relevant to accessibility at both S-Structure and LF. Furthermore, suppose that reconstruction is applicable to a topicalized phrase at LF, but not to a *wh*-phrase in order to maintain its status as an operator binding its variable at LF. The LF representations of (i) will then be as follows:

(i') a.*who_i does he think t_i is intelligent?

b. John_i likes himself_i.

In these representations, only (a) violates Principle C, and hence is ruled out. Note that reconstruction is optional, so that, when the trace of a topicalized phrase is not A-bound, this phrase need not be reconstructed. Consider the following sentence:

(ii) John thinks that himself_i, Mary likes t_i.

If *himself* is reconstructed, this sentence will be marked

ungrammatical in the same reason as (iii).

(iii) *John thinks that Mary likes himself.

Thus (ii) amounts to the LF representation of this sentence and Principle C is not violated. For the explanation of how *self* satisfies Principle A, see note 10.

¹² The present system of the binding theory predicts that TSC effects should not be manifested at LF since Domain I is only relevant at S-Structure, so, while extraction from subject position is not allowed in Syntax when the Comp of its clause is occupied by any element, as shown in (6a), *wh-in-situ* expressions in this position should be allowed. This prediction seems to be borne out, according to May (1985) and Lasnik and Saito (forthcoming):

(i) a. ?Who believes that who suspected Philby?

b. ?Who wondered whether who suspected Philby?

(May (1985: 137))

The sentences in (i) are fairly better than (6a). The relevant LF representations of (ia,b) will be as follows:

- (i') a. $(\text{who}_1, \text{who}_j) \lambda_{IP_j} t_{j/j} \text{Agr}_j (\nu_{F_j} \text{believes } (C_{F_j} \text{that } (\lambda_{IP_i} t_{i/i} \text{Agr}_i (\nu_{F_i} \text{suspected Philby))))))$
 b. $(\text{who}_1, \text{who}_j) \lambda_{IP_j} t_{j/j} \text{Agr}_j (\nu_{F_j} \text{wondered } (C_{F_j} \text{whether } (\lambda_{IP_i} t_{i/i} \text{Agr}_i (\nu_{F_i} \text{suspected Philby))))))$;
 or $(\text{who}_j (\lambda_{IP_j} t_{j/j} \text{Agr}_j (\nu_{F_j} \text{wondered } (C_{F_j} (\text{whether, who}_1) (\lambda_{IP_i} t_{i/i} \text{Agr}_i (\nu_{F_i} \text{suspected Philby))))))$

In these representations, the index *j* is not accessible to t_i , since its indexing with *j* would lead to the trace being A-bound by t_j , violating Principle C. Hence t_i has no Domain, so the binding theory simply does not apply.

¹³ In (34'), we are assuming that *Mary* c-commands *jibun*.

It is unclear, however, how c-command should be defined, taking into consideration the fact that in (iii) of note 10, as repeated here,

- (i) John thinks that himself_i, Mary Agr likes t_i.

himself, adjoined to IP, should not be c-commanded by Agr, judging from the grammaticality of the sentence.

One may claim, adopting Hoji's (1985) idea that the Japanese construction is strictly binary, that *jibun* is adjoined to the V' which constitutes the V and its object in (34'), so that Mary obviously c-commands *jibun*, as illustrated below.

- (ii) *Bill-wa (v_P Mary_i-ni (v' jibun_i-no (v' t_i shashin-wo
mise-ta)))

Furthermore, if we interpret the domain of an operator in (31a) as a maximal projection, even in (ii) t_i will be A-bound by Mary in the domain of *jibun*, violating Principle C.

¹⁴ H. Tada pointed out to me that the traces of *jibun* does not seem to obey Principle C, referring to the following sentence:

- (i) Mary_i-ga (v_P jibun_i-ni (jibun_i-no hahaoya-wo)
Mary-Nom self-Dat self-Poss mother-Acc
shoukai-si-ta (koto)
introduce-Past
(Mary_i introduced her_i mother to herself_i.)

In (i), if *jibun-no* is adjoined to the VP, its trace will be A-bound by *jibun-ni* or its trace, violating Principle C, and hence the sentence should be marked ungrammatical, but the fact is opposite. I have no explanation for why the sentence is grammatical, but T. Oka called my attention to the following sentence:

- (ii)??Mary_i-ga (v_P (jibun_i-ga (jibun_i-no hahaoya-wo aisit-e
Mary-Nom self-Nom self-Poss mother-Acc love
-i-ru)) to it-ta) (koto)
Prog-Pres COMP say-Past
(Mary_i said that she_i loved her_i mother.)

I assume that anaphors cannot serve as antecedents, as Chomsky

(1981) notes; he judges the following sentences as rather marginal.

- (iii) a. they expected each other to like each other
 b. they expected each other to hurt themselves

jibun-no must, then, be adjoined to the matrix VP, so its trace is A-bound by *jibun-ga* or its trace, violating Principle C. This seems to reflect rather low acceptability of (ii). Why (i) differs from (ii) in acceptability is still a mystery, however.

¹⁵ Note that referential indices alone are involved in the *i*-within-*i* Condition and P-indices are not.

¹⁶ For similar data in Italian, see Giorgi (1984).

¹⁷ We are assuming here that P-indexation by means of (27) is not involved in percolation and that only P-indices assigned by means of what Williams (1980) calls predication are allowed to percolate down.

