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LONG DISTANCE SCRAMBLING IN JAPANESE*

This paper examines the nature of scrambling in Japanese in the light of Webelhuth (1989) and Mahajan (1989). Webelhuth proposes that scrambling is uniformly movement to a third type of position, the non-operation/non-A position, and that this position has the binding properties of both A and A′ (operator) positions. Mahajan does not recognize the third type of position, and argues that clause-internal scrambling can be either A or A′ movement, while "long distance" scrambling is necessarily A′ movement. I argue in this paper that these two apparently inconsistent hypotheses are both necessary for the analysis of scrambling in Japanese.

As evidence for Webelhuth's hypothesis, I show that unlike *wh*-movement, scrambling need not establish a semantically significant operator-variable relation. Then, I argue that Mahajan's hypothesis, based on the A/A′ dichotomy, is also needed to account for the distinction between clause-internal scrambling and "long distance" scrambling with respect to anaphor binding. Finally, adopting Tada's (1990) proposal that non-operator/non-A positions are licensed at S-structure but not at LF, I suggest that a modified version of Webelhuth's hypothesis applies at S-structure, and Mahajan's hypothesis applies at LF.

1. INTRODUCTION

Since Ross (1967), there has been much discussion on the nature of scrambling. In Saito (1985), I discussed scrambling in Japanese and argued that it is an adjunction operation.[1] The following is the precise formulation of scrambling proposed there:

(1)   Adjoin-α, where α is X^{max}.

According to this hypothesis, the examples in (2a–b) have the structures shown in (3a–b) respectively.[2]

(2) a.   Sono hon -o   Taroo-ga   katta   (koto)
         that book-Acc   -Nom   bought   fact
         'Taro bought that book'

    b.   Sono hon -o   Hanako-ga   Taroo-ga   katta   to
         that book-Acc   -Nom   -Nom   bought   COMP
         omotteiru (koto)
         think   fact
         'Hanako thinks that Taro bought that book'

(3) a. [IP Sono hon -oi [IP Taroo-ga [VP ti katta]]] (koto)
    that book-Acc   -Nom   bought fact
    'That booki, Taro bought ti'

b. [IP Sono hon -oi [IP Hanako-ga [CP [IP Taroo-ga
    that book-Acc   -Nom   -Nom
    [VP ti katta]] to] omotteiru]] (koto)
    bought COMP think   fact
    'That booki, Hanako thinks that Taro bought ti'

(2a) is an example of clause-internal scrambling, while (2b) is that of "long distance" scrambling. In Saito (1985), I assumed, following Chomsky (1981), that adjunction is an instance of A´ movement. Hence I assumed that scrambling in Japanese, whether it is clause-internal or "long distance," is uniformly A´ movement.[3]

However, different hypotheses have been proposed recently on the nature of scrambling. As we will see directly, these hypotheses are based on more detailed examination of the relevant data and are much richer in theoretical consequences. One such hypothesis is proposed in Mahajan (1989). He examines data from Hindi in detail and argues that scrambling in this language can be in principle A or A´ movement. According to his analysis, clause-internal scrambling is in fact ambiguous between A and A´ movement, while "long distance" scrambling can only be A´ movement due to the effects of the Binding Theory. On the other hand, Webelhuth (1989) discusses data from the Germanic languages and proposes that the landing site of scrambling is neither an A position nor an A´ (operator) position. He hypothesizes that scrambling is movement to a third kind of position, i.e., the non-A, non-operator position, and further, that this position has the binding properties of both A and A´ (operator) positions.

The purpose of this paper is to reexamine the nature of scrambling in Japanese in the light of Mahajan's and Webelhuth's hypotheses. These two hypotheses are based on similar kinds of data, i.e., those related to weak crossover and anaphor binding. At the same time, they clearly differ and seem to be mutually incompatible. But I will show in this paper that they capture different important aspects of scrambling in Japanese and hence that they must both be incorporated into its analysis. In the following section, I discuss some facts of weak crossover and anaphor binding in Japanese and show that Mahajan's hypothesis

straightforwardly accounts for them. In Section 3, I present supporting evidence for Webelhuth's hypothesis that scrambling is movement to a non-A, non-operator position. In particular, I argue that Japanese scrambling exhibits some properties of A´ movement but at the same time differs from regular A´ movement, such as wh-movement, in that it does not establish a semantically significant operator-variable relation. In Section 4, I return to some of the binding facts discussed in Section 2 and show that they are correctly predicted by Mahajan's hypothesis but not by Webelhuth's. Then I adopt a hypothesis proposed in Tada (1990) and suggest a way to incorporate Mahajan's insight into Webelhuth's analysis of scrambling as non-A, non-operator movement, so that the relevant facts can be properly accounted for. Finally, in Section 5, I discuss a remaining problem concerning the facts of weak crossover and speculate on a possible solution.

2. CLAUSE-INTERNAL VS. LONG DISTANCE SCRAMBLING: MAHAJAN (1989) ON HINDI

Mahajan (1989) examines Hindi data on weak crossover and anaphor binding, and argues that clause-internal scrambling can be A movement, but "long distance" scrambling is necessarily A´ movement. He concludes that scrambling in principle can be A or A´ movement and attributes the impossibility of "long distance" A scrambling to the Binding Theory. In this section, I will present his arguments using data from Japanese and, by doing so, show that his hypothesis receives support from the facts of weak crossover and anaphor binding not only in Hindi but also in Japanese.

Let us first consider Mahajan's arguments that clause-internal scrambling can be A movement. One of his arguments is based on the observation that such scrambling in Hindi can "remedy" weak crossover violations. In this case, a similar argument is presented independently in Yoshimura (1989) on the basis of Japanese examples. I will simply summarize her argument here. Consider first the examples in (4).

(4) a. ?*[Masao-wa [PP Hanako-ga proi yomu mae-ni]
    -Top   -Nom   read before
    [dono hon-o yonda]] no
    which book-Acc read Q
    '[Masao [read which book]i] [before Hanako read e i]]'

(4) b. Dono hon -o_i [Masao-wa [_PP Hanako-ga e_i yomu
which book-Acc -Top -Nom read
mae-ni] [t_i yondal] no
before read Q

'Which book_i [Masao [read t_i] [before Hanako read e_i]]'

(4a) is a typical example of weak crossover in Japanese. The wh-phrase in situ, dono hon 'which book', does not c-command the coindexed empty pronoun. (4b), on the other hand, shows that the example becomes perfect when the wh-phrase is scrambled to sentence-initial position. In Saito (1985) and Hoji (1985), where scrambling is assumed to be A' movement, sentences like (4b) are analyzed as examples of the "parasitic gap construction." If scrambling is A' movement and the empty category e in (4b) is an empty pronoun, we expect the example to exhibit weak crossover effects. However, if the wh-phrase in this example is in A' position, the empty category e need not be an empty pronoun but can be a parasitic gap. Thus the grammatical status of (4b) is correctly predicted.

However, the analysis of (4b) outlined above has one major problem. It has been observed in Chomsky (1986a) that the distribution of parasitic gaps is constrained by Subjacency. Hence if the empty categories found in examples such as (4b) must be parasitic gaps, as predicted by the account in Saito (1985) and Hoji (1985), then we expect them to exhibit Subjacency effects. But as shown in detail in Yoshimura (1989), this prediction is not borne out. For example, (5) is virtually perfect and contrasts with (6), which is a clear case of Subjacency violation.

(5) Dono hon -o_i [Masao-wa [_PP Hanako-ga [_NP e_i kaita
which book-Acc -Top -Nom wrote
hito] -ni au mae-ni] [t_i yondal] no
person-to meet before read Q

'Which book_i [Masao [read t_i] [before meeting the person who wrote e_i]]'

(6) ?*Dono hon -o_i [Hanako-wa [_NP t_i kaita hito] -ni atta] no
which book-Acc -Top wrote person-to met Q

'Which book_i [Hanako met the person who wrote t_i]'

Thus the parasitic gap analysis of Saito (1985) and Hoji (1985) does not fully account for the relevant data, and an alternative analysis must be sought for (4b) and, in particular, for (5).

Here, as Yoshimura (1989) points out, the hypothesis that scrambling can be A movement provides the desired alternative analysis. If the scrambled wh-phrases in (4b) and (5) are in A position, then we can simply assume that the empty categories in these examples are empty pronouns and analyze these examples exactly as the English (7).

(7) Everyone_i seems to his_i mother [t_i to be smart]

That is, (4b) and (5) are grammatical because the empty pronouns in these examples are A bound and hence can be licensed as bound pronouns. Thus (4b) and (5) provide evidence that scrambling can be A movement.[4]

Yoshimura (1989) presents another set of weak crossover data that leads to the same conclusion. It is well known that overt pronouns such as kare 'he' in Japanese cannot be construed as bound variables. For example, (8) is unacceptable.

(8) *Dare_i-ga [kare_i-no hahaoya]-o aisiteru no
who -Nom he -Gen mother -Acc love Q

'Who_i loves his_i mother'

(9) ?Dare_i-ga [soitu_i-no hahaoya]-o aisiteru no
who -Nom the guy-Gen mother -Acc love Q

'Who_i loves his_i mother'

However, as observed by Hajime Hoji and Hiroaki Tada, among others, there are overt elements, such as sore 'it' and soitu 'the guy', that at least marginally allow bound variable interpretation. Thus (9) contrasts sharply with (8).

Given this background, let us now consider the examples in (10).

(10) a. ?*[[Soitu_i -no hahaoya]-ga [dare_i-o aisiteru]] no
the guy-Gen mother -Nom who -Acc love Q

'His_i mother loves who_i'

b. ?Dare_i-o [[soitu_i -no hahaoya]-ga [t_i aisiteru]] no
who -Acc the guy-Gen mother -Nom love Q

'Who_i his_i mother loves t_i'

(10a) is a straightforward example of weak crossover. If scrambling is necessarily A' movement, then we expect (10b) to be a weak crossover violation also, exactly as the English example (11).

(11) ?*Who_i does his_i mother love t_i

Yet (10b) is far better than (10a) and has roughly the status of (9). Here again, the hypothesis that scrambling can be A movement enables us to accommodate the problematic data, as Yoshimura (1989) points out. According to this hypothesis, *soitu* can be A bound in (10b), and hence it is predicted correctly that the example should have the status of (9). Thus the weak crossover facts in Japanese, exactly as those in Hindi, indicate that scrambling can be A movement.[5]

Mahajan's second argument for scrambling as A movement is based on the anaphor binding facts in Hindi. In this case also, we can construct the same argument on the basis of Japanese examples. Let us first consider the following examples, which contain the anaphor *otagai* 'each other':[6]

(12) a. [Masao-ga [karera-ni [[otagai$_i$ -no sensei]-o syookaisita]]] (koto)
-Nom they -to each other-Gen teacher-Acc introduced fact

'Masao introduced each other's$_i$ teachers to them$_i$'

b. [Karera$_i$ -ga [otagai$_i$ -no sensei] -o hihansita]] (koto)
they -Nom each other-Acc criticized fact

'They$_i$ criticized each other$_i$'

In these grammatical examples, the anaphors are locally A bound. On the other hand, in (13a–b) the anaphors are not bound and hence are in violation of Condition (A) of the Binding Theory.

(13) a. ?*[Masao-ga [[otagai$_i$ -no sensei]-ni [karera$_i$-o
-Nom each other-Gen teacher-to they -Acc
syookaisita]]] (koto)
introduced fact

'Masao introduced them$_i$ to each other's$_i$ teachers'

b. ?*[[Otagai$_i$ -no sensei] -ga [karera$_i$-o hihansita]]
each other-Gen teacher-Nom they -Acc criticized
(koto)
fact

'Each other's$_i$ teachers criticized them$_i$'

Let us now consider the following examples:

(14) a. [Karera-o$_i$ [Masao-ga [[otagai$_i$ -no sensei]-ni
they -Acc -Nom each other-Gen teacher-to
[t$_i$ syookaisita]]]] (koto)
introduced fact

'Them$_i$, Masao introduced t$_i$ to each other's$_i$ teachers'

b.?[Karera-o$_i$ [[otagai$_i$ -no sensei]-ga [t$_i$ hihansita]]
they -Acc each other-Gen teacher-Nom criticized
(koto)
fact

'Them$_i$, each other's$_i$ teachers criticized t$_i$'

(14a–b) differ from (13a–b) only in that the object *karera-o* 'they-Acc' is preposed to sentence-initial position. Yet they contrast sharply with (13a–b). If (13a–b) are ungrammatical because the anaphor *otagai* lacks an A binder, then the improved status of (14a–b) indicates that in these examples *otagai* does have an A binder. But then the preposed objects in (14a–b) must be in A position. And this conclusion, in turn, implies that scrambling can be A movement.[7]

So far we have seen evidence that scrambling in Japanese, exactly as that in Hindi, can be A movement. But note here that all of the relevant examples considered above involve clause-internal scrambling. Hence the conclusion we obtained is more precisely that clause-internal scrambling in Japanese can be A movement. As mentioned above, Mahajan in fact distinguishes between clause-internal scrambling and "long distance" scrambling in Hindi and argues that the latter necessarily involves A' movement. And here also, his argument seems to apply to Japanese. Let us first consider the examples in (15).

