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Improper Adjunction*

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1. Introduction

The nature of Japanese scrambling has been quite controversial. Some have argued that it is an adjunction operation. This view is represented by Saito (1985, 1989, 1992a), Fukui and Speas (1986), Tada (1990, 1993), Abe (1993), and Lee (forthcoming), among others. On the other hand, Nemoto (1993), adopting some ideas from Mahajan (1990), argues that it is movement to AGR_o SPEC when it shows all the properties of A-movement. A somewhat similar hypothesis is found in Miyagawa (1990, 1994); he proposes that A-scrambling takes place for the purpose of Case licensing. In this paper, I will maintain that it is not motivated by any sort of feature checking, as in the adjunction hypothesis. But developing the analyses in Fukui and Speas (1986), Tada and Saito (1991), and Murasugi and Saito (1994), I will suggest, at the same time, that it is a kind of a substitution operation.

In Section 2, I will review the analysis of the so called VP-adjunction scrambling proposed in Murasugi and Saito (1994). Then, in Section 3, I will argue that this analysis can be made more principled if we consider scrambling as

* This paper is an extension of Tada and Saito (1991), Murasugi and Saito (1994), and also my earlier work presented at the 64th General Meeting of the English Literary Society of Japan, the University of Connecticut, Hokkaido University, the University of Rochester, and Tohoku University. I would like to thank Željko Bošković, Naoki Fukui, Masatoshi Koizumi, Howard Lasnik, Hideki Maki, Roger Martin, Keiko Murasugi, Hiroaki Tada, and Daiko Takahashi for helpful discussion.

a substitution operation within Chomsky's (1994) Bare Phrase Structure framework. I will consider the implications of this hypothesis for the analysis of some of the controversial properties of scrambling, e.g., its optionality and "radical reconstruction" property. In Section 4, I will discuss some related issues; in particular, I will speculate on the account for improper movement of the type A-A'-A.

2. On the So Called VP-Adjunction Scrambling

In this section, I will briefly discuss the analysis of the so called VP-adjunction scrambling proposed in Tada and Saito (1991), and Murasugi and Saito (1994). Following these works, I will assume in the discussion here that scrambling involves adjunction. But as will be shown in Section 3, one of the main conclusions in this section leads to the hypothesis that scrambling is a substitution operation licensed by phrase structure extension in the sense of Chomsky (1992, 1994).

2.1. VP-Adjunction as A-movement

It has been noted that both IP and VP are possible adjunction sites for scrambling.¹ Thus, (1b) and (1c) are both perfectly grammatical.

- (1)a. [_{IP}John-ga [_{VP}Mary-ni sono hon -o watasita]] (koto)
 -nom -to that book-acc handed fact

'John handed that book to Mary'

- b. [_{IP}sono hon-o_i [_{IP}John-ga [_{VP}Mary-ni t_i watasita]]] (koto)
 c. [_{IP}John-ga [_{VP}sono hon-o_i [_{VP}Mary-ni t_i watasita]]] (koto)

However, when we consider long-distance scrambling, a difference between IP-adjunction and VP-adjunction emerges. For example, the former type of scrambling allows extraction out of a tensed clause, but not the latter, as shown in (2)-(3).

- (2)a. [_{IP}John-ga [_{VP}Bill-ni [_{CP}Mary-ga sono hon -o motteiru to] itta]] (koto)
 -nom -to -nom that book-acc have that said fact

'John said to Bill that Mary has that book'

¹ I argued in Saito (1985) for the following formulation of scrambling:

- (i) Adjoin α , where α is X^{\max} .

According to this formulation, any node is a possible adjunction site.

- b. [_{IP}sono hon-o_i [_{IP}John-ga [_{VP}Bill-ni [_{CP}Mary-ga t_i motteiru to] itta]]] (koto)
 c.??[_{IP}John-ga [_{VP}sono hon-o_i [_{VP}Bill-ni [_{CP}Mary-ga t_i motteiru to] itta]]] (koto)

- (3)a. [_{IP}John-ga [_{VP}Bill-ni [_{CP}Mary-ga sono mati-ni sundeiru to] itta]] (koto)
 -nom -to -nom that town-in reside that said fact

'John said to Bill that Mary lives in that town'

- b. [_{IP}sono mati-ni_i [_{IP}John-ga [_{VP}Bill-ni [_{CP}Mary-ga t_i sundeiru to] itta]]] (koto)
 c.??[_{IP}John-ga [_{VP}sono mati-ni_i [_{VP}Bill-ni [_{CP}Mary-ga t_i sundeiru to] itta]]] (koto)

Interestingly, long-distance VP-adjunction scrambling does not always result in marginality. It is perfectly fine in a control structure, as shown in (4).

- (4) [_{IP}John-ga [_{VP}sono hon -o_i [_{VP}Bill-ni [PRO t_i mottekuru yooni] itta]]] (koto)
 -nom that book-acc -to bring to said fact

'John told Bill to bring that book'

The locality of VP-adjunction scrambling illustrated above is noted as a problem in Saito (1985), where scrambling in general, including the VP-adjunction case, is assumed to be A'-movement. However, Mahajan (1990) shows that scrambling in Hindi can be A-movement, and further, that A-scrambling in this language exhibits the same kind of locality. Here, I will illustrate his findings using Japanese examples. Examples such as (5) indicate that Japanese scrambling, like that in Hindi, can be A-movement, as noted in Tada (1990) and Saito (1992a), among others.

- (5)a.??[[otagai_i -no sensei]-ga karera_i-o hihansita] (koto)
 each other-gen teacher-nom they -acc criticized fact

'?*Each other's teachers criticized them'

- b. ?[karera-o_i [[otagai_i -no sensei]-ga t_i hihansita]] (koto)
 they -acc each other-gen teacher-nom criticized fact

In (5b), the NP preposed by (clause-internal) scrambling serves as an A-binder for the lexical anaphor *otagai*. Further, Nemoto (1991) demonstrates that A-scrambling in Japanese shows the same locality as that in Hindi: long-distance A-scrambling is possible out of a non-finite clause, but not out of a finite clause. The examples in (6)-(7) illustrate this generalization.