I also stipulate, following Chomsky (1986b), that adjunction to an adjunct is forbidden. He needs this stipulation to explain what is called the Adjunct Condition, which roughly says that an element cannot be extracted from an adjunct, as illustrated below:

- (i) a. to whom did (₁ they leave (before speaking t))
 b. who did (₁ they leave (before speaking to t))

In Chomsky's system, the two bracketed categories are barriers to the traces, which is a Subjacency violation. But, if adjunction to the *before*-phrase was admitted, no traces would go across two or more barriers which dominate them (see note 7) in one step of movement, and hence no Subjacency violation.

¹⁸ In (39a), if *jibun* is replaced by *jibun-jishin*, *Mary* cannot serve as the latter's antecedent, simply because it is subject to the SSC.

Notice that in (39) the *when*-clauses are preposed before the embedded clauses. If they are put inside the embedded clauses as (i), *Mary* cannot serve as an antecedent of *jibun*

(-jishin), since the relevant LF structure of (i) is the same as (37').

- (i) a. Mary₁-wa (John₂-ga (Bill-ga jibun_{2,1,2,2}-wo mi-ta
 Mary-Top John-Nom Bill-Nom self -Acc see-Past
 toki) hon-wo yon-de i-ta to) it-ta.
 when book-Acc read-Prog-Past COMP say-Past
 (Mary₁ said that John₂ was reading a book when Bill
 saw self_{2,1,2,2}.)
- b. *Mary₁-wa (John₂-ga (jibun(-jishin) _{1,2}-ga Bill-wo
 Mary-Top John-Nom self -Nom Bill-Acc
 mi-ta toki) hon-wo yon-de i-ta to) it-ta.
 see-Past when book-Acc read-Prog-Past COMP say-Past
 (*Mary₁ said that John₂ was reading when self_{1,2}
 saw Bill.)

REFERENCES

- Abe, J. (1987) "Generalized Binding Theory and the Behavior of Anaphors in Gerunds," *English Linguistics* 4, 165-185.
- Aoun, J. (1981) *The Formal Nature of Anaphoric Relations*, Doctoral dissertation, MIT, Cambridge, Massachusetts.
- Aoun, J. (1985) *A Grammar of Anaphora*, MIT Press, Cambridge, Massachusetts.
- Aoun, J. (1986) *Generalized Binding*, Foris, Dordrecht.
- Aoun, J., N. Hornstein, D. Lightfoot and A. Weinberg. (1987) "Two Types of Locality," *Linguistic Inquiry* 18, 537-577.
- Baltin, M. (1982) "A Landing Site Theory of Movement Rules," *Linguistic Inquiry* 13, 1-38.
- Chomsky, N. (1973) "Conditions on Transformations," in S. Anderson and P. Kiparsky, eds., *A Festschrift for Morris Halle*, Holt, Rinehart and Winston, New York.
- Chomsky, N. (1980) "On Binding," *Linguistic Inquiry* 11, 1-46.
- Chomsky, N. (1981) *Lectures on Government and Binding*, Foris, Dordrecht.

- Chomsky, N. (1986a) *Knowledge of Language: Its Nature, Origin, and Use*, Praeger, New York.
- Chomsky, N. (1986b) *Barriers*, MIT Press, Cambridge, Massachusetts.
- Giorgi, A. (1984) "Toward a Theory of Long Distance Anaphors: A GB approach," *The Linguistic Review* 3, 307-361.
- Hoji, H. (1985) *Logical Form Constraints and Configurational Structures in Japanese*, Doctoral dissertation, University of Washington.
- Kitagawa, Y. (1986) *Subjects in Japanese and English*, University of Massachusetts, Amherst.
- Kuroda, S.-Y. (1985) *Generative Grammatical Studies in the Japanese Language*, Doctoral dissertation, MIT, Cambridge, Massachusetts.
- Lasnik, H and M. Saito. (forthcoming) "Move-alpha: Conditions on its Application and Output," ms.
- Lebeaux, D. (1983) "A Distributional Difference between Reciprocals and Reflexives," *Linguistic Inquiry* 14, 723-730.
- May, R. (1985) *Logical Form: Its Structure and Derivation*, MIT Press, Cambridge, Massachusetts.
- Pica, P. (1984) "On the Distinction between Argumental and Non-argumental anaphors," in W. de Geest and Y. Putseys, eds., *Sentential Complementation*, Foris, Dordrecht.
- Pica, P. (1985) "Subject, Tense and Truth," in J. Guéron, H.-G. Obenauer and J.-Y. Pollock, eds., *Grammatical Representation*, Foris, Dordrecht.
- Pica, P. (1987) "On the Nature of the Reflexivization Cycles," in *Proceedings of the 17th Annual Meeting of NELS, GLSA*, University of Massachusetts, Amherst.
- Rappaport, G. (1982) "On Anaphors and Control in Russian," ms., University of Texas.
- Ueda, M. (1984) "On a Japanese Reflexive Zibun," ms., University of Massachusetts, Amherst.
- Williams, E. (1980) "Predication," *Linguistic Inquiry* 11, 203-238.

Yang, D.-W. (1984) "The Extended Binding Theory of Anaphors,"
Theoretical Linguistic Research 1, 195-218.

Institute of Literature and Linguistics
University of Tsukuba