(15) a. *[Masao-ga [[otagai$_i$ -no sensei]-ni [$_{CP}$ [$_{IP}$ Hanako-ga
-Nom each other-Gen teacher-to -Nom
karera$_i$-o hihansita] to] itta]] (koto)
they -Acc criticized COMP said fact

'Masao said to each other's$_i$ teachers that Hanako criticized them$_i$'

b.*[[Otagai$_i$ -no sensei]-ga [$_{CP}$ [$_{IP}$ Hanako-ga
each other-Gen teacher-Nom -Nom
karera$_i$-o hihansita] to] itta] (koto)
they -Acc criticized COMP said fact

'Each other's$_i$ teachers said that Hanako criticized them$_i$'

These examples contain unbound anaphors and hence are ruled out in exactly the same way as (13a–b). Now if we prepose *karera* 'they', the intended antecedent of *otagai* 'each other', to sentence-initial position, we obtain (16a–b).

(16) a. *[Karera-o$_i$ [Masao-ga [otagai$_i$ -no sensei]-ga
    they -ACC -Nom each other-Gen teacher-to
    [$_{CP}$ [$_{IP}$ Hanako-ga t_i hihansita] to] itta]] (koto)
    -Nom criticized COMP said fact

'Them$_i$, Masao said to each other's teachers that Hanako criticized t_i'

b. *[Karera-o$_i$ [[otagai$_i$ -no sensei]-ga
    they -Acc each other-Gen teacher-Nom
    [$_{CP}$ [$_{IP}$ Hanako-ga t_i hihansita] to] itta] (koto)
    -Nom criticized COMP said fact

'Them$_i$, each other's$_i$ teachers said that Hanako criticized t_i'

In this case, unlike in the case of (14a–b), the scrambling of *karera-o* does not improve the examples. The only difference between (14a–b) and (16a–b) is that the former involves clause-internal scrambling, while the latter involves "long distance" scrambling. Hence if "long distance" scrambling, like clause-internal scrambling, can be A movement, we predict falsely that (16a–b) should be grammatical. Thus (16a–b) indicate that "long distance" scrambling must be A' movement in Japanese, exactly as in Hindi.[8]

The data considered so far indicate that clause-internal scrambling can be A movement, and "long distance" scrambling must be A' movement. From this observation Mahajan (1989) draws the principled conclusion that scrambling itself can be either A or A' movement. Given that "long distance" A' scrambling is possible, there does not seem to be any reason to exclude clause-internal A' scrambling. And as Mahajan points out, there is in fact evidence that clause-internal scrambling can be not only A movement, but also A' movement. Let us consider the following example:

(17) Zibunzisin-o$_i$ [Hanako-ga t_i hihansita] (koto)
    self -Acc -Nom criticized fact

'Herself$_i$, Hanako$_i$ criticized t_i'

If *zibunzisin* 'self' in (17) is in A position, the example should be ruled out by Condition (C) of the Binding Theory. On the other hand, if it is

in A' position, we expect the example to be well formed, exactly as the English (18).

(18) Himself$_i$, John$_i$ likes t_i

Thus (17) constitutes evidence that clause-internal scrambling can be A' movement.

The remaining question, then, is why "long distance" scrambling cannot be A movement. Here, Mahajan assumes that A' scrambling is an adjunction operation, while A scrambling is movement to an IP SPEC position. The configurations resulting from A' scrambling and A scrambling are thus assumed to be as in (19a–b) respectively.[9,10]

(19) a. [$_{IP}$ NP$_i$ [$_{IP}$ ... t_i ...]]

b. [$_{IP}$ NP$_i$ [$_{I'}$ ... t_i ...]]

If we adopt this assumption, the remaining question noted above is reduced to the question why successive cyclic A scrambling, as in (20), is impossible.

(20) [$_{IP}$ NP$_i$ [$_{I'}$ ... [$_{CP}$ [$_{IP}$ t'_i [$_{I'}$ ... t_i ...] ...] ...] ...] ...]

Mahajan, discussing Hindi, hypothesizes that (20) is excluded because the trace t'_i violates Condition (A) of the Binding Theory.

The situation is somewhat complicated in the case of Japanese. As noted by Yang (1984) and Kitagawa (1986), among others, anaphors in this language exhibit the SSC effect but not the NIC effect. The following examples from Kitagawa (1986) illustrate this generalization:[11]

(21) a. Taroo$_i$-wa [zibunzisin$_i$-ga syoo -o toru
    -Top self -Nom award-Acc get
    to] -wa omottemominakatta
    COMP-Top never-thought

'Taro$_i$ never thought that self$_i$ would receive an award'

b. ?*Taroo$_i$-ga [Hanako-ga zibunzisin$_i$-o semeru
    -Nom self -Acc blame
    to] -wa omottemominakatta (koto)
    COMP-Top never-thought fact

'Taro$_i$ never thought that Hanako would blame self$_i$'

Thus it is not entirely clear how (20) in Japanese can be ruled out by the Binding Theory. However, as discussed in detail in Chomsky (1986a),

there seems to be a firm generalization that each link of an A chain must be 0-subjacent, i.e., that A' movement cannot take place across a barrier. Since the embedded CP in (20) constitutes a barrier in the sense of Chomsky (1986a), it is quite plausible that the configuration in (20) is ruled out by the constraint that accounts for this generalization.[12] Hence, even if (20) in Japanese does not violate Condition (A), it seems likely that it is ruled out on independent grounds.

3. ON WEBELHUTH'S (1989) HYPOTHESIS: SCRAMBLING AS A THIRD TYPE OF MOVEMENT

In the preceding section, I discussed some facts of weak crossover and anaphor binding in Japanese, and showed that Mahajan's (1989) hypothesis straightforwardly accounts for them. Webelhuth (1989) considers similar facts in German and independently reports observations similar to Mahajan's. In German, scrambling seems to be limited to the clause-internal case, and hence the range of the available data is narrower. But Webelhuth does discuss the facts of weak crossover and anaphor binding, and shows that a phrase moved by clause-internal scrambling can be an A binder in this language, exactly as in Hindi and Japanese. In addition, he argues that such a phrase can also be an A' binder. He presents examples such as the following as evidence for this latter claim:

(22) a. *weil   jemand   [ohne   PRO   vorher e_i zu
        because   somebody   without   first   to
        untersuchen] ihn$_i$ operiete
        examine   him   operated
        (because somebody operates on him$_i$ without first examining
        e_i)

    b. ?weil ihn$_i$ jemand [ohne PRO vorher e_i zu untersuchen] t_i
        operiete

Since German does not have empty pronouns, there is nothing surprising about the ungrammaticality of (22a). The empty category e_i in this example simply cannot be licensed in any way. But as shown in (22b), the example improves considerably when the object *ihn* 'him' is preposed to sentence-initial position. According to Webelhuth's analysis, the contrast in (22) obtains because the empty category e_i in (22b), but not that in (22a), can be licensed as a parasitic gap. And this analysis of course implies that the scrambled phrase in (22b) can be an A' binder.

Although Webelhuth (1989), exactly like Mahajan (1989), arrives at the generalization that a scrambled phrase can be an A binder or an A' binder, he draws a different conclusion from this generalization. Mahajan, as noted above, hypothesizes that scrambling can be movement to the IP SPEC position or to the CP adjoined position, and hence is ambiguous between A and A' movement. Webelhuth, on the other hand, hypothesizes that scrambling is uniformly an adjunction operation and that a phrase in an adjoined position can be an A binder as well as an A' binder. According to his hypothesis, A' movement is movement to an operator position, such as the CP SPEC position. One of the constraints on A' (operator) positions is that A binding from such positions is prohibited. Hence a constituent in an A' (operator) position can only be an A' binder. On the other hand, a constituent in an A (argument) position, such as the IP SPEC position, is prohibited from being an A' binder and hence can only be an A binder. The adjoined position, according to Webelhuth, is neither an A' (operator) position nor an A (argument) position. Hence a constituent in this position can be both an A binder and an A' binder. Webelhuth's hypothesis, then, can be schematized as in (23).

(23) a. CP SPEC position . . . . A' (operator) position
        . . . *A binding . . . . . . A' binding only

    b. IP SPEC position . . . . A (argument) position
        . . . *A' binding . . . . . A binding only

    c. Adjoined position . . . non-A/non-A' position
        . . . no constraint . . . . A/A' binding

Webelhuth's hypothesis, as shown in (23), contains two independent proposals. The first is that scrambling is not A movement, but at the same time differs from typical cases of A' movement, such as *wh*-movement, in that it is movement to a non-operator position. This proposal, then, states that scrambling is a third type of movement, i.e., movement to a non-A, non-operator position. The second proposal is that a constituent in this non-A, non-operator position can be an A binder as well as an A' binder. I will present supporting evidence for Webelhuth's first proposal in this section and return to his second proposal in Section 4.

3.1. *LF Lowering of Scrambled Phrases*

I will argue in this subsection that scrambling does not, in general, establish a semantically significant operator-variable relation and hence

should be classified as movement to non-operator position, as proposed by Webelhuth (1989).[13] More specifically, I will show that scrambling in Japanese, even when it moves a constituent "long distance," can be literally undone in the LF component and differs from English topicalization and wh-movement in this respect. Since the argument in this subsection relies heavily on the Proper Binding Condition, which states that traces must be bound, I will first discuss some examples to illustrate the effect of this condition.[14] I will then argue for the conclusion that constituents moved by scrambling can be moved back to their D-structure positions in the LF component.

Let us first consider the examples in (24).

(24) a. Mary ordered John to find out [$_{CP}$ who$_i$ [$_{IP}$ Bill saw t_i]]

b. *Mary ordered t_i to find out [$_{CP}$ who$_i$ [$_{IP}$ Bill saw John]]

This is one of the most straightforward pairs illustrating the effect of the Proper Binding Condition. The trace t_i is bound in (24a) but not in (24b). Hence the latter, and only the latter, is ruled out by this condition. (24b) is also ruled out by the constraint against vacuous quantification. But since the effect of this constraint is quite similar to that of the Proper Binding Condition, and since the argument in this subsection can be constructed on the basis of either condition, I will refer only to the Proper Binding Condition in the discussion below.

The traces in (24) were created by S-structure wh-movement. The following examples indicate that traces created by LF movement are also subject to the Proper Binding Condition, as shown in detail in May (1977):

(25) a. Mary ordered John to find out [$_{CP}$ who$_i$ [$_{IP}$ t_i saw who]]

b. *Mary ordered who to find out [$_{CP}$ who$_i$ [$_{IP}$ t_i saw John]]

Neither of the examples in (25) violates the Proper Binding Condition at S-structure. But in both (25a–b), the wh in situ, who, must move in the LF component to the CP SPEC position occupied by who. And the trace created by this LF wh-movement violates the Proper Binding Condition in the case of (25b), but not in the case of (25a).

Let us now consider the slightly more complicated examples in (26).

(26) a. ??Who$_i$ do you wonder [$_{CP}$ [which picture of t_i]$_j$ [$_{IP}$ John likes t_j]]

b. *[Which picture of t_i]$_j$ do you wonder [$_{CP}$ who$_i$ [$_{IP}$ John likes t_j]]

(26a), which is due to Howard Lasnik, is the English counterpart of the Spanish examples that Chomsky (1986a) attributes to Esther Torrego. It shows that a wh-phrase, albeit somewhat marginally, can be extracted out of another wh-phrase in a CP SPEC position. In (26b), who$_i$ is extracted out of the wh-phrase in the matrix CP SPEC position and moved to the embedded CP SPEC position. The example is hopeless and clearly contrasts with (26a). This contrast, exactly as that in (24), follows from the Proper Binding Condition, since the trace t_i is bound in (26a) but not in (26b). The following pair is an LF counterpart of (26).

(27) a. Who$_i$ t_i knows [$_{CP}$ [which picture of whom]$_j$ [$_{IP}$ Bill bought t_j]]

b. ??[Which picture of whom]$_j$ do you wonder [$_{CP}$ who$_i$ [$_{IP}$ t_i bought t_j]]

Van Riemsdijk and Williams (1981) discuss (27a) and point out that the example is ambiguous; whom in this example can take either matrix scope or embedded scope. The fact that whom can take matrix scope indicates that it can move to the matrix CP SPEC position in LF. (27b), on the other hand, involves extraction out of a wh-island and hence is marginal. But what concerns us here is not its marginality, but instead the fact that it is, unlike (27a), unambiguous. Whom in this example can take matrix scope but not embedded scope. This fact follows from the Proper Binding Condition since, if whom moves to the embedded CP SPEC position in LF, the resulting representation will clearly be in violation of this condition.

Let us finally consider the examples in (28).