- (6)a. *[[otagai_i -no sensei]-ga [Hanako-ga karera_i-o hihansita to] itta]
each other-gen teacher-nom -nom they -acc criticized that said

(koto)
fact

'*Each other's teachers said that Hanako criticized them'

- b. *[[karera-o_i [[otagai_i-no sensei]-ga [Hanako-ga t_i hihansita to] itta]] (koto)

- (7)a. *[[John-ga [[otagai_i -no sensei]-ni [PRO karera_i-o homeru yooni]
-nom each other-gen teacher-to they -acc praise to

tanonda]] (koto)
asked fact

'*John asked each other's teachers to praise them'

- b. ?[[John-ga [karera-o_i [[otagai_i-no sensei]-ni [PRO t_i homeru yooni] tanonda]]]

(koto)

- c. ?[[karera-o_i [John-ga [[otagai_i-no sensei]-ni [PRO t_i homeru yooni] tanonda]]]

(koto)

Since VP-adjunction scrambling is subject to the same locality as A-scrambling, it is only natural to suppose that VP-adjunction is necessarily A-movement. This is what was proposed in Tada and Saito (1991).² Note that the data of heavy NP shift seem to be perfectly consistent with this hypothesis. First, as noted in Postal (1974), long-distance heavy NP shift is possible out of a control complement, but not out of a finite clause. One of his pairs is given in (8).

² See also Tada (1993) and Fukui (1993a). The hypothesis itself was initially proposed by Tada (1990) on the basis of different considerations.

At this point, it is not clear to me why (2c) and (3c) are just marginal and not as bad as (6b). I assume here that (2c) and (3c) are in fact out as examples of VP-adjunction scrambling, but can marginally be construed as involving IP-adjunction as in (i).

- (i) [_{IP}NP_j-ga [_{IP}XP_i [_{IP}PRO_j [_{VP} ... t_i ...]]]]

The nominative NP in (i) is not in the regular subject position, but occupies the major subject position in the sense of Kuroda (1986).

- (8)a. *I have expected [that I would find t_i] since 1939 [_{NP}the treasure said to have been buried on that island]_i

- b. I have expected [PRO to find t_i] since 1939 [_{NP}the treasure said to have been buried on that island]_i

Thus, heavy NP shift exhibits the same locality as VP-adjunction scrambling. Secondly, it seems to behave as A-movement with respect to anaphor binding, as Daiko Takahashi (p.c.) points out. (9b) shows clear improvement over (9a).

- (9)a. *Mary wanted [PRO to meet [_{NP}the men who had been accused of the crime]] until each other's trials

- b. ?Mary wanted [PRO to meet t_i] until each other's trials [_{NP}the men who had been accused of the crime]_i

If heavy NP shift involves VP-adjunction, then this fact provides further support for the hypothesis that the VP-adjoined position is an A-position.³

The remaining problem then is to provide a precise account for the locality of VP-adjunction. This problem was one of the main concerns in Murasugi and Saito (1994). There, we extended the analysis of improper movement suggested in Takahashi (1992, 1993), and argued that examples like (2c) and (3c) necessarily involve movement of the type A-A'-A. Since scrambling is an adjunction operation, it is reasonable to suppose that the principle 'Minimize chain links' of Chomsky and Lasnik (1993) forces it to go through every possible adjunction site. Then, the derivation of these examples will be roughly as in (10).

- (10) ... [_{VP} XP_i [_{VP} ... [_{CP} t_i' [_{CP} ... t_i ...

If the CP-adjoined position (and any position in the C projection) is necessarily an A'-position, as seems reasonable, then the movement in (10) is clearly an instance of improper movement.

Then, why is it that long-distance VP-adjunction scrambling is possible out of control complements? The analysis of infinitival clauses proposed in Bošković

³ Nishikawa (1990), in fact, argues on the basis of locality that heavy NP shift is A-movement. He proposes that it is movement to AGR₀ SPEC, and suggests that (8b) should be analyzed in the same way as clitic climbing out of control complements. I will not pursue the AGR₀ hypothesis here for VP-adjunction scrambling or heavy NP shift, since PPs seem to show the same locality. But the analysis suggested in this paper shares some features with Nishikawa's AGR₀ analysis.

(1993a) suggests a rather straightforward answer to this question. Within the LGB model, control complements were assumed to be CPs for two reasons. First, the CP blocks the government of PRO by the higher predicate, as in (11a). And secondly, it blocks raising in examples like (11b).

(11)a. John_i decided [_{CP}[_{IP} PRO_i to leave]]

b. *John_i was decided [_{CP}[_{IP} t_i to leave]]

If PRO must not be governed (the PRO theorem) and traces must be properly governed (the ECP), then the CP node in (11) plays a fundamental role to distinguish control predicates from raising predicates, which take IP complements as illustrated in (12).

(12)a. *John_i believes [_{IP} PRO_i to be intelligent]

b. John_i is believed [_{IP} t_i to be intelligent]

Chomsky and Lasnik (1993), however, propose that PRO is assigned null Case by non-finite INFL, rejecting the PRO theorem. Martin (1992) further argues that PRO is allowed only in tensed infinitival clauses (in the sense of Stowell (1982)), and hence, that null Case is assigned by tense. Based on this, he concludes that the distribution of PRO can be explained completely by that of null Case, and consequently, that the PRO theorem is in fact eliminable. PRO is allowed in (11a) but not in (12a), because only in the former the embedded infinitive carries tense. This takes away the reason to assume a CP in control examples like (11a).

Bošković (1993a) carries this line of investigation further. He first points out that the ungrammaticality of examples such as (11b) can also be explained without appealing to a CP. Chomsky's (1986a) Last Resort Principle has the effect of prohibiting A-movement from a Case position, and hence accounts for examples like (13).