(28) a. ??Who$_i$ t_i said that [the man that bought what]$_j$ John knows whether Mary likes t_j

b. *Mary thinks that [the man that bought what]$_j$ John knows who$_i$ t_i likes t_j

(28a–b) involve embedded topicalization. The judgment on examples of embedded topicalization varies considerably, and for those who do not accept embedded topicalization to begin with, (28a–b) are both hopeless. But for those who accept embedded topicalization quite freely, the contrast between (28a) and (28b) seems to be a clear one. For them, (28a) is marginal since it involves topicalization out of a wh-island, but (28b) is far worse. This contrast also follows from the Proper Binding Condition. In both (28a–b), what moves in LF to the CP SPEC

position occupied by *who*. The trace produced by this movement will be bound in the case of (28a) but not in the case of (28b). Hence the LF representation of (28b), but not that of (28a), violates the Proper Binding Condition.

We have seen so far that the Proper Binding Condition constrains traces created by S-structure movement and also those created by LF movement. We have considered only English examples so far, but as expected, we can establish the same conclusion on the basis of Japanese examples. Let us first consider the case of traces created by S-structure movement, namely, scrambling. The following examples show that not only NPs but also CPs are subject to scrambling in Japanese:[15]

(29) a. Taroo-ga   [$_{CP}$ Hanako-ga   sono   hon -o   yonda
      -Nom   -Nom   that   book-Acc   read

     to]   itta   (koto)
     COMP   said   fact

     'Taro said that Hanako read that book'

b. [$_{CP}$ Hanako-ga sono hon-o yonda to]$_i$ Taroo-ga t_i itta (koto)
     '[That Hanako read that book]$_i$, Taro said t_i'

(29b) is derived from (29a) by scrambling the complement CP to sentence-initial position. The examples in (30), on the other hand, show that not only "long distance" scrambling but also multiple "long distance" scrambling is possible in Japanese.

(30) a. Taroo-ga   [$_{CP}$ Hanako-ga   Masao-ni   sono   hon -o
      -Nom   -Nom   -to   that   book-Acc

     watasita   to]   omotteiru   (koto)
     handed   COMP   think   fact

     'Taro thinks that Hanako handed that book to Masao'

b. Sono hon-o$_i$ Masao-ni$_j$ Taroo-ga [$_{CP}$ Hanako-ga t_i t_j watasita
   to] omotteiru (koto)

     'That book,$_i$ to Masao,$_j$ Taro thinks that Hanako handed t_i t_j'

(30b) is derived from (30a) by scrambling both the direct object and the indirect object out of the embedded CP to the initial position of the matrix clause.

Given this much background on scrambling, let us now consider the

following examples, which illustrate the effect of the Proper Binding Condition:

(31) a. [Taroo-ga   [$_{CP}$ Hanako-ga   sono   hon -o   yonda
      -Nom   -Nom   that   book-Acc   read

     to]   itta   (koto)
     COMP   said   fact

     'Taro said that Hanako read that book'

b. [Sono hon-o$_i$ [Taroo-ga [$_{CP}$ Hanako-ga t_i yonda to] itta]]
   (koto)

     'That book,$_i$ Taro said that Hanako read t_i'

c. *[$_{CP}$ Hanako-ga t_i yonda to]$_j$ [sono hon-o$_i$ [Taroo-ga t_j itta]]
   (koto)

     '[That Hanako read t_i]$_j$, that book,$_i$ Taro said t_j'

(31b) is derived from (31a) by scrambling the embedded object to the initial position of the matrix clause. Since "long distance" scrambling is possible, there is nothing surprising about the grammaticality of this example. (31c), on the other hand, is derived from (31b) by scrambling the embedded CP, again to the initial position of the matrix clause. Since CPs are subject to scrambling and since multiple scrambling is possible, there does not seem to be anything wrong with the movement operations involved in the derivation of (31c). Here, the trace t_i in (31c), produced by the scrambling of *sono hon-o* 'that book-Acc', is not bound by its antecedent. Thus (31c) is ruled out by the Proper Binding Condition and hence constitutes evidence that traces created by scrambling are subject to this condition.

We have seen above that traces created by S-structure movement in Japanese are constrained by the Proper Binding Condition, as expected. The following examples from K. I. Harada (1972) show that those created by LF *wh*-movement in Japanese are also subject to this condition:

(32) a. [$_{IP}$ Hanako-ga   Masao-ni [$_{CP}$ [$_{IP}$ dare-ga   kuru]   ka]
      -Nom   -to   who-Nom   come   Q

     osieta] koto
     taught fact

     'the fact that Hanako told Masao [Q[who is coming]]'

(32) b. *[$_{IP}$ Hanako-ga　dare-ni [$_{CP}$ [$_{IP}$ Masao-ga　kuru] ka]
　　　　-Nom　who-to　　　　　-Nom　come　Q
　　　osieta] koto
　　　taught　fact
　　　'the fact that Hanako told who [Q[Masao is coming]]'

Japanese lacks syntactic *wh*-movement, and the *wh*-phrase *dare* 'who' appears *in situ* in both (32a—b). The *wh*-phrase, however, must move in the LF component to the SPEC position of the CP headed by the Q-morpheme *ka*. The trace produced by this LF *wh*-movement will be bound in the case of (32a), but not in the case of (32b). Hence the LF representation of (32b) is ruled out by the Proper Binding Condition.

As seen above, the Proper Binding Condition constrains traces in Japanese, whether they are created by S-structure movement or LF movement, exactly as expected. Given this fact, let us now turn to the evidence that scrambling can be undone in LF. Consider first the examples in (33).

(33) a. [Masao-ga　[$_{CP}$ [$_{IP}$ Hanako-ga　dono　hon -o
　　　　-Nom　　　　　　-Nom　which　book-Acc
　　　tosyokan-kara karidasita]　ka]　siritagatteiru] koto
　　　library -from checked-out Q　want-to-know　fact
　　　'the fact that Masao wants to know [Q [Hanako checked out which book from the library]]'

b. ?[Dono hon-o, [Masao-ga [$_{CP}$ [$_{IP}$ Hanako-ga t_i tosyokan-kara
　　　karidasita] ka] siritagatteiru]] koto
　　　'the fact that which book, Masao wants to know [Q [Hanako checked out t_i from the library]]'

(33a) has the configuration shown in (34).

(34)　　[…[$_{CP}$ [$_{C'}$ [$_{IP}$…*wh*…].[Q]]…]

The *wh*-phrase moves in LF to the SPEC position of the CP headed by the Q-morpheme, and the trace created by this LF *wh*-movement will be bound. Hence we expect the example to be grammatical. The interesting case is (33b). In this example, the *wh*-phrase is scrambled out of the embedded CP all the way to the initial position of the matrix clause. The structure of this example is shown in (35).

(35)　　*wh*, […[$_{CP}$ [$_{C'}$ [$_{IP}$…t_i…].[Q]]…]

If the *wh*-phrase moves in LF to the SPEC position of the CP headed by Q, leaving behind a trace, then we should expect this example to violate the Proper Binding Condition at LF. Yet the example is far better than (32b) and clearly does not have the ungrammatical status of a Proper Binding Condition violation.[16]

The contrast between (33b) and (32b) indicates that the former example conforms to the Proper Binding Condition. And this, in turn, implies that the *wh*-phrase in (33b) need not leave a trace behind when it moves to the embedded CP SPEC position in LF. It is argued in Lasnik and Saito (1984) that movement only optionally creates a trace, and in particular, that it need not create a trace unless the trace is required by an independent principle, e.g., the Projection Principle. I conclude, then, that no principle requires the LF *wh*-movement in (33b) to leave a trace and that this is the reason the example does not violate the Proper Binding Condition at LF. If this is the correct way to account for examples such as (33b), it follows that scrambling need not be represented at all at LF, since the LF representation of (33b), for example, will be identical to that of (33a). This account suggests, further, that scrambling can be freely undone in the LF component. If scrambled phrases can freely move "downward" in LF without leaving a trace, then nothing seems to prevent them from moving back to their D-structure positions.

The following slightly more complicated examples lead us to the same conclusion:

(36) a. [Masao-ga　[$_{CP}$ [$_{IP}$ minna-ga　[$_{CP}$ [$_{IP}$ Hanako-ga　dono
　　　　-Nom　　　　all　-Nom　　　　　　　-Nom　which
　　　hon -o　tosyokan-kara karidasita]　to]　omotteiru]
　　　book-Acc library -from checked-out COMP think
　　　ka] siritagatteiru] koto
　　　Q　want-to-know　fact
　　　'the fact that Masao wants to know [Q [everyone thinks [that [Hanako checked out which book from the library]]]]'

b. ??[[$_{CP}$ [$_{IP}$ Hanako-ga dono hon-o tosyokan-kara karidasita] to]i
　　　[Masao-ga [$_{CP}$ [$_{IP}$ minna-ga t_i omotteiru] ka] siritagatteiru]]
　　　koto
　　　'the fact that [that [Hanako checked out which book from the library]]i, Masao wants to know [Q [everyone thinks t_i]]'

(36a) is like (33a), except that it involves one more embedding. The structure of this example is shown below in (37).

(37) $[...[_{CP}[_{C'}[_{IP}...[_{CP}...\mathit{wh}...]...]Q]]...]$

As in the case of (33a), there is nothing surprising about the grammaticality of this example. The *wh*-phrase moves in LF to the SPEC position of the CP headed by Q, and the trace of this movement will be bound by the moved *wh*-phrase. (36b), on the other hand, is derived from (36a) by scrambling the most deeply embedded CP to the initial position of the matrix clause. Its structure is shown in (38).

(38) $[_{CP}...\mathit{wh}...]_i[...[_{CP}[_{C'}[_{IP}...t_i...]Q]]...]$

By assumption, the *wh*-phrase in this example must move to the SPEC position of the CP headed by Q in the LF component. The LF *wh*-movement in this case, unlike that in the case of (33b), must leave a trace behind, since the *wh*-phrase is in the object position, and hence the trace is required by the Projection Principle. Thus if we simply apply LF *wh*-movement to (36b), the resulting LF representation would clearly be in violation of the Proper Binding Condition. However, as in the case of (33b), although the example is somewhat marginal, it does not have the ungrammatical status of a Proper Binding Condition violation.

As noted above, the *wh*-phrase in (36b) must move in LF to the SPEC position of the CP headed by Q, leaving behind a trace. Hence if the example is not in violation of the Proper Binding Condition, as it seems not to be, then the scrambled CP must be able to lower in LF to a position inside the c-command domain of the moved *wh*-phrase. If such lowering is possible, the *wh*-trace can clearly be bound at LF. Furthermore, this lowering of CP should not produce a trace, for otherwise, the lowering would itself result in a Proper Binding Condition violation. Thus we are once again led to the conclusion that scrambled constituents can freely lower in LF without producing a trace. And as noted above, if this is the case, nothing seems to prevent them from moving back to their D-structure positions in LF. We thus arrive once again at the hypothesis in (39).

(39) A constituent moved by scrambling can move back to its D-structure position in the LF component.

Given this hypothesis, the LF representation of (36b) can have the structure shown in (40).

(40) $[_{IP}...[_{CP}\,\mathit{wh}_i[_{C'}[_{IP}...[_{CP}...t_i...]...]Q]]...]$

From (38), we first move back the scrambled CP to its D-structure position and then move the *wh*-phrase out of this CP to the SPEC position of the CP headed by Q. The resulting representation, as shown in (40), clearly does not violate the Proper Binding Condition.

The hypothesis in (39) is in accord with the traditional view of scrambling. Since Ross (1967), it has been widely assumed that scrambling does not contribute significantly to the semantic interpretation of a sentence. For example, Ross assumes that scrambling is a stylistic rule, and Chomsky and Lasnik (1977) suggests that scrambling applies in the PF component. The non-configurationality hypothesis of Hale (1980) and Farmer (1980) can be viewed as an attempt to explain the lack of semantic effects of scrambling by eliminating scrambling itself. In later works, such as Saito (1985) and Hoji (1985), arguments were presented that scrambling exists as an S-structure movement operation. In those works, it was automatically assumed that scrambling has some semantic import, since S-structure feeds into LF. But if scrambling can be undone in LF, it follows that it does not, or at least it need not, contribute to the interpretation of a sentence.

The hypothesis in (39) also raises an interesting theoretical problem. Note here that (39) is intended to distinguish scrambling from English topicalization and *wh*-movement. If topicalization and *wh*-movement can be undone in LF, exactly as scrambling, then we can no longer maintain the account proposed above for (27b) and (28b), repeated below as (41) and (42).

(41) ??[Which picture of whom]_i do you wonder who_j t_j bought t_i

(42) *[Mary thinks that [the man that bought what]_j] John knows who_i t_i likes t_j

The fact that *whom* in (41) cannot take embedded scope was attributed to the Proper Binding Condition. If *whom* moves to the embedded CP SPEC position in LF, its trace will not be bound and hence will be in violation of this condition. But if *wh*-movement could be undone in LF, this explanation would no longer make sense, since the *wh*-phrase in the matrix CP SPEC could be moved back to its D-structure position. In fact, if moved *wh*-phrases could move back to their D-structure positions in LF, the idea of LF *wh*-movement itself would be difficult to maintain. The account for (42) proposed above was that *what* in this example moves to the CP SPEC position occupied by *who*_i in LF and that this movement creates an unbound trace. This account crucially relies on the assumption that topicalization is not undone in the LF

component. If the topic in (42) could move back to its D-structure position in LF, then the LF *wh*-movement of *what* need not result in a Proper Binding Condition violation. Thus if (39) is the correct way to account for the scrambling facts discussed in this section, scrambling must differ from English topicalization and *wh*-movement in that only the former can be literally undone in LF. And a question naturally arises why scrambling has this peculiar property.

The hypothesis that English topicalization and *wh*-movement cannot be undone in LF is rather standard and is in accord with the standard conception of these movement operations, as discussed, for example, in Chomsky (1976). It is widely assumed that these movement operations contribute to semantic interpretation in the sense that they create the forms in which the sentences are interpreted. Thus the *wh*-phrase in (43a) and the topic in (43b) are interpreted as operators binding variables, as shown in (44a) and (44b) respectively.

(43) a. What$_i$ did John buy t_i

    b. John$_i$, Mary likes t_i

(44) a. [for which x: x a thing] John bought x

    b. [for x: x = John] Mary likes x

English topicalization and *wh*-movement, then, establish semantically significant operator-variable relations. It is assumed further that these movement operations contribute to interpretation in this way because their landing site, as opposed to that of A movement operations, is an operator position, i.e., a position in which the moved constituent is interpreted as an operator binding a variable. Given this conception of *wh*-movement and topicalization, we expect the moved *wh*-phrases and topics to stay in their S-structure positions at LF since LF is the level of interface between syntax and the interpretive component.

Then what does (39) say about scrambling? If those movement operations that establish semantically significant operator-variable relations cannot be undone in LF, as assumed above, then (39) directly implies that scrambling is not one of them. That is, scrambling differs from English topicalization and *wh*-movement in that it does not, or at least need not, establish a semantically significant operator-variable relation. Furthermore, if English topicalization and *wh*-movement necessarily establish such a relation because their landing site is an operator position, as assumed above, then it follows that scrambling is movement

to a non-operator position. Thus (39) provides strong support for Webelhuth's (1989) hypothesis that scrambling differs from regular A' movement operations in that it is movement to a non-operator position.

The remaining problem, then, is to explain why the landing site of scrambling, as opposed to that of topicalization and *wh*-movement, is, or at least can be, a non-operator position. Webelhuth proposes a principled solution to this problem. He hypothesizes that the CP SPEC position is an operator position, while adjoined positions are in general non-operator positions. This hypothesis straightforwardly accounts for the difference between *wh*-movement and scrambling if the latter is assumed to be an adjunction operation. Whether this hypothesis can be maintained or not, then, seems to depend heavily on the analysis of English topicalization. If English topicalization is movement to the CP SPEC position, as proposed in Chomsky (1977), then the relevant facts are consistent with Webelhuth's hypothesis. On the other hand, if it can involve IP adjunction, as proposed in Baltin (1982), and Lasnik and Saito (1990), then the hypothesis must be refined. The remaining issue, in any case, has to do with the explanation of the fact that scrambling is, or can be, movement to a non-operator position, and the fact itself seems to be well established at this point.[17]

3.2. *Scrambling as Non-A Movement*

In the preceding subsection, I first argued that the examples in (33b) and (36b) constitute evidence for (39), which states that scrambling can be undone in LF. Then I argued that (39) provides support for Webelhuth's (1989) hypothesis that scrambling differs from the standard cases of A' movement in that it is movement to a non-operator position.

Given the discussion in the preceding subsection, a possibility, then, naturally arises that scrambling is A movement. A-movement is in general non-operator movement; furthermore, as Deprez (1989) points out, this hypothesis enables us to assimilate (39) with the phenomenon of quantifier lowering, discussed in May (1977). As is well known, examples such as the following are ambiguous:

(45) Someone$_i$ is likely [$_{IP}$ t_i to win the race]

In (45), the quantified NP *someone* may take wide or narrow scope with respect to *likely*. May (1977) accounts for this fact by assuming that in LF *someone* may raise and adjoin to the matrix IP, or it may lower and adjoin to the embedded IP.[18] This account, then, implies that A moved

NPs may freely lower in LF. And what we saw in the preceding subsection is that the same is true of scrambled phrases. Thus, if scrambling is A' movement, the property of scrambling stated in (39) falls under the straightforward generalization that A movement, but not A' movement, can be undone in LF.[19]

However, Webelhuth (1989) presents evidence that scrambling should be distinguished not only from A' (operator) movement but also from A movement, and as noted above, he argues that it should be considered a third type of movement, i.e., non-operator, non-A movement. As evidence that scrambling is non-A movement, he presents examples such as (22), which shows that scrambling licenses parasitic gaps. In addition, he points out that scrambling in German exhibits the Condition (C) type reconstruction effect, which is observed with A' movement but not with A movement. Let us consider the following English examples from Reinhart (1976):

(46) a. ?*[In Benᵢ's box]ⱼ heᵢ put his cigars t_j

    b. [In the box that Benᵢ brought from China]ⱼ heᵢ put cigars t_j

In both (46a–b), the pronoun *he* c-commands the R-extression *Ben* at D-structure, but this c-command relation does not hold at S-structure because of movement (PP preposing). The contrast between (46a) and (46b), then, indicates that the movement does not make the R-expression a possible antecedent for the pronoun unless the former is "deeply embedded" within the moved constituent. This phenomenon, called the Condition (C) type reconstruction effect, seems to be observed with A' movement, such as PP preposing, but not with A movement, as the following examples suggest:[20,21]

(47) a. [John'sᵢ mother]ⱼ seems to himᵢ [t_j to be smart]

    b. [John'sᵢ picture]ⱼ struck himᵢ [t_j as a good likeness]

John in (47) is clearly no more deeply embedded within the moved phrase than *Ben* in (46a), but (47a–b) are perfect.

What Webelhuth points out is that scrambling in German shows the reconstruction effect in (46), and hence should be grouped with A' movement and not with A movement in this respect. Here the relevant data in Japanese are far from clear. However, examples such as the following seem to indicate that scrambling in Japanese, like that in German, exhibits the Condition (C) type reconstruction effect.[22]

(48) a. ??[Masaoᵢ-no hako-ni]ⱼ [kareᵢ-ga t_j hamaki-o ireta]
       -Gen box -in   he -Nom   cigar -Acc placed
    (koto)
    fact
    '[In Masao's box]ⱼ heᵢ put cigars t_j'

    b. [Hanako-ga Masaoᵢ-ni ageta hako-ni]ⱼ [kareᵢ-ga t_j
      -Nom   -to gave box -in   he -Nom
    hamaki-o ireta] (koto)
    cigar -Acc placed fact
    '[In the box Hanako gave Masaoᵢ]ⱼ heᵢ put cigars t_j'

(49) a. ??[Tarooᵢ-no syasin-o]ⱼ [kareᵢ-ga zibun-no heya-ni
      -Gen picture-Acc he -Nom self -Gen room-in
    t_j kazatteiru] (koto)
    display   fact
    '[Taro'sᵢ picture]ⱼ heᵢ displays t_j in hisᵢ room'

    b. [Hanako-ga Tarooᵢ-ni ageta syasin -o]ⱼ [kareᵢ-ga
      -Nom   -to gave picture-Acc he Nom
    zibun-no heya-ni t_j kazatteiru] (koto)
    self -Gen room-in display fact
    '[The picture that Hanako gave Tarooᵢ]ⱼ heᵢ displays t_j in hisᵢ room'

(50) a. ??[Tarooᵢ-no sensei -o]ⱼ [kareᵢ-wa t_j itiban sonkeisiteiru]
      -Gen teacher-Acc he -Top   most respect
    '[Taro'sᵢ teacher]ⱼ heᵢ respects t_j most'

    b. [Tarooᵢ-ni oniron -o osieta sensei -o]ⱼ [kareᵢ-wa
      -to phonology-Acc taught teacher-Acc he -Top
    t_j itiban sonkeisiteiru]
    most respect
    '[The teacher that taught Taroᵢ phonology]ⱼ heᵢ respects t_j most'

As noted above, the Condition (C) type reconstruction effect is not observed with A movement. Thus if the marginality of (48a)—(50a) is in fact due to this effect, then, as Webelhuth points out, these examples indicate that scrambling cannot be analyzed simply as A movement.

The anaphor binding facts discussed in Section 2 above provide further evidence that scrambling should not be considered A movement solely on the basis of the examples in (33b) and (36b). Note that (33b) and (36b), which indicate that scrambling is non-operator movement, involve "long distance" scrambling. Hence what they show, more precisely, is that "long distance" scrambling can be non-operator movement and can be undone in LF. However, as we saw in Section 2, phrases moved by "long distance" scrambling cannot serve as A binders for anaphors. The relevant examples, (16a–b), are repeated below as (51a–b).

(51) a. *[Karera-o$_i$] [Masao-ga [otagai$_i$ -no sensei]-ni
　　　they -Acc 　　-Nom 　each other-Gen teacher-to
[$_{CP}$ [$_{IP}$ Hanako-ga 　t_i hihansita] to] itta]] (koto)
　　　　　　-Nom 　　criticized COMP said fact
'Them$_i$, Masao said to each other's$_i$ teachers that Hanako criticized t_i'

b.*[Karera-o$_i$ 　[[otagai$_i$ 　-no 　sensei]-ga
　　they -Acc 　each other-Gen teacher-Nom
[$_{CP}$ [$_{IP}$ Hanako-ga 　t_i hihansita] to] itta]] (koto)
　　　　　　-Nom 　criticized COMP said fact
'Them$_i$, each other's$_i$ teachers said that Hanako criticized t_i'

Recall that, based on examples of this kind, Mahajan (1989) concludes that "long distance" scrambling cannot be A movement. If we accept this conclusion, then we clearly cannot account for (33b) and (36b) by assuming that scrambling is in general A movement. Thus (33b) and (36b), together with (51), show decisively that "long distance" scrambling should be distinguished from both operator movement and A movement.

4. S-STRUCTURE AND LF PROPERTIES OF THE
IP ADJOINED POSITION IN JAPANESE

In the preceding section, we have seen much evidence for Webelhuth's (1989) hypothesis that scrambling is non-operator, non-A movement. The data considered so far, then, seem to indicate that scrambling in Japanese is better accounted for by Webelhuth's hypothesis than by Mahajan's (1989), which assumes only two types of movement, A and A'. As noted above, the examples in (51) show that "long distance"

scrambling cannot be A movement. Thus, if all movement operations are either A or A', "long distance" scrambling must be A' movement, which is exactly the conclusion Mahajan draws from these examples. But then A' movement must be divided into two groups, operator and non-operator movement, so that a distinction can be made between *wh*-movement and topicalization on the one hand and "long distance" scrambling on the other. Hence even if we assume Mahajan's hypothesis, it is still necessary to postulate a third type of movement, i.e., non-operator, non-A movement, exactly as Webelhuth proposed.

Then can we simply assume Webelhuth's hypothesis as it is for the analysis of scrambling in Japanese? I will argue in this section that the answer is negative. I will first show that we must rely crucially on Mahajan's insights to properly account for the binding data discussed in Section 2. Then in Sections 4.2 and 4.3, I will adopt an idea presented in Tada (1990) and suggest a way to incorporate Mahajan's insights into the analysis of Japanese scrambling as non-operator, non-A movement.

4.1. *Potential Problems for Webelhuth's Hypothesis*

As noted at the outset of Section 3, Webelhuth's (1989) hypothesis contains two independent proposals. The first, which was discussed in detail in the preceding section, is that the landing site of scrambling is a non-operator, non-A position. The second is that a scrambled phrase, being in a non-A position, counts as an A' binder and at the same time, being in a non-operator position, counts as an A binder. The latter proposal is motivated in part by the facts of anaphor binding and weak crossover discussed in Section 2. Let us consider again the examples in (14), repeated below as (52).

(52) a. Karera-o$_i$ [Masao-ga [[otagai$_i$ 　-no 　sensei]-ni
　　　they -Acc 　　-Nom 　each other-gen teacher-to
[t_i syookaisita]]] (koto)
　　introduced 　　fact
'Them$_i$, Masao introduced t_i to each other's$_i$ teachers'

b.?Karera-o$_i$ 　[[otagai$_i$ 　-no 　sensei]-ga 　[t_i hihansita]]
　　they -Acc 　each other-gen teacher-Nom 　　criticized
(koto)
fact
'Them$_i$, each other's$_i$ teachers criticized t_i'

According to Webelhuth's proposal, the scrambled phrases in (52) are in non-operator position and hence can be A binders. It is thus predicted correctly that the examples do not have the ungrammatical status of Condition (A) violations.