(13) *John_i seems to t_i [that Mary is a genius]

But if null Case is assigned to the position of PRO in (11a), the movement in (11b) obviously originates in a Case position. Then, the latter example is ruled out by the Last Resort Principle, regardless of whether a CP intervenes between the matrix verb and the trace. The movement in (12b) is correctly allowed since null Case is not assigned to the embedded subject position, as can be seen in (12a). Having established that there is no need to assume a CP node in control complements, Bošković goes on to argue that they are in fact IPs. One piece of evidence comes

from the distribution of empty complementizers.⁴ Kayne (1981) and Stowell (1981) note that an empty C is allowed only when the CP is in a complement position, and propose an account in terms of the ECP. Relevant examples are given in (14).

(14)a. John believes [_{CP} e [_{IP} Mary is a genius]]

b. * [_{CP} e [_{IP} Mary is a genius]] is obvious

Here, infinitival clauses pose a potential problem for this generalization: they appear freely in the subject position as shown in (15).

(15) [PRO to solve this problem] would be very difficult

If the subject in (15) is a CP, then there should be an empty C in its head position, and the example should be ruled out exactly like (14b). However, as Bošković points out, (15) is quite consistent with the Kayne-Stowell account for (14) if the subject is an IP. Then, there is no empty C, and hence, the ECP is irrelevant. He thus takes (15) as evidence that infinitival clauses with PRO subjects are (or at least can be) IPs.⁵

Bošković's proposal enables us to structurally distinguish scrambling out of tensed complements and that out of control complements. If control complements are IPs, then long-distance scrambling can take place without going through a C projection, as in (16).

(16) ... [_{VP} XP_i [_{VP} ... [_{IP} t_i' [_{IP} ... t_i ...

Thus, the following classification of adjoined positions makes only long scrambling out of a tensed complement an improper movement.

(17)a. VP-adjoined position ... A

b. IP-adjoined position ... A or A'

c. CP-adjoined position ... A' (Cf. Webelhuth (1989).)

I will return to the nature of the adjoined positions later in this section, and also in Section 3.

⁴ Murasugi (1991) presents an argument of exactly the same form to show that pronominal sentential modifiers in Japanese are not CPs but IPs.

⁵ See also Ormazabal (forthcoming) for extensive discussion on this issue. He argues that contrary to the widely assumed view, control complements are IPs and ECM complements are CPs.

2.2. The VP-adjunction Paradox and the Minimalist Program

The account for the locality of VP-adjunction scrambling suggested above crucially relies on the hypothesis that the VP-adjoined position is an A-position. This hypothesis, however, gives rise to an interesting paradox, as noted in Murasugi and Saito (1994). It is argued in Chomsky (1986b, 1992) that Wh-movement, and A'-movement in general, can take place through adjunction, in particular VP-adjunction. More evidence for this hypothesis is presented in Takahashi (1994).⁶ Given Chomsky and Lasnik's (1993) "Minimize chain links," this implies that A'-movement in fact must go through all possible adjunction sites, including the VP-adjoined positions. Long-distance Wh-movement and long-distance A'-scrambling, then, take place as in (18)-(19).⁷

(18) [_{CP}what_i do [_{IP}you [_{VP}think [_{CP}that [_{IP}John [_{VP}bought t_i]]]]]]
 |_____| |_____| |_____| |_____| |_____| |_____|

(19) [_{IP}sono hon -o_j [_{IP}Bill-ga [_{VP} [_{CP} [_{IP}John-ga [_{VP} t_j nusunda]] to] omotteiru]]]
 that book-acc -nom -nom stole that think
 |_____| |_____| |_____| |_____|

'Bill thinks that John stole that book'

But note here that the movement in (19) is identical to the illicit case of long-distance VP-adjunction scrambling, except for the last step, as illustrated in (20).

(20)a. [_{IP} [_{VP} NP_i [_{VP} ... [_{CP} ... t_i -----] (2c)
 |_____| |_____|
 |_____| |_____|

b. [_{IP} NP_i [_{IP} ... [_{VP} t_i' [_{VP} ... [_{CP} ... t_i -----] (19)
 |_____| |_____|

⁶ In addition, the facts concerning extraction out of an NP seem to provide indirect, but substantial support for this hypothesis. Pairs such as the following from Stowell (1989) indicate that NP (within the DP analysis) and/or PP are possible adjunction sites:

(i)a.??who_i does Jane regret [_{DP}Bob's [_{NP}dismissal [_{PP}of t_i]]]

b. *why_i does Jane regret [_{DP}Bob's [_{NP}dismissal [_{PP}of her] t_i]]

See, for example, Torrego (1986), Stowell (1989), Ormazabal (1991), and Saito and Murasugi (1992) for relevant discussion.

⁷ I tentatively assume here that the third step of the movement in (18)-(19) is adjunction to CP, but it does not affect the discussion even if it is substitution into CP SPEC.

Then, it seems that long-distance VP-adjunction out of a finite clause is allowed when the VP-adjoined position is an intermediate landing site, but not when it is the final landing site. Given the account for (20a) suggested above, this means that the VP-adjoined position is an A-position as a final landing site, but can be an A'-position as an intermediate landing site.⁸

In Murasugi and Saito (1994), we argued that this difference in fact provides support for the Minimalist model proposed in Chomsky (1992). In this model, a phrase structure is built up in a bottom-up fashion, and movement can apply as the structure is constructed. Then, the VP-adjunction in (20a) can apply at the time the matrix VP is created, but that in (20b) takes place only after the matrix IP is built up. This enables us to distinguish the two VP-adjunctions rather straightforwardly.

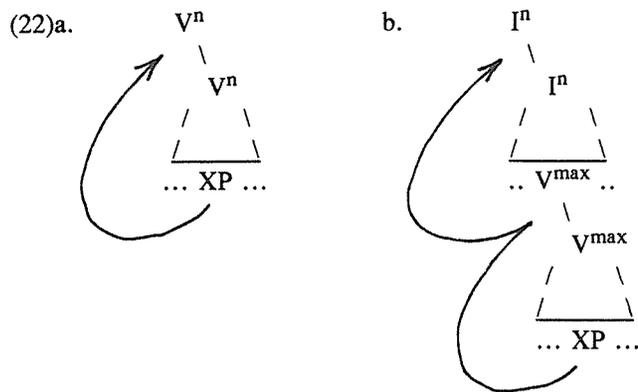
Suppose that 'maximal projection' is defined contextually as proposed in Muysken (1982) and Fukui and Speas (1986). More specifically, let us assume that a phrase attains a maximal projection status in the following two contexts: (i) when SPEC-head agreement takes place in the phrase, and (ii) when the phrase is embedded under another projection. The two contexts are illustrated in (21).