However, there seem to be two problems for the hypothesis that phrases in non-operator positions automatically count as A binders. The first has to do with examples such as (17), repeated below as (53).

(53)   Zibunzisin-o$_i$ [Hanako$_i$-ga   t$_i$ hihansita]   (koto)
       self   -Acc   -Nom   criticized   fact
       'Herself$_i$, Hanako$_i$ criticized t$_i$'

If *zibunzisin* 'self' in this example counts as an A binder, as predicted by Webelhuth's proposal, then the example should be ruled out as a violation of Condition (C) of the Binding Theory. Hence this example indicates that a scrambled phrase should not always count as an A binder, and in particular that it need not count as an A binder for the purpose of Condition (C). Recall here that the examples in (52) and (53) are both straightforwardly accounted for if we assume Mahajan's (1989) proposal that clause-internal scrambling is ambiguous between A and A' movement. According to this proposal, (52a–b) can be examples of A scrambling, while (53) can be an instance of A' scrambling. The latter example, then, can be accounted for in exactly the same way as the English (54).

(54)   Himself$_i$, John$_i$ likes t$_i$

Thus (52) and, in particular, (53) pose no problem for Mahajan's hypothesis.

The second problem for Webelhuth's hypothesis has to do with the distinction between clause-internal scrambling and "long distance" scrambling with respect to anaphor binding. Recall that (33b) and (36b) indicate that scrambling, in particular "long distance" scrambling, is movement to non-operator position. (51), on the other hand, confirms Mahajan's observation that a phrase moved by "long distance" scrambling cannot serve as an A binder for a lexical anaphor. As noted above, these examples show that "long distance" scrambling should be distinguished from operator movement as well as from A movement, and hence provide strong support for Webelhuth's proposal that scrambling is non-operator, non-A movement. However, exactly the same set of examples poses a problem for his other proposal that a phrase in non-

operator position automatically qualifies as an A binder. Given that "long distance" scrambling can be non-operator movement, this proposal predicts incorrectly that the examples in (51) should be as good as those in (52). Hence if we appeal to Webelhuth's hypothesis that scrambling is non-operator movement to account for (33b) and (36b), it seems impossible to maintain his other proposal that a phrase in non-operator position automatically qualifies as an A binder.

This problem posed by (51) does not arise in German, where scrambling is limited to the clause-internal case. But the contrast between clause-internal scrambling and "long distance" scrambling, shown in (52) and (51), exists in languages with both, such as Hindi and Japanese, and it clearly must be accounted for. And as discussed in detail in Section 2, this contrast follows straightforwardly from Mahajan's hypothesis. Since clause-internal scrambling is ambiguous between A and A' movement and "long distance" scrambling is necessarily A' movement, the examples in (51), but not those in (52), are ruled out by Condition (A) of the Binding Theory. Interestingly enough, then, (33b) and (36b), which constitute strong evidence for Webelhuth's proposal that scrambling is non-operator movement, provide indirect support for Mahajan's analysis of (52) and (51) in terms of the A/A' distinction.

It seems clear at this point that we cannot simply assume Webelhuth's hypothesis as it is, but must rely also on Mahajan's insights to account properly for the facts of Japanese scrambling. Here one option would be to directly adopt Mahajan's hypothesis for the analysis of examples such as (53) and (51)–(52), completely rejecting Webelhuth's proposal that a phrase in non-operator, non-A position counts as an A binder. In this case, we still need to rely on part of Webelhuth's hypothesis to account for the facts in (33b) and (36b). That is, we still need to assume that scrambling, even when it takes place "long distance," is non-operator movement. We then arrive at the following amalgamated hypothesis:

(55) a. Clause-internal scrambling is ambiguous between A and A' movement, while "long distance" scrambling must be A' movement. (Mahajan's hypothesis)

b. A' scrambling differs from *wh*-movement and topicalization in that it is movement to a non-operator position. (A revised version of Webelhuth's hypothesis)

The only problem for this amalgamated hypothesis, as far as I can see, is the fact that scrambling shows the Condition (C) type reconstruction

effect. As shown by (48)–(50), and also by (56) below, even clause-internal scrambling seems to exhibit this effect.

(56) ?*[Masao_i-no   hahaoya]_j-o_j   [kare_i-ga   t_j   aisiteiru] (koto)
    -Gen mother   -Acc   he   -Nom   love   fact

'[Masao's_i mother]_j, he_i loves t_j'

This fact would be totally unexpected under the hypothesis in (55). This hypothesis does not prevent (56) from being an instance of A scrambling, but as noted above, A movement does not exhibit this type of reconstruction effect. Here, given the ill-understood nature of the Condition (C) type reconstruction effect and also the unclarities concerning the Japanese data (see fn. 22), it is quite tempting to dismiss this problem and maintain the hypothesis in (55). But (56), for example, does contrast with (57); this problem, I believe, should be taken seriously.

(57) [Masao_i-no   hahaoya]-ga   kare_i-o   aisiteiru (koto)
    -Gen mother   -Nom he   -Acc love   fact

'[Masao's_i mother] loves him_i'

In the following subsections, I will rely crucially on an idea presented in Tada (1990), and suggest a way to incorporate Mahajan's insights into Webelhuth's hypothesis so that the facts discussed in this subsection, including (56), can be accounted for.[23]

4.2. LF Reanalysis of the IP Adjoined Position

Let us first consider the problematic example (53), repeated below as (58).

(58) Zibunzisin-o_i   [Hanako_i-ga   t_i   hihansita] (koto)
    self   -Acc   -Nom   criticized   fact

'Herself_i, Hanako_i criticized t_i'

This example and (56) indicate that scrambling has the reconstruction properties of A' (non-A) movement. (58), as Mahajan points out, shows that the chain created by scrambling can be an A' chain, and (56), as Webelhuth observes, suggests that it must be an A' chain. Thus these examples constitute evidence for the hypothesis that scrambling should be characterized as A' (non-A) movement. Given the formulation of Condition (C) in (59), this hypothesis, like Mahajan's, predicts correctly that Hanako in (58) does not violate this condition.

(59)   An R-expression is A-free. (Chomsky (1981))

The hypothesis that scrambling is A' (non-A) movement is not only consistent with examples such as (56) and (58), but also seems to be in accord with the following condition on chains suggested in Chomsky (1981, 1986b):

(60)   If $C = (a_1, \ldots, a_n)$ is a maximal CHAIN, then a_n occupies its unique θ-position and a_1, its unique Case-marked position. (Chomsky (1986b, p. 137))

(60) is a condition on A chains and implies that the head of an A chain is in a Case-marked position. Here it is argued in Saito (1985), for example, that objective Case in Japanese is a structural Case assigned by a verb under government, exactly as that in English. If this analysis is correct, then in examples such as (61), not the scrambled object but its trace is in a Case-marked position.

(61)   [Sono bon -o]_i   [Masao-ga   t_i   yonda] (koto)
    that   book-Acc   -Nom   read   fact

'[That book]_i, Masao read t_i'

Hence according to the condition in (60), the chain created by scrambling cannot be an A chain and must be an A' chain.[24]

This hypothesis, however, faces a problem when we consider examples like (52). (52b) is repeated below as (62).

(62)   ?Karera-o_i   [[otagai_i   -no   sensei]-ga   t_i   hihansita]]
    they   -Acc   each other-Gen   teacher-Nom   criticized
    (koto)
    fact

'Them_i, each other's_i teachers criticized t_i'

This example shows that a phrase moved by clause-internal scrambling can (at least marginally) serve as a binder for a lexical anaphor. And as noted above, it was examples of this kind that led Webelhuth (1989) to the hypothesis that phrases in non-operator positions automatically count as A binders. That is, he maintains the formulation of Condition (A) in (63) and concludes that the landing site of scrambling has the binding properties of an A position.

(63)   An anaphor is A bound in its binding domain. (Chomsky (1981, 1986b))

However, there is an obvious alternative possibility, which is in line with Webelhuth's conception of scrambling. Instead of hypothesizing that scrambled phrases can be A binders, we can slightly revise the formulation of Condition (A). According to Webelhuth's hypothesis, the landing site of scrambling is a third type of position, i.e., a non-operator, non-A position. This position is grouped with operator positions in that it is a non-A position and with A positions in that it is a non-operator position. If we accept this proposal, which is well motivated on independent grounds as shown in Section 3 above, we have the operator/non-operator distinction in addition to the A/A' (i.e., A/non-A) distinction to distinguish among NP positions. Hence it is possible to modify Condition (A) minimally as in (64) to accommodate examples like (62).

(64)   An anaphor is non-operator bound in its binding domain.

This alternative account for (62) is consistent with the grammaticality of examples such as (58), as long as we maintain the A/A' (A/non-A) distinction and the formulation of Condition (C) in (59).

The analysis suggested in the preceding paragraph only slightly modifies Webelhuth's hypothesis. It is based on Webelhuth's proposal that scrambling is movement to a non-operator, non-A position. Furthermore, it directly adopts his proposal that a scrambled phrase can serve as a binder for a lexical anaphor because it is in a non-operator position. But it abandons his assumption that binding relations can be characterized solely on the basis of the A/A' dichotomy. If there are only two types of NP positions, A and A', then it seems reasonable to assume that, correspondingly, there are only two types of binding relations, A binding and A' binding. However, given Webelhuth's hypothesis on NP positions, it seems only reasonable to assume that there are more types of binding relations, e.g., operator binding, non-operator binding, A binding, and non-A binding.[25]

The modification suggested above successfully accommodates examples such as (58). But it does not provide a solution for the problem posed by the examples in (51). (51b) is repeated below as (65).

(65)   *[Karera-o_i   [[otagai_i   -no   sensei]-ga
         they   -Acc   each other-Gen   teacher-Nom
         [CP [IP Hanako-ga   t_i   hihansita]   to]]   itta]]   (koto)
                 -Nom   criticized   COMP   said   fact
         'Them_i, each other's_i teachers said that Hanako criticized t_i'

Given our conclusion that even "long distance" scrambling can be non-operator movement, the revised condition (A) in (64) apparently makes the wrong prediction that examples such as (65) should be grammatical. Thus we still face the second problem for Webelhuth's hypothesis noted in Section 4.1, and further modification seems to be in order.

As noted above, (65) seems to satisfy Condition (A). Given our conclusions so far, this is certainly the case at S-structure. However, the situation is less clear when we consider the LF representation of the example. It was argued above in Section 3 that scrambling can be literally undone in LF. Thus, ungrammatical examples like (65) can have LF representations that are different from their S-structure representations. If their LFs not only can but must differ from their S-structures, then there arises the possibility that they are ruled out by Condition (A), not at S-structure but at LF.[26] If we pursue this possibility, the remaining problem would be to find a way to force those examples to have LF representations that violate Condition (A). The idea of exploiting the level of LF to account for the peculiar properties of scrambling has already been proposed in Tada (1990). In what follows, I will directly adopt his central ideas. At the same time, I will try to apply those ideas to the relevant examples in a way that enables us to account for the contrast between (62) and (65) along the lines of Mahajan (1989).[27]

Tada (1990) first hypothesizes that a non-operator, non-A position is licensed at S-structure but not at LF.[28] It follows from this hypothesis that every NP position must be either an A position or an operator position at LF. In particular, this hypothesis implies that the position of the scrambled phrases cannot remain a non-operator, non-A position at LF. Tada suggests the following two possibilities for the LF status of the position in question:

(66)   a.   The position disappears at LF.

       b.   The position is reanalyzed as an operator position.

(66a) is achieved when the scrambled phrase is moved back to its D-structure position in LF. (66b), according to Tada, is what happens when the scrambled phrase stays in its S-structure position at LF. The plausibility of (66b) becomes apparent when we consider the LF operation of quantifier raising (QR). If QR involves adjunction, as argued in May (1977), then the IP adjoined position, for example, must at least be a potential operator position at LF not only in English but also in Japanese.

Tada's (1990) hypothesis, summarized above, has exactly the desired

effect of making ungrammatical examples like (65) violate Condition (A) at LF. The position of the scrambled phrase in (65) cannot remain a non-operator, non-A position at LF, and there are two options, (66a–b), to derive the LF representation of this example. If we apply the first option, (66a), to (65), the resulting LF representation clearly violates Condition (A). Since scrambling is undone, the lexical anaphor in this example no longer has a c-commanding antecedent at LF. The option in (66b) also makes (65) violate Condition (A) at LF. Since the scrambled phrase will be in an operator position, it does not qualify as a possible antecedent for the lexical anaphor at this level. Thus, (66a–b) both make (65) violate Condition (A) at LF.

Here, in order to exhaust the logical possibilities, I would like to add (66c) to the possibilities listed in (66a–b) above.

(66) c. The position is reanalyzed as an A position.