(21) X^{max} ... 1) Spec/head agreement 2) embedding



Then, the VP-adjunction in (20a) can be an adjunction to a non-maximal projection of V, since the VP need not be embedded when the scrambling takes place. On the other hand, that in (20b) is necessarily an adjunction to V^{max}. The target VP is already embedded under the matrix I projection when the adjunction happens. (22a-b) illustrate the two cases.

⁸ Fukui (1993a), based on a similar consideration, argues that A'-movement does not proceed via VP-adjunction, and that we should return to the COMP-to-COMP derivation assumed before Chomsky (1986b). I will not adopt this hypothesis here because it seems incompatible with the Chomsky-Takahashi analysis of island effects, and also with the account of (20a) suggested above. If "Minimize chain links" forces VP-adjunction scrambling to proceed via CP-adjunction in (20a), then it seems reasonable to suppose that it also makes the IP-adjunction scrambling in (20b) go through the VP-adjoined position.

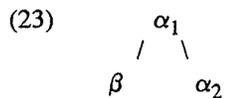


Thus, if we hypothesize that adjunction to a non-maximal projection of V is necessarily A-movement while that to a V^{max} can be A'-movement, the difference between (20a) and (20b) is accounted for. (20b), in particular, is allowed since the VP-adjunction in this case can be A'-movement.

There is one final point that we must be concerned with. As noted above, the Minimalist way of phrase structure building allows the VP-adjunction in (20a) to apply right after the target VP is constructed. In this case, the adjunction, we argued, is A-movement. But if the adjunction can take place after the VP is embedded under the I projection, then it can also be A'-movement. We then lose the account for the locality of VP-adjunction scrambling. Here, in Murasugi and Saito (1994), we appealed to Chomsky's (1992) extension requirement. He proposes that a substitution operation must apply in a way to extend the phrase structure. This prohibits substitution from applying within a proper subtree of the given structure. We proposed that all syntactic operations, including adjunction, are subject to this requirement. Then, the VP-adjunction in (20a) must apply before the target VP is embedded, and hence, it can only be A-movement.

3. Scrambling as Substitution

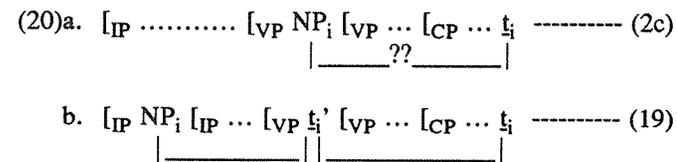
The account for (20a-b) outlined above receives a rather natural interpretation within Chomsky's (1994) Bare Phrase Structure theory. The conception of phrase structure building suggested there is roughly as follows.⁹ Two objects α and β are combined by the operation 'Merge', which takes one of them to be the head and projects it. When α is the head, the resulting configuration is as follows:



⁹ See Chomsky (1994) for more detailed, more precise discussion.

The "simple case" of phrase structure construction is when α and β are independent from each other. When β is from within α , we have the substitution case of movement. Adjunction differs from substitution in that the target α does not project a new category, but it forms a new two-segment category in the sense of Chomsky (1986b).

What was proposed in Murasugi and Saito (1994) for VP-adjunction scrambling is basically that it does not involve adjunction to V^{max} but applies before the V^{max} is formed, and hence, that the landing site is contained within the V projection. We obtain this result more straightforwardly if scrambling (and heavy NP shift) is substitution in the sense that it necessarily involves projection of the target phrase structure. Let us consider the configurations in (20) again.



If the scrambling in (20a) accompanies the projection of the "target VP," then the landing site is within V^{max} and hence an A-position. On the other hand, the scrambling in (20b) projects the "target IP," but not the VP since the latter is an intermediate adjunction site. The VP-adjunction in (20b), then, is a true adjunction and therefore can be A'-movement. In the remainder of this section, I will discuss some consequences of this analysis of scrambling.¹⁰

3.1. The Directionality of "Adjunction"

As noted in Saito (1985), scrambling and heavy NP shift seem structure preserving in some sense. (See also Fukui and Speas (1986), and Fukui and Saito (1992) for much relevant discussion.) Let us consider the following configurations:

¹⁰ I will continue to use the expressions 'VP-adjunction scrambling' and 'IP-adjunction scrambling' below to refer to the two types of scrambling.

But before I discuss this problem, I will briefly consider some cases of true adjunction operations.

If the speculation presented above on scrambling and heavy NP shift is on the right track, then most of the major cases of XP movement in syntax are substitution. The only difference between scrambling/heavy NP shift and the traditional type of substitution is that the latter involves SPEC-head agreement. Then, it seems even possible that true adjunction occurs only at the intermediate steps of movement. This raises the question whether there are true adjunction operations at all. At this point, there seem to be some plausible cases. For example, expletive replacement, proposed by Chomsky (1986a, 1992), is one such case. According to his analysis, the associate NP *a man* in (27) adjoins to *there* in LF to have its features checked.

(27) there is a man in the corner

Also, it is proposed in Saito (1992b) that the Japanese adjunct Wh-phrase *naze* can adjoin to a higher Wh-phrase in LF and be licensed. Let us consider the following examples:¹³

(28)a. *John-wa [[sono hon -o_i naze t_i katta] hito] -o sagasiteru no
-top that book-acc why bought person-acc looking-for Q

'Q John is looking for [the person [that bought that book why]]'

b.??John-wa [[nani -o_i naze t_i katta] hito] -o sagasiteru no
-top what-acc why bought person-acc looking-for Q

'Q John is looking for [the person [that bought what why]]'

c. *John-wa [[naze nani-o katta] hito] -o sagasiteru no
-top why what-acc bought person-acc looking-for Q

(28a) is straightforwardly ruled out by the ECP, since *naze* in LF must move out of the complex NP to the matrix CP SPEC to be properly licensed. (See Huang (1982).) (28b), however, shows that *naze* is marginally allowed within a complex NP when there is another Wh-phrase in a higher position. If *naze* in this example can only be licensed at the matrix CP SPEC, this example too should have the status of an ECP violation. I hence proposed that there is an alternative way for *naze* to be licensed: it can adjoin to a higher Wh-phrase instead of moving to a CP SPEC.

¹³ In these examples and some others to follow, I will give the rough structure of the Japanese sentence in place of its translation.

If this analysis is correct, then we have another case of true adjunction in LF.¹⁴

Thus, it seems impossible to maintain that all cases of XP movement are substitution operations.¹⁵ But interestingly, the two adjunction operations illustrated above are motivated by "feature-checking" in a broad sense. The associate NP adjoins to the expletive to have its features checked, and *naze* adjoins to a higher Wh for the licensing of its [+wh] feature. It seems then that true adjunction, unlike scrambling, is consistent with the Last Resort Principle.

Then, why is scrambling optional? In Fukui and Saito (1992), we suggested that this is precisely because scrambling involves adjunction. Roughly put, we proposed that only those operations that create a new category (substitution) is subject to the Last Resort; since adjunction only adds a segment to an existing category, it is not subject to this principle. Given the substitution analysis of scrambling, this proposal cannot be maintained as it is. Further, it faces a serious problem if true adjunction is indeed subject to Last Resort, as seems plausible. But the substitution analysis opens up a new way to approach the problem of optionality. As scrambling necessarily involves projection of the target phrase structure, it seems possible that it is licensed by virtue of this projection itself. According to the substitution analysis, scrambling is quite similar to the "simple case" of phrase structure construction. Both combine α and β projecting one of them, say β , as the head, and neither seems to be motivated by any sort of "feature checking." The only difference is that α originates within β in the case of scrambling. Thus, it seems quite possible that scrambling, like the "simple case" of Merge, is licensed by virtue of its contribution to phrase structure construction.

This approach to optionality has one desirable consequence. Since the "simple case" of Merge can apply only before SPELL-OUT, it seems reasonable to suppose

¹⁴ But see S. Watanabe (1994) for an alternative analysis of the paradigm in (28).

¹⁵ Given the discussion so far, one might hypothesize that all operations before SPELL-OUT are substitution, and those after are adjunction. But if movement to AGR_O (and AGR_S in some languages) can be covert, then we must admit substitution in LF. Also, if *naze* 'why' is licensed at CP SPEC in LF in examples like (i), then we have another case of LF substitution.

(i) boku-wa [_{CP} [_{IP} John-ga naze kaetta] ka] siritai
I -top -nom why went-home Q know-want

'I want to know why John went home'

Further, once we assume adjunction in LF, there does not seem to be any strong reason to preclude it in overt syntax. See, for example, Rudin (1988) and Sohn (1994) for arguments that there are overt true adjunction operations.

that an operation can be licensed in this way only in overt syntax and not in LF. It is then predicted that scrambling cannot apply in LF. And there are some facts indicating that this is a correct prediction. First, as discussed in Kuroda (1971) and Hoji (1985), scrambling affects the possible scope relation of quantifiers. When two quantified NPs appear in situ, the asymmetrically c-commanding one necessarily takes wide scope. Thus, *dareka* 'someone' takes scope over *daremo* 'everyone' in (29).

(29) *dareka -ga daremo -o aisiteiru*
 someone-nom everyone-acc love

'Someone loves everyone'

But when the object is scrambled over the subject, a scope ambiguity emerges. (30a-b) are both completely ambiguous with respect to the scope relation of the two quantified NPs.

(30)a. *daremo -o_i dareka -ga t_i aisiteiru*
 everyone-acc someone-nom love

'Someone loves everyone'

b. *dareka -o_i daremo -ga t_i aisiteiru*
 someone-acc everyone-nom love

'Everyone loves someone'

Suppose, as seems reasonable, that the scope relation of quantifiers is determined based on the LF configuration. Then, the absence of ambiguity in (29) indicates that there is no LF scrambling. If the object in (29) could be scrambled over the subject in LF, then there would be no way to distinguish this example from (30a).

The second piece of evidence is found in the paradigm in (28). Suppose that *naze* in (28b) avoids an ECP violation by adjoining to *nani* 'what', as proposed above. This option is not available in (28c): since *nani* is in a lower position than *naze*, the adjunction involves lowering. But if scrambling can apply in LF, *nani* in this example can move to a position higher than *naze*, e.g., to the position of *nani* in (28b). Then, *naze* should be able to raise and adjoin to *nani* in LF. The contrast between (28b) and (28c) thus indicates that scrambling does not apply in LF.¹⁶

¹⁶ If syntactic operations can be licensed by their contribution to phrase structure construction, as proposed here, then some of the facts explained in terms of Last Resort and Procrastinate must be reconsidered. For example, the movement

3.3. "Radical Reconstruction" of A'-Scrambling

As discussed in Section 2 above, clause-internal IP-adjunction scrambling can be A- or A'-movement, while long-distance scrambling out of a finite clause is necessarily A'-movement. Japanese scrambling has another notable property with respect to "reconstruction." Let us consider the following examples:

(31)a. [John-ga [Mary-ga nani-o katta ka] siritagatteiru] (koto)
 -nom -nom what-acc bought Q know-want fact

'John wants to know [Q [Mary bought what]]'

b. *[dare-ga [Mary-ga sore-o katta ka] siritagatteiru] (koto)
 who-nom -nom it -acc bought Q know-want fact

'Who wants to know [Q [Mary bought it]]'