Given Tada's hypothesis that every NP position is either an A position or an operator position at LF, (66c) is also a logical possibility. Interestingly enough, (66c) also seems to lead (65) to an LF violation, but in a different way. If the scrambled phrase in (65) is in A position at LF, then the lexical anaphor satisfies Condition (A) at this level. But at the same time, the chain containing the scrambled phrase and its trace must be an A chain. Here recall from section 2 the following generalization proposed in Chomsky (1986a):

(67)   Each link of an A chain must be 0-subjacent. (1e., no barrier can intervene between two members of a single A chain.)

(68), due to Mark Baker, illustrates (67), which is an extension of Aoun's (1981) observation that "S's (CPs) break A chains."

(68)   *John$_i$ is believed [$_{CP}$ that [$_{IP}$ it was told t_i [$_{CP}$ that Mary was leaving]]]

In this example, a barrier (CP) intervenes between *John* and its trace. Chomsky (1986a) suggests that (67) may be explained by the Empty Category Principle (ECP), while Lasnik and Saito (1990) promote (67) to a principle, pointing out that it subsumes a large part of the phenomenon accounted for by Chomsky's (1986b) Uniformity Condition. I will continue to put aside the controversial issue of how (67), as a generalization, is to be explained. But I will assume that (67) is a real generalization in the sense that it follows from a syntactic principle and further, that the relevant principle applies at LF. Given these minimal assumptions, we expect the option in (66c) to lead (65) to an ill-formed

LF representation. A CP intervenes between the scrambled phrase and its trace in (65). Hence if the scrambled phrase is in A position, the chain it heads would be an ill-formed A chain, exactly like that in (68).[29]

Let us now consider how the LF account of (65) suggested above fares with the example of clause-internal scrambling in (62), repeated below as (69).

(69)   ?Karera-o$_i$ [[otagai$_i$ -no   sensei]-ga   [t_i hihansita]]
        they -Acc   each other-Gen   teacher-Nom   criticized
        (koto)
        fact

        'Them$_i$, each other's$_i$ teachers criticized t_i'

Given Webelhuth's (1989) hypothesis that scrambling is uniformly movement to a non-operator, non-A position, which we are pursuing here, the scrambled phrase in (69), like that in (65), has the three options (66a–c) at LF. The first two options (66a–b) make (69) violate Condition (A) at LF in exactly the same way that they lead (65) to LF violation of this condition. If scrambling is undone in LF (option (66a)), then the lexical anaphor in (69) lacks a c-commanding antecedent at this level. And if the scrambled phrase is in an operator position at LF (option (66b)), it does not qualify as a possible antecedent for the lexical anaphor at this level. Hence the only option that can distinguish between (65) and (69) is (66c). That is, the contrast between (65) and (69) indicates that the option in (66c) must lead (65), but not (69), to an ill-formed LF representation.

Then what is the relevant difference between (65) and (69) that distinguishes them with respect to the option in (66c)? It was hypothesized above that (66c) leads (65) to an LF violation because the chain containing the scrambled phrase and its trace cannot be a well-formed A chain. In particular, it was hypothesized that a violation occurs because a barrier (the embedded CP) intervenes between the scrambled phrase and its trace. If this is correct, then the well-formedness of (69) indicates that there is no such violation in the case of this example. This conclusion seems plausible since the crucial barrier in (65), i.e., the embedded CP, is not present in the case of (69). We thus arrive at the conclusion that the A' chain in (69) can be reanalyzed as an A chain at LF because it, unlike the chain in (65), satisfies the locality requirement on A chains. According to this analysis, then, the lexical anaphor in (69) satisfies Condition (A) at LF since it can be A bound at this level.[30]

Note at this point that the account for the examples in (65) and (69)

suggested above is exactly like Mahajan's (1989) except that it is concerned exclusively with LF representations. I have basically pursued Webelhuth's (1989) hypothesis that scrambling is uniformly non-operator, non-A movement. According to this hypothesis, scrambled phrases are in A' (non-A) position at S-structure. Hence this hypothesis makes it possible to account for the fact that scrambling in general exhibits reconstruction effects, as shown in (56) and (58), repeated below as (70) and (71).

(70) ?*[Masao$_i$-no hahaoya]-o$_j$ [kare$_i$-ga t$_j$ aisiteiru] (koto)
 -Gen mother -Acc he -Nom love fact
'[Masao's$_i$ mother]$_j$, he$_i$ loves t$_j$'

(71) Zibunzisin-o$_i$ [Hanako$_i$-ga t$_i$ hihansita] (koto)
self -Acc -Nom criticized fact
'Herself$_i$, Hanako$_i$ criticized t$_i$'

But at the same time, I was led to adopt Tada's (1990) hypothesis that a non-operator, non-A position is not licensed at LF. This hypothesis implies that unless scrambling is undone, the position of a scrambled phrase must be reanalyzed either as an operator position or as an A position at LF. At this point, I fully relied on Mahajan's insight on examples such as (65) and (69). According to his analysis, whether a scrambled phrase can be an antecedent of a lexical anaphor depends crucially on the relation between the scrambled phrase and its trace. In the case of clause-internal scrambling, the scrambled phrase can constitute an A chain with its trace and hence can serve as the antecedent of a lexical anaphor. On the other hand, a phrase preposed by "long distance" scrambling cannot form a well-formed A chain with its trace and hence does not qualify as an antecedent of a lexical anaphor. I directly adopted this analysis for the LF representations of examples in (65) and (69). The chain of the scrambled phrase and its trace can be reanalyzed as an A chain at LF in the case of (69) but not in the case of (65). Hence only in the latter example does the lexical anaphor *otagai* violate Condition (A) at LF. Thus the analysis presented here is in line with Webelhuth's (1989) hypothesis, but at the same time it relies crucially on Mahajan's (1989) analysis as well.

It should be noted here that if the analysis of scrambling presented above is correct, it has certain implications for the analysis of Condition (C) type reconstruction effects. Recall first that it was examples such as (70) that led us to the hypothesis that scrambling is uniformly A'

(non-A) movement. Those examples indicate that even clause-internal scrambling exhibits the Condition (C) type reconstruction effect, which is observed with A' chains but not with A chains. However, according to the analysis presented above, the position created by clause-internal scrambling can be reanalyzed as an A position at LF. This implies that the chain created by scrambling in (70) can be an A chain at this level. Hence the analysis of scrambling suggested above implies that Condition (C) type reconstruction effects must be accounted for not at LF, but at some level before the reanalysis of an A' chain to an A chain can apply. The analysis, then, is incompatible with the proposals to rule out the Condition (C) type reconstruction examples at the level of LF, e.g., the proposal in Guéron (1984). It is, however, consistent with the proposal in Lebeaux (1988) to rule them out at D-structure, the analysis in van Riemsdijk and Williams (1981), which relies on NP-structure, and the proposal of Barss (1986) to analyze the reconstruction phenomenon in general at S-structure.

4.3. The IP Adjoined Position in Japanese and the Mechanism of LF Reanalysis

The LF reanalysis of an A' chain to an A chain was crucial in the analysis of (69) suggested above. In this subsection, I will consider the mechanism of this reanalysis in more detail. First, the possibility of this reanalysis indicates that the landing site of scrambling, i.e., the IP adjoined position, can, in principle, be an A position or an A' (non-A) position in Japanese. If this position is necessarily an A' position, for example, then such reanalysis should be impossible. Hence a question naturally arises why the IP adjoined position in Japanese is ambiguous in this way. Secondly, according to the analysis suggested above, even clause-internal scrambling necessarily creates an A' chain at S-structure. Then there must be a condition that prevents such scrambling from creating an A chain at this level. Furthermore, the condition in question must allow the chain created by clause-internal scrambling to be reanalyzed as an A chain at LF. A question also arises what the condition is and why it allows the LF reanalysis. I will consider these two questions in turn.

The ambiguity of the IP adjoined position in Japanese between A and A' (non-A) positions seems to be in accord with Kuroda's (1988) analysis of Japanese phrase structure and scrambling. Kuroda proposes that one fundamental difference between English and Japanese is that agreement is obligatory and necessarily one to one in the former, while it

is optional in the latter. For example, in English the IP SPEC position of a tensed clause cannot be left vacant, and furthermore, only one constituent can occupy this position. This fact indicates that the SPEC/head agreement in a tensed IP is obligatory and one to one. On the other hand, according to Kuroda's analysis, the IP SPEC position in Japanese may be left vacant or may be occupied by two or more constituents. Let us first consider the following examples:

(72) a. [$_{IP}$ [$_{I'}$ [$_{VP}$ Taroo-ga [$_{V'}$ Hanako-ni sono hon -o
                   -Nom   -to that book-Acc
     watasita]] I]] (koto)
     handed   fact
     'Taro handed that book to Hanako'

    b. [$_{IP}$ Hanako-ni$_i$ [$_{I'}$ [$_{VP}$ Taroo-ga [$_{V'}$ t_i sono hon-o watasita]] I]]
     (koto)

Kuroda assumes that nominative Case can be assigned VP-internally in Japanese.[31] Given this assumption, the subject NP need not move to the IP SPEC position to receive Case. Now, since by hypothesis SPEC/head agreement is optional in Japanese, I(NFL) does not require that there be a phrase in the IP SPEC position, and, furthermore, if there is a phrase in this position, it need not agree in features with I. Consequently, the IP SPEC position can be left vacant as in (72a) or be filled by a non-nominative argument as in (72b). Given the availability of the latter option, Kuroda proposes that scrambling is in effect movement of a non-nominative phrase to the IP SPEC position.[32]

Let us next consider the example in (73).

(73) [$_{IP}$ Sono hon -o$_j$ [$_{IP}$ Hanako-ni$_i$ [$_{I'}$ [$_{VP}$ Taroo-ga [$_{V'}$ t_i t_j
     that book-Acc   -to   -Nom
     watasita]] I]]] (koto)
     handed   fact
     'That book$_j$ to Hanako$_i$ Taro handed t_i t_j'

(73) is derived from (72a) by scrambling both the indirect object and the direct object to sentence-initial position. Given Kuroda's hypothesis that scrambling is movement to an IP SPEC position, this example of multiple scrambling must contain two IP SPEC positions. But this, he points out, is not surprising, given the assumption that agreement is optional in Japanese. Suppose that a finite IP in English has a unique SPEC position because SPEC/head agreement is obligatory and is

necessarily one to one. Then nothing seems to prevent Japanese IPs from having more than one SPEC position. Thus, we predict that multiple scrambling, i.e., multiple movement to IP SPEC, is possible in Japanese. Kuroda, then, assigns the structure shown in (73) to this example, and suggests that the IP adjoined position can be considered an IP SPEC position in Japanese exactly because agreement is optional in this language.

I have been assuming, following Webelhuth (1989), that scrambling always involves adjunction and cannot involve simple substitution to the IP SPEC position. This assumption is clearly incompatible with Kuroda's (1988) analysis of (72b), for example. But what is of particular interest for our purpose here is his hypothesis that agreement in Japanese is optional and that consequently the IP adjoined position may be considered an IP SPEC position in this language. Regardless of what theory of A/A' positions we adopt, we must clearly allow an IP SPEC position to be an A position, e.g., in English sentences. Thus, Kuroda's hypothesis implies that the IP adjoined position is at least a potential A position in Japanese.[33]

Once we assume that the IP adjoined position is a potential A position in Japanese, a question immediately arises why the chain created by scrambling is necessarily an A' chain at S-structure. That is, if the IP adjoined position can be an A-position, it is not clear why scrambling, and in particular clause-internal scrambling, cannot create an A chain at this level. The answer to this problem, I believe, can be found in Chomsky's (1981, 1986b) Chain Condition, discussed above and repeated below in (74).

(74) If C = (a$_1$, . . . , a$_n$) is a maximal CHAIN, then a$_n$ occupies its
     unique θ-position and a$_1$ its unique Case-marked position.

This condition implies that an A chain must have its unique Case-marked position at its head. And as noted above, if objective Case is assigned to the position of the trace in examples such as (75), this condition guarantees that the chain created by scrambling is not an A chain.

(75) [Sono hon -o]$_i$ [Masao-ga t_i yonda] (koto)
     that book-Acc   -Nom   read   fact
     'That book]$_i$, Masao read t_i'

Thus even if the IP adjoined position is potentially an A position in Japanese, the Chain Condition forces scrambling to create an A' chain.[34]

The above account in terms of the Chain Condition leads us to the last question to be considered in this subsection. That is, why is it that the chain created by clause-internal scrambling can be reanalyzed as an A chain at LF, despite the fact that it must be an A' chain at S-structure? If it is indeed the case that the Chain Condition forces scrambling to create an A' chain at S-structure, there seem to be only two possible answers to this question. The first possibility is that the Chain Condition, or the relevant part of it, applies at S-structure but not at LF. If this is the case, then nothing would prevent the chain created by clause-internal scrambling from being an A chain at LF. The second possibility is that the Chain Condition applies at LF as well as at S-structure, but there is an LF operation that can apply to examples such as (75) and make the chain formed by clause-internal scrambling satisfy the Chain Condition at this level. I will tentatively adopt the latter approach here and briefly consider how it may be worked out.