(32) ?*nani-o_i [John-ga [Mary-ga t_i katta ka] siritagatteiru] (koto)*
 what-acc -nom -nom bought Q know-want fact

'What, John wants to know [Q [Mary bought t]]'

The examples in (31) show that a Wh-phrase must be within the c-command domain of the Q-morpheme *ka* that it is associated with. This c-command relation is necessary for the licensing of the Wh at LF. (In the case of argument Wh, 'unselective binding' in the sense of Pesetsky (1987) or 'absorption' in the sense of Chomsky (1992).) (32), on the other hand, shows that a Wh-phrase can be scrambled out of the c-command domain of the relevant Q-morpheme. Given this last fact, it is proposed in Saito (1989) that scrambling, being a non-operator movement, can be undone in LF. *Nani* in (32) then can move back to the embedded object position in LF, and satisfy the c-command requirement. Given the 'copy + deletion' theory of movement, adopted in Chomsky (1992), this "undoing" can be construed as the deletion of all the positions created by scrambling, as in (33).¹⁷

in (13), repeated in (i), should be licensed.

(i) **John_i seems to t_i [that Mary is a genius]*

I tentatively assume here that Last Resort applies not to movement, but to feature checking in this case. Or in more traditional terms, double feature checking is prohibited. See Lasnik (1993) for much relevant discussion.

¹⁷ See also Lee (forthcoming) for much relevant discussion on the mechanism of the "undoing" of scrambling.

- (33) $NP_i \dots NP_i \dots NP_i$
 $\quad \quad \quad | \quad \quad \quad | \quad \quad \quad |$
 $\quad \quad \quad \emptyset \quad \quad \quad \emptyset \quad \quad \quad NP_i$

Based on the facts noted above and some others, Tada (1990) proposes that A'-scrambling is necessarily undone in LF. (See also Abe (1993) for relevant discussion.) Note first that the examples that indicate the possibility of "undoing", e.g., (32), involve long-distance scrambling out of a finite clause, hence A'-scrambling. Further, if this type of scrambling is necessarily undone, then it straightforwardly follows that a phrase preposed out of a finite clause cannot be the antecedent of a lexical anaphor. It simply does not c-command the anaphor at LF.

In Saito (1992a), I proposed a slightly different account of the facts noted above. Let us consider the IP-adjunction structure shown in (34).

- (34) IP
 $\quad / \quad \backslash$
 $XP \quad IP$
 $\quad \quad / \quad \backslash$
 $\quad \quad \quad I'$
 $\quad \quad \quad / \quad \backslash$
 $\quad \quad \quad VP \quad I$

I maintained that IP-adjunction scrambling, being an adjunction operation, is uniformly A'-movement at S-structure. But at the same time, I suggested that the scrambled XP can be interpreted in three different ways at LF. This suggestion was based on the following two assumptions: (i) V raises to I in LF in Japanese, and (ii) since Japanese lacks SPEC-head agreement, the IP projection is not closed off (in the sense of Fukui and Speas (1986)), and hence the IP-adjoined position can be construed as being completely within the projection of I.¹⁸ Then, after V raises to I in LF, the scrambled phrase can be within the projection of V. This accounts for the A-properties of scrambling. This, I proposed, is impossible in the case of long scrambling out of a finite clause because of the locality requirement on A-chains. In the present terms, the "reanalysis" of the adjoined position as an A-position results in formation of an improper chain, A-A'-A. Secondly, since scrambling, unlike QR and English topicalization, can be non-operator movement,

¹⁸ See Oka (1989) and M.-K. Park (1991) for evidence for the former assumption, and Kuroda (1988) and Fukui and Speas (1986) for arguments for the latter. Arguments against the first assumption are found in Miyagawa (1994) and Hoshi (forthcoming), for example. The second assumption was stated somewhat differently in Saito (1992a), in accordance with Kuroda's (1988) optional multiple-SPEC hypothesis, to present the analysis in more precise terms under the assumptions made there.

it can be undone in LF. And finally, since the position of the scrambled phrase in (34) can be an operator position in the case of QR, I assumed that scrambling can be interpreted as operator movement. In this case, the position of XP is interpreted as an A'-position also at LF.

The analysis sketched above is based on the hypothesis that scrambling is an adjunction operation. A different picture of course emerges if scrambling is substitution as proposed above. If the scrambling in (34) necessarily accompanies the projection of the "target IP," the position of XP not only can be but also must be construed as being completely within the I projection. I tentatively assume here that any position in the I projection is "undefined" with respect to A/A'.¹⁹ Or more generally, positions contained within a lexical projection (e.g., a V projection) are A-positions, positions contained in or adjoined to a C projection are A'-positions, and all other positions are "undefined." Then, when V raises to I, the XP position falls within the V projection, and is necessarily construed as an A-position. The "undoing" option remains as before. The third possibility, the interpretation of scrambling as A'-, operator movement, however, is eliminated. This is consistent with the postulation of QR as an A'-, operator movement: since scrambling is not adjunction, there is no reason to suppose that it can be like QR.²⁰ The substitution analysis of scrambling, thus, implies that all instances of A'-scrambling are undone, as proposed by Tada (1990).

There is one piece of direct evidence for this conclusion. As noted above, a higher Wh-phrase saves the adjunct Wh *naze* contained within an island. According to the analysis sketched above, *naze* in (35a) can adjoin to *dare* in LF, and be licensed together with the latter Wh. In this example, the saving Wh *dare* is preposed to a position c-commanding 'naze' by clause-internal scrambling.

- (35)a. ??kimi-wa [[dare-ni_i naze t_i [John-ga sono hon -o katta tte] itta]
 you -top who -to why -nom that book-acc bought that said
 hito] -o sagasiteru no
 person-acc looking-for Q
 'Q you are looking for [the person that said to whom [that John bought that book] why])

¹⁹ The subject position then becomes an A-position at LF after V raises to I. Or alternatively, "undefined" can be understood as either A or A'. Cf. Webelhuth (1989).

²⁰ Kitahara (1993) proposes to do away with QR. If he is correct, then the issue concerning the analogy of QR and IP-adjunction scrambling does not arise in the first place.

- b. *kimi-wa [[nani-o_i naze Mary-ni [John-ga t_i katta tte] itta] hito] -o
 you -top what-acc why -to -nom bought that said person-acc

sagasiteru no.
 looking-for Q

'Q you are looking for [the person that said to Mary [that John bought what] why]'

But as shown in (35b), this saving effect does not obtain when the higher Wh is moved across *naze* by long-distance scrambling out of a finite clause. In Saito (1992b), I stipulated that *naze* can license its trace with respect to the ECP only when it adjoins to an A-position, and not when it adjoins to an A'-position. But given that A'-scrambling is necessarily undone, this stipulation becomes superfluous. Since the scrambling of *nani* in (35b) must be undone in LF, the adjunction of *naze* to this Wh-phrase must involve lowering.²¹ The contrast in (35), thus, can be taken as evidence for the substitution analysis of scrambling.

4. Reconstruction Effects and Improper Movement

As noted in Section 2, in Murasugi and Saito (1994), we proposed to exclude long-distance VP-adjunction scrambling out of a finite clause as an instance of improper movement. Two relevant examples (2c) and (5) are repeated in (36)-(37).

- (36)??[_{IP}John-ga [_{VP}sono hon -o_i [Bill-ni [_{CP}Mary-ga t_i motteiru to] itta]]] (koto)
 -nom that book-acc -to -nom have that said fact

'John said to Bill that Mary has that book'

- (37) [_{IP}John-ga [_{VP}sono hon -o_i [Bill-ni [PRO t_i mottekuru yooni] itta]]] (koto)
 -nom that book-acc -to bring to said fact

'John told Bill to bring that book'

The scrambling in (36), as opposed to that in (37), goes through a C projection, and hence, creates an improper chain of the form A-A'-A.²² A problem of course

remains here as to how improper movement itself should be explained. I do not have a proposal to offer at this point, but in this section I will briefly discuss this problem in relation to the "reconstruction effects" observed with VP-adjunction scrambling.

4.1. The Initial Hypothesis

The account for improper movement has been a controversial topic, and even more so after Chomsky's (1989) proposal on chain uniformity. He proposes that only uniform chains (A', A, and head) and operator-variable chains are allowed at LF, and that deletion applies as a Last Resort to create a legitimate chain. Given this, deletion should be able to apply to an improper chain of the form A-A'-A, and create a legitimate uniform A-chain. Thus, it is not clear that anything is wrong with the resulting LF representation. Recent discussion on this issue is found, for example, in Takahashi (1992), Fukui (1993a), and Sakai (1994).

One possible way to exclude improper A-A'-A chains is to rely on Chomsky's (1992) 'copy + deletion' analysis of A'-movement.²³ He proposes that A'-movement leaves full copies behind, and deletion creates an operator variable relation, as in (38).

- (38) [_{CP}what_i did [_{IP}what_i [_{IP}John [_{VP}what_i [_{VP}buy what_i]]]]]
 | | | |
 which x Ø Ø x

This enables us to account for "reconstruction" examples like (39) as instances of strong crossover.

- (39) *[whose_i brother]_j did he_i see t_j

This example is derived roughly as follows:

- (40) [_{CP}whose brother_j did [_{IP}w.b._j [_{IP}he [_{VP}w.b._j [_{VP}see whose brother_j]]]]]
 | | | |
 which x Ø Ø x's brother

As the subject 'he' c-commands the variable 'x', the bound variable interpretation of the pronoun is excluded exactly as in the case of (41).

relevant discussion.

²³ As will become clear directly, the account of improper movement suggested below is a variant of May's (1981) classical analysis in terms of Condition (C) of the Binding theory.

²¹ This analysis of (35b) is proposed also in Sohn (1994). See also Nemoto (1993) for discussion on the locality of the "saving effect" by a higher Wh-phrase.

²² Given the substitution analysis, this implies that scrambling proceeds via adjunction even when it is a substitution operation to an A-position. This, then, raises the possibility that all types of movement, including the standard cases of A-movement, involve successive-cyclic adjunction. See Fukui and Saito (1992) for

(41) *who_i did he_j see t_i

It is known that A-movement, as opposed to A'-movement, does not show the reconstruction property observed in (39). Thus, (42) is grammatical.

(42) [whose_i brother]_j seems to him_i [t_j to be a genius]

Given this, Chomsky (1992) suggests, as one possibility, that 'copy + deletion' is limited to A'-movement.²⁴ Then, we may assume that only movement to an A'-position leaves a copy, and deletion applies only to chains or chain links headed by an A'-position. Let us suppose that this is the case. An improper movement of the form A-A'-A, then, produces the chain in (43) prior to deletion.

(43) XP_i ... t_i ... XP_i
 |_____| |_____|
 A A' A

The intermediate position cannot be deleted since the chain is headed by an A-position. Further, even if it is deleted, the resulting chain will be a uniform A-chain with two full XPs. Since the lower XP cannot be deleted, the chain should be uninterpretable. The account sketched above works for (36) and also for examples of "super raising" like (44).

(44) *John_i seems that it is likely [t_i to win the race]

Even if 'John' is moved to the matrix subject position through the embedded C projection, the resulting chain will face the problem illustrated in (43).

4.2. Improper "VP-Adjunction" Scrambling

VP-adjunction scrambling, however, poses an interesting problem to the rather simple account of improper movement suggested above. Let us first briefly review the A and A' properties of IP-adjunction scrambling. As noted above, a phrase preposed by clause-internal IP-adjunction scrambling can be the antecedent of a lexical anaphor. The relevant examples in (5) are repeated in (45).