A natural candidate for the relevant LF operation is V raising, as discussed in Chomsky (1988).[35] Suppose that V raises to I in LF in Japanese, exactly as Chomsky suggests for English. Suppose further that the IP adjoined position in Japanese can not only be an IP SPEC position, as Kuroda (1988) proposes, but can also participate in SPEC/head agreement with the position of I. The latter assumption basically means that SPEC/head agreement in Japanese differs from that in English in two respects: It is optional and furthermore can be many to one. Then, a scrambled object NP will be able to receive Case directly from the raised V through SPEC/head agreement, as illustrated in (76).[36]

(76) $[_{IP} \text{NP-o}_i \; [_{IP} \ldots \; [_{I'} \; [_{VP} \ldots \; t_i \; t_V] \; V+I]]]$

Consequently, the chain created by clause-internal scrambling can satisfy the Chain Condition and be an A chain at LF, as long as the trace of V need not assign Case to that of the scrambled phrase.

According to the analysis suggested above, the IP adjoined position in Japanese can always be an IP SPEC position, regardless of whether it agrees with the head position of the IP. I followed Kuroda (1988) and assumed that it can be an IP SPEC position even when SPEC/head agreement, which is optional in Japanese, does not take place in the IP. But I suggested that the position can head an A chain only when it participates in SPEC/head agreement with the head position of the IP and receives Case from the raised V. This analysis, if correct, supports the hypothesis entertained, for example, in Oka (1989) that Japanese is an I-to-V language like English and not a V-to-I language like French, in

the sense of Chomsky (1988). Only with the assumption that V raising takes place in LF are we able to account for the fact that the chain created by clause-internal scrambling must be an A' chain at S-structure but can be an A chain at LF.[37]

5. SUMMARY AND FURTHER SPECULATIONS

In this paper, I discussed Webelhuth's (1989) hypothesis that scrambling is non-operator, non-A movement in detail and presented further evidence for this hypothesis. In addition, I maintained his hypothesis that a phrase in non-operator position qualifies as an antecedent of a lexical anaphor. At the same time, however, I argued that Mahajan's (1989) hypothesis must also be incorporated into the analysis of Japanese scrambling. I pointed out in particular that we must appeal to his insights to account for the fact that a phrase moved by "long distance" scrambling cannot serve as an antecedent of a lexical anaphor.

Webelhuth assumes crucially that there are three types of NP positions; (i) operator position, (ii) A position, and (iii) non-operator, non-A position. On the other hand, Mahajan assumes only the first two. Thus obvious problems arise when we try to incorporate Mahajan's analysis into Webelhuth's hypothesis. At this point, I relied on Tada's (1990) hypothesis that the third type of position is licensed at S-structure but not at LF. According to this hypothesis, only the first two types of positions, i.e., (i) and (ii), exist at LF. Thus it becomes possible to maintain Mahajan's analysis at this level. I suggested, then, that Webelhuth's analysis, virtually as it is, applies at S-structure and that Mahajan's analysis applies at LF. More specifically, I suggested that scrambling is uniformly movement to a non-operator, non-A position, but the landing site of clause-internal scrambling can be reanalyzed as an A position at LF. For the specific mechanism of this LF reanalysis, I appealed to Kuroda's (1988) conception of Japanese phrase structure, as well as to the conditions and operations proposed in Chomsky (1986b, 1988).

Before I conclude this paper, I would like to briefly discuss one remaining problem and speculate on a possible solution. Recall from Section 2 that clause-internal scrambling "remedies" weak crossover violations. A relevant example, (10), is repeated below as (77).

(77)   a.   ?*[[Soitu$_i$ -no   hahaoya]-ga   [dare$_i$-o   aisiteru]] no
the guy-Gen mother -Nom   who -Acc love   Q
'His$_i$ mother loves who$_i$'

(77) b.?$Dare_i$-o   [[$soitu_i$ -no   hahaoya]-ga   [t_i aisiteru]] no
    who -Acc   the guy-Gen mother -Nom   love   Q
    'Who$_i$, his$_i$, mother loves t_i'

If weak crossover is an LF condition, as proposed in Chomsky (1976, 1981) and widely assumed, then the analysis of scrambling suggested in this paper straightforwardly accommodates (77b) in essentially the same way as Mahajan (1989). The position of the scrambled phrase in (77b) can be reanalyzed as an A position at LF, and hence *soitu* can be A-bound at this level. Or more precisely, after *dare-o* moves to the CP SPEC position, the position of its LF trace can be reanalyzed as an A position, and hence *soitu* can be A bound by the LF trace of the *wh*-phrase. Thus it is predicted correctly that (77b) is not a weak crossover violation. Note, however, that this analysis of (77b) faces a problem with (77a). If the *wh*-phrase in this example first adjoins to IP and then moves to the CP SPEC position in LF, the LF representation of (77a) can be exactly as that of (77b). In particular, the IP adjoined position can be reanalyzed as an A position, and the trace in this position can A-bind *soitu* at LF. Hence it is not clear how (77a) can be ruled out as a weak crossover violation.[38]

In addition, a further complication arises with respect to "long distance" scrambling. Mahajan (1989) observes that "long distance" scrambling, in distinction from clause-internal scrambling, does not "remedy" weak crossover violations in Hindi. He presents examples such as the following:

(78) a. kis-ko_i $uskii_i$ bahin   pyaar kartii hE
    who(DO) his   sister(SUB) loves
    'Who$_i$, his$_i$, sister loves t_i'

b.*kis-ko_i $uskii_i$ bahin-ne   socaa   [ki   raam-ne t_i
    who(DO) his   sister(SUB) thought   that   Ram(SUB)
    dekhaa thaa]
    seen   be-past
    'Who$_i$, his$_i$ sister thought that Ram had seen t_i'

This contrast between clause-internal scrambling and "long distance" scrambling is straightforwardly accounted for by Mahajan's (1989) hypothesis. Only the former can be A movement, and hence *kis-ko* can A-bind the pronoun in (78a) but not in (78b). (78) also represents the

state of affairs that is expected according to the analysis of scrambling suggested in this paper. The position of the scrambled *wh*-phrase in (78b) must either disappear or be reanalyzed as an operator position at LF. In the first case, the *wh*-phrase moves back to its D-structure position without producing a trace and then moves to the matrix CP SPEC position. The pronoun is directly operator-bound by the *wh*-phrase in the CP SPEC position in the resulting LF representation, and hence we expect a weak crossover violation. The second case is rather straightforward. Since the S-structure position of the proposed *wh*-phrase is reanalyzed as an operator position, the pronoun will be directly operator-bound at LF. Hence in this case also, we expect a weak crossover violation.

However, the predicted contrast in (78) does not seem to obtain in Japanese. Yoshimura (1989) examines the relevant Japanese examples in detail, and concludes that not only clause-internal scrambling but also "long distance" scrambling "remedies" weak crossover violations in Japanese. The following examples confirm her observation:[39]

(79) a.?$Dare_i$-o   [[$soitu_i$ -no   hahaoya]-ga   [$_{CP}$ [$_{IP}$ Hanako-ga
    who -Acc   the guy-Gen mother -Nom
    t_i aisiteru] to]   omotteiru] no
    love   COMP think   Q
    'Who$_i$, his$_i$, mother thinks that Hanako loves t_i'

b.?Dono $hito_i$ -mo   [[$soitu_i$ -no   hahaoya]-wa
    which person-also   the guy-Gen mother -Top
    [$_{CP}$ [$_{IP}$ Hanako-ga t_i aisiteru] to]   omotteinai]
    -Nom   love   COMP think-not
    'Anyone$_i$, his$_i$, mother does not think that Hanako loves t_i'

As noted above, if weak crossover is an LF condition, the analysis of scrambling suggested in this paper predicts that "long distance" scrambling should not "remedy" weak crossover violations. Thus a problem arises as to why (79a–b) are as good as (77b).[40]

The problems posed by (77a) and (79), I believe, indicate that weak crossover is not an LF condition but an S-structure condition, as proposed by Reinhart (1976) and Haïk (1983), among others. Let us adopt this "less standard" view and at the same time formulate the weak crossover condition as follows, along the lines of Webelhuth (1989) and the discussion in fn. 25:

(80) A pronoun can be interpreted as a bound pronoun only if it is non-operator bound.

Then the contrast in (77) straightforwardly follows. In (77a), *soitu* is not bound at all at S-structure. Hence, according to (80), it cannot be interpreted as a bound pronoun. On the other hand, in (77b), *soitu* is non-operator bound by the scrambled phrase at S-structure. Hence, regardless of what happens in LF, it is already licensed as a bound pronoun at this level. The examples in (79) can be accounted for in the same way. Since *soitu* is non-operator bound at S-structure, it does not violate the condition in (80).[41],[42]

If the analysis of (77) and (79) outlined above is on the right track, it provides strong support for the hypothesis that weak crossover is an S-structure condition. But whether this analysis can be maintained still remains to be seen. It seems to imply, for example, that "long distance" scrambling in Hindi, as exemplified in (78b), is radically different from scrambling in Japanese in that it is operator bound at S-structure, it does not that in Japanese in that it is operator movement. This kind of prediction must be examined before we arrive at a definite conclusion.

NOTES

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[1] See also Hoji (1985) for a detailed discussion of this hypothesis.

[2] *Koto* 'the fact that' is added to some of the Japanese examples only to avoid the unnaturalness resulting from the lack of topic in a matrix sentence. The purpose of the English "translations" in single quotes is to help the reader understand the 'rough structures' of the Japanese examples, and they are not intended to be the "correct translations."

[3] This assumption is implicit in some earlier works such as S.-I. Harada (1977), which shows that scrambling is subject to Ross's (1967) island constraints. See also Haig (1976) and Whitman (1982) for relevant discussion.

[4] See Deprez (1989) for a similar proposal. Note that if scrambling can be not only A movement but also A' movement, nothing seems to prevent the empty category in (4b) from being a parasitic gap. The structure of this particular example should then be ambiguous.

[5] This conclusion is incompatible with the weak crossover account of the following contrast suggested in Saito and Hoji (1983):

(i) [[Hanako-ga zibun₁-o kiratteiru koto]-ga [Ziroo₁-o yuuutu-ni siteiru]]
-Nom self -Acc dislike fact -Nom -Acc depressed make
'The fact that Hanako dislikes himself₁ has depressed Ziro₁'

(ii) ??Ziroo-o₁ [[Hanako-ga zibun₁-o kiratteiru koto]-ga
-Acc -Nom self -Acc dislike fact -Nom
[t₁ yuuutu-ni siteiru]]
depressed make
'Ziro₁ the fact that Hanako dislikes himself₁ has depressed t₁'

If scrambling can be A movement, the marginality of (ii) cannot be attributed directly to weak crossover, contrary to the proposal in Saito and Hoji (1983). (10b) seems to be a more solid piece of data than (ii), and hence if one of them must be left unexplained at this point, I think it should be the latter.

[6] It is pointed out in Yang (1984), Ueda (1984), and Kitagawa (1986) that *otagai* exhibits the SSC effect and has the binding properties of an anaphor.

[7] The examples in (14), especially (14b), are slightly marginal and are somewhat worse than the perfect example in (i), which involves VP-internal scrambling.

(i) Masao-ga karera-o₁ [[otagai₁ -no sensei]-ni t₁ syookaisita] (koto)
-Nom they -Acc each other-Gen teacher-to introduced fact
'Masao, them₁, introduced t₁ to each other's₁ teachers'

A similar contrast seems to obtain in Hindi, according to Mahajan (1989). Discussing these and other similar examples, Tada (1990) argues that VP-internal scrambling ("short scrambling" in his terms) should be distinguished from clause-internal scrambling across the subject ("medium scrambling" in his terms). I will return to the marginality of (14b) briefly in Section 4.3. But I refer the reader to Tada (1990) for discussion of VP-internal scrambling and the contrast between (14b) and (i).

[8] Mahajan (1989) points out that in Hindi, scrambling out of an embedded CP in a control structure patterns with clause-internal scrambling, and not with "long distance" scrambling out of a tensed CP as in (16a–b). Nemoto (1991) discusses similar facts in Japanese and explores their consequences for the locality requirements on A movement. I will not discuss the relevant facts in this paper, but as far as I can tell, there is no obvious conflict between Nemoto's account and the analysis of scrambling suggested in Section 4 below.

It was brought to my attention by Young-Suk Lee and Masaru Nakamura (p.c.) that some speakers accept examples with structures similar, in the relevant respects, to (16b) (see, for example, Ueyama (1990)). I do not have an explicit account to offer for this apparent dialectical variation at this point.

[9] Mahajan actually follows Chomsky (1988) and assumes a more complicated IP structure, where there is more than one SPEC position that a scrambled phrase can move into. See Mahajan (1989) for the details of his proposal.