(45)a. ?*[_{IP}otagai_i -no sensei]-ga karera_i-o hihansita] (koto)
 each other-gen teacher-nom they -acc criticized fact

'?*Each other's teachers criticized them'

²⁴ The other possibility that he suggests (and seems to adopt) is that A-movement also leaves copies behind, but the copies are simply deleted. I will present supporting evidence for this view in the following subsection.

b. ?[_{IP}karera_i-o [_{IP}otagai_i -no sensei]-ga t_i hihansita] (koto)
 they -acc each other-gen teacher-nom criticized fact

The position of *karera* in (45b) is completely within the V projection after V raises to I in LF. Hence, the preposed phrase can be in an A-position at LF. The same kind of scrambling also shows A'-properties. Thus, examples like (46b) are perfectly grammatical, as noted in Saito (1985) and Mahajan (1990):

(46)a. [_{IP}karera_i-ga [_{VP}otagai_i -o hihansita]] (koto)
 they -nom each other-acc criticized fact

'They criticized each other'

b. [_{IP}otagai_i-o [_{IP}karera_i-ga [_{VP}t_i hihansita]]] (koto)

This is attributed to the "undoing" option, as proposed in Tada (1990): (46b) has the same LF representation as (46a) when "undoing" applies.

Here, interestingly, VP-adjunction scrambling out of a control complement shows exactly the same pattern as the clause-internal IP-adjunction scrambling, as noted in Tada and Saito (1991), and Nemoto (1993). The preposed phrase can serve as the antecedent of a lexical anaphor, as noted above, and further, the scrambling can be undone. This is shown in (47)-(49).

(47) ?John-ga [_{VP}karera_i-o [_{IP}otagai_i -no sensei]-ni [PRO t_i homeru yooni]
 -nom they -acc each other-gen teacher-to praise to

tanonda]] (koto)
 asked fact

'*John asked each other's teachers to praise them'

(48)a. John-ga [_{VP}karera_i-ni [PRO otagai_i -o hihansuru yooni] itta] (koto)
 -nom they -to each other-acc criticize to said fact

'John told them to criticize each other'

b. ?John-ga [_{VP}otagai_i -o [_{IP}karera_i-ni [PRO t_i hihansuru yooni] itta]] (koto)
 -nom each other-acc they -to criticize to said fact

(49)a. John-ga [_{VP}Mary_i-ni [PRO zibunzisin_i-o hihansuru yooni] itta] (koto)
 -nom -to self -acc criticize to said fact

'John told Mary to criticize herself'

- b. ?John-ga [_{VP}zibunzisin-o_i [Mary_i-ni [PRO t_i hihansuru yooni] itta]] (koto)
 -nom self -acc -to criticize to said fact

The fact in (47) is expected. Since the "VP-adjunction" is to a position within the V projection, it is A-movement. But the reconstruction facts shown in (48b) and (49b) are rather surprising. As discussed above, A-movement does not show this kind of reconstruction property. The example in (50) also illustrates this point.

- (50) *each other_i seem to them_i [t_i to be smart]

If (46b) is explained in terms of "undoing," then (48b) and (49b) indicate that VP-adjunction scrambling can also be undone, despite the fact that it is A-movement. Nemoto (1993) presents an important piece of data confirming this conclusion.

- (51) John_i-ga [_{VP}kare-o_i [Mary-ni [PRO t_i homeru yooni] tanonda]] (koto)
 -nom he -acc -to praise to asked fact

'John asked Mary to praise him'

The pronoun *kare* in (51) can be coreferential with the matrix subject. But if it stays in the scrambled position, an A-position, at LF, then the example should be in violation of Condition (B) of the Binding theory. Thus, this example shows that VP-adjunction scrambling, like IP-adjunction scrambling, can be undone in LF.

This conclusion is clearly inconsistent with the account for improper movement sketched above. It was proposed above that "undoing" is more precisely deletion of all the positions created by scrambling, as in (52).

- (52) XP_i ... XP_i ... XP_i
 | | |
 Ø Ø XP_i

If 'copy + deletion' is limited to A'-movement, we predict incorrectly that VP-adjunction scrambling, being A-movement, cannot be undone. (48b) and (49b), then, indicate that A-movement also involves 'copy + deletion'. We must therefore come up with an alternative account for improper movement. Here, I tentatively suggest a mechanical solution to this problem, leaving the pursuit of a more principled explanation for future research.

Suppose that deletion of positions applies to a chain in a top-down or bottom-up fashion roughly as follows:

- (53)a. XP is deleted under identity with the successive member of the chain.

- b. If XP is in an A-position and the successive member of the chain is in an A'-position, the deletion turns the XP into a variable.

This procedure creates an operator-variable chain as in (54).

- (54) XP_i ... XP_i ... XP_i
 | | |
 A' A' A
 | | |
 XP Ø x

Applying the deletion in a bottom-up fashion, the last member of the chain in an A-position is turned into a variable under identity with the intermediate XP. The latter, since it is in an A'-position, is simply deleted under identity with the top XP.

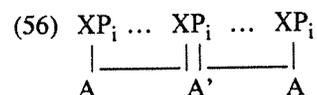
This procedure, as intended, produces the desired results for scrambling chains. Let us first consider the straightforward cases of A-scrambling and A'-scrambling.

- (55)a. XP_i ... XP_i ... XP_i
 | | |
 A' A' A
- b. XP_i ... XP_i ... XP_i
 | | |
 A A A

In the case of A'-scrambling, illustrated in (55a), the top position becomes an A-position after V raises to I. Then, the resulting chain will be an improper, illegitimate chain of the form A-A'-A. I will come back to this case directly. But there is another option, i.e., deletion can apply before V-raising. If deletion applies in a bottom-up fashion, then the last member of the chain will be turned into a variable, and the intermediate XP will be deleted as in the case of (54). The resulting chain will be eventually excluded since the top position will be turned into an A-position after V-raising; we end up with an A-bound variable. But suppose that deletion applies top-down. This option is allowed for scrambling because it is neither operator movement nor motivated by Case checking. Then the top position is deleted under identity with the intermediate position, and the latter is also deleted under identity with the bottom position. This amounts to the "undoing" of scrambling, the only LF option for A'-scrambling. In the case of (55b), the deletion can apply bottom-up or top-down. If it applies bottom-up, A-scrambling is retained at LF. Thus, an A-scrambled phrase can serve as the antecedent of a lexical