[10] The hypothesis that scrambling in Japanese may be movement to an IP SPEC position is proposed in Kuroda (1988). Some of the later works that entertain the possibility that scrambling in Japanese may be A movement, e.g., Yoshimura (1989) and Saito and Fukui (1986), were in fact inspired by this proposal of Kuroda (1988). I will briefly discuss Kuroda's analysis in Section 4.3 below.

(i) Who$_i$ t$_i$ borrowed t$_j$ from the library [which book that David assigned in class]$_j$

Suppose we assume the formulation of the ECP in Lasnik and Saito (1984). Then if the LF wh-movement of the heavy NP in (i) leaves a trace behind, the example should be in violation of this principle at LF. Hence the grammaticality of (i) indicates that this LF wh-movement need not leave a trace and consequently that heavy NP shift, like scrambling, need not be represented at LF.

(i) contrasts with (ii), which shows that a wh-phrase cannot be topicalized, an observation due to Howard Lasnik (p.c.).

(ii) *Who$_i$ t$_i$ thinks that what$_j$ Mary bought t$_j$

This example is hopeless even for those who allow embedded topicalization quite freely. Andrew Barss (p.c.) suggests that this example can be ruled out by the ECP if what, being in an operator position, must leave a trace behind when it undergoes LF wh-movement.

11 It is noted in Kurata (1986) and Nakamura (1989) that *zibunzisin* 'self', as opposed to *zibun* 'self', has the binding properties of an anaphor. Huang (1982) discusses examples like those in (21) in Chinese and attributes the lack of NIC effects to the lack of Agr in this language. Yang (1984), discussing reciprocals, proposes to account for the lack of NIC effects in Korean and Japanese in the same way. See also Kitagawa (1986) for relevant discussion.

12 Chomsky (1986a) suggests that the generalization is to be explained by the Empty Category Principle (ECP). In this paper, I will not be concerned with the controversial issues regarding the explanation of this generalization. But I will discuss the generalization itself in a little more detail in Section 4.2 below.

13 For more detailed discussion of the material presented in this subsection, see Saito (1986,1989).

14 For more detailed discussion of the Proper Binding Condition, see, for example, Fiengo (1974,1977), May (1977), and Chomsky (1981,1986b).

15 In fact, any maximal projection seems to be subject to scrambling in Japanese, as indicated in the formulation in (1). See S-I. Harada (1977) and Saito (1985) for relevant discussion.

16 The marginality of (33b) may be attributed, at least in part, to the fact that the scrambling of the *wh*-phrase involves extraction out of a *wh*-island.

17 Webelhuth (1989) discusses heavy NP shift as an example of non-A, non-operator movement in English. Although the exact properties of heavy NP shift are still far from clear at this point, the following example suggests its similarity with scrambling:

18 When *someone* lowers, we can assume, as in the case of scrambled phrases, that it does not leave a trace. If every clause requires a subject not only at S-structure but also at LF, then an expletive may be inserted in the matrix subject position as suggested in May (1977), or, as Howard Lasnik (p.c.) suggests, the complement IP may move into this position. The latter will be consistent with Chomsky's (1986b) proposal that expletives are not allowed at LF, due to the Principle of Full Interpretation.

19 Based on these considerations, among others, Deprez (1989) in fact proposes to assimilate scrambling with A movement. However, at the same time, she develops her own theory of A/A' positions. See Deprez (1989) for the details of her proposal.

20 For more detailed discussion of the Condition (C) type reconstruction effect, see, for example, Wasow (1972), Reinhart (1976), van Riemsdijk and Williams (1981), Guéron (1984), Hornstein (1984), and Lebeaux (1988).

21 I tentatively assume, as in Chomsky (1986b), for example, that *him* c-commands *John* in the D-structure representation of (47a), despite the presence of the preposition *to*. If

(47b) indeed involves NP movement, as suggested by Howard Lasnik (p.c.), it is a more convincing example, since *him* clearly c-commands *John* in the D-structure representation of this example.

22 As is well known, the Condition (C) type reconstruction phenomenon in English is very complex and seems to resist a simple analysis. The phenomenon observed in (48)—(50) is equally complicated, if not worse. For example, the grammatical status of an example seems to depend even on the choice of the matrix verb, as the following examples indicate:

(i) a. ?*[Masao$_i$-no hahaoya-o]$_j$ [kare$_i$-ga t$_j$ aisiteiru] (koto)
　　 -Gen mother -Acc he -Nom love fact
　 'Masao's$_i$ mother]$_j$, he$_i$ loves t$_j$'

b. ?[Masao$_i$-no sensei-o]$_j$ [kare$_i$-ga t$_j$ syookaisita] (koto)
　 -Gen teacher-Acc he -Nom introduced fact
　 '[Masao's$_i$ teacher]$_j$, he$_i$ introduced t$_j$ (to the audience)'

See Saito (1985) for discussion concerning the complexity of the data, and Tada (1990) for important observations that may lead to certain clarifications of the phenomenon.

23 According to Mahajan (1990), clause-internal scrambling in Hindi does not exhibit the Condition (C) type reconstruction effect. It seems possible, then, that Hindi differs from German and Japanese in this respect and that (55), and in particular Mahajan's hypothesis, can be maintained for Hindi but not for German and Japanese.

24 Mahajan (1989) adopts Chomsky's (1988) suggestion that Case assignment (or checking) is in general a form of SPEC/head agreement, and argues that in Hindi, clause-internal scrambling of the object NP, for example, can be to a Case marked position, i.e., to the SPEC position of Agr-O(bject). Given this assumption, his hypothesis that such scrambling in Hindi can be A movement is consistent with the Chain Condition in (60). I will not consider the implications of Chomsky's (1988) suggestion for Japanese scrambling in this paper. But see Kuroda (1988), Yoshimura (1989), Ueyama (1990), and Miyagawa (1990) for relevant discussion.

25 If we reconsider the weak crossover facts discussed in Section 2 along this line, the relevant generalization can be stated as follows:

(i) Weak crossover effects are observed only with operator binding.

26 See Section 5 below for more detailed discussion of weak crossover.

27 Barss (1986) argues on the basis of contrasts such as the following that Condition (A) applies at S-structure:

(i) John$_i$ wonders [which picture of himself$_i$]$_j$ Mary likes t$_j$ best

(ii) *John$_i$ wonders who$_j$ t$_j$ likes which picture of himself$_i$

I follow Chomsky (1986b) and others, and assume that the condition applies at LF as well.

28 Although the analysis proposed in Tada (1990) and the one suggested below are different in the specifics, they are quite similar conceptually and also in the mechanisms employed. I will briefly discuss Tada's analysis in fn. 37 below. But I must refer the reader to Tada (1990) for the details of his analysis.

29 Tada (1990) proposes to derive this LF condition from a generalized version of Chomsky's (1988) "Last Resort" Principle.
The analysis of (65) suggested here is virtually identical to Mahajan's (1989). The two options, (66b—c), actually make it possible to apply his analysis to the LF representation of (65). I will come back to this point later in this section.

In the text, I appealed to (67), and not to Condition (A) as applied to the trace of the scrambled phrase, to rule out the LF of (65) under the option (66c). This is simply to avoid the complication, discussed in Section 2, that arises from the lack of NIC effects in Japanese.

30 Under the analysis suggested here, the slight marginality of (69) may be attributed to the marginality of the reanalysis of an A' chain to an A chain as an LF operation.

31 See Kuroda (1978) and Fukui (1986) for analyses of Japanese nominative Case that are consistent with this assumption.

32 Kuroda's analysis thus suggests that scrambling can be A movement, as was later proposed more explicitly by Mahajan (1989). See fn. 10 above.

33 Note that this hypothesis suggests a way to account for the differences between English topicalization and Japanese scrambling under the assumption that both involve IP adjunction (see Section 3.1. above). Suppose that the IP adjoined position is in principle ambiguous between an operator position and a non-operator position. And suppose further that it is a non-operator position only when it is a specifier position of IP. Then the position must be an operator position in English but can be a non-operator position in Japanese.

34 Ueyama (1990) also proposes to derive the A' properties of scrambling from the fact that the chain created by scrambling is assigned Case at its tail and not at its head. See also Tada (1990) for much relevant discussion.

35 Chomsky (1988) suggests that in languages such as French (V-to-I languages), V raises to I in the syntax and the V + I complex raises to I to cover up the trace of I in LF. See also Emonds (1978), Lasnik (1981), and Pollock (1989) for relevant discussion.

36 Or alternatively, if V raises to C through I in LF, then the raised V and the scrambled NP would be in the configuration of exceptional Case marking (ECM).

37 Tada (1990), on the contrary, hypothesizes that Japanese is a V-to-I language (see also Lasnik and Saito (1990) for relevant discussion). Despite this major difference, the analysis of scrambling suggested in the text is conceptually quite similar to Tada's (1990). He assumes that scrambling is non-operator, non-A movement. But at the same time, he argues that the A properties of clause-internal scrambling are to be accounted for at S-structure and proposes to attribute them to V raising at this level (see Ueyama (1990) and Miyagawa (1990) for similar proposals). He then utilizes the idea in (66a–b) to draw the conclusion that such scrambling cannot have any property of A movement at LF. Thus the analysis suggested in the text, which states that clause-internal scrambling can create an A chain at LF but not at S-structure, is basically the "reverse" of what he proposed.

The mechanism of the LF reanalysis of A' chains to A chains suggested in the text is not only compatible with Tada's (1990) analysis of VP internal scrambling but also has some similarities to it. Tada first shows that VP-internal scrambling, as opposed to other types of scrambling, has all the properties of A movement. He then concludes that the chain created by VP-internal scrambling can be an A chain at both S-structure and LF, and tries to explain this on the basis of the assumption that the landing site of this type of scrambling can be a Case-marked position. The proposal in the text basically states that because of V raising in LF, clause-internal scrambling across the subject can be exactly like VP-internal scrambling at this level.

38 This problem does not arise with Mahajan's (1989) analysis, where A scrambling is assumed to be an obligatory S-structure movement to the SPEC position of an Agr phrase. See Mahajan (1989) for details.

39 On the basis of this observation, Yoshimura (1989) concludes that scrambling, whether clause-internal or "long distance," can in general be A movement. However, given the facts discussed in Section 4.2, in particular (65) and (70), it seems difficult to maintain this conclusion.

40 The generalization that "long distance" scrambling in Japanese "remedies" weak crossover violations is controversial. Cho (1990) examines similar examples in Korean, and concludes that the generalization holds in this language. Tada (1990) and Nemoto (1991) report that examples such as (79a–b) are somewhat worse than those like (77b) and conclude that a contrast similar to that in (78) obtains in Japanese.

My judgment is basically in accord with that of Yoshimura (1989). Even if the examples in (79) are slightly worse than (77b), they are far better than (77a), for example, and they do not seem to have the status of weak crossover violations. It should be noted, however, that there are limited cases in which I detect a clear contrast between clause-internal scrambling and "long distance" scrambling. For example,

(i)   Dono hon -ni -mo, [[sono, tyosya]-ga t_i keti-o tuketa]
       which book-on-also   its   author -Nom   threw-cold-water
       'Every book, its, author threw cold water on t_i'

(ii)   ?*Dono hon -ni -mo, [[sono, tyosya]-ga [CP [IP Hanako-ga t_i
       which book-on-also   its   author -Nom   -Nom
       keti-o tuketa]   to]   iteiru]
       threw-cold-water COMP is-saying
       'Every book, its, author says that Hanako threw cold water on t_i'

41 See Cho (1990) for much relevant discussion. He proposes a similar account for Korean examples like (79) and examines its consequences in detail in relation to Lasnik and Stowell's (1987) account of weak crossover.

42 Note that (80) does not specify a sufficient condition for the bound variable interpretation of a pronoun. (i) and (ii) below both satisfy (80), but the latter is hopeless.

I do not have an account for the contrast between (i) and (ii). But since this kind of contrast is observed only in limited cases, I assume that the marginality of (ii), for example, is due to effects independent of weak crossover.

(i)   ?Dare-o, [[soitu, -no hahaoya]-ga [CP [IP Hanako-ga t_i aisiteiru]
       who -Acc   the guy-Gen mother -Nom   -Nom love
       kadooka] siritagatteiru] no
       whether   want-to-know   Q
       'Q [Who, his, mother wants to know [whether [Hanako loves t_i]]]'

(ii)   *Dare-o, [[soitu, -no hahaoya]-ga [CP [IP Hanako-ga t_i aisiteiru]
       who -Acc   the guy-Gen mother -Nom   -Nom love
       ka] siritagatteiru] koto
       Q   want-to-know   fact
       'the fact that who, his, mother wants to know [Q [Hanako loves t_i]]'

The wh-phrase in (i) moves to the matrix CP SPEC position in LF and hence binds soitu at this level. The wh-phrase in (ii), on the other hand, lowers to the embedded CP SPEC position in LF, as discussed in Section 3.1. Consequently, it does not bind soitu in the LF representation of this example. (ii) is then ruled out by an independent condition, which states that a bound pronoun must be within the scope of its quantifier at LF. See May (1977) for an extensive discussion of this condition.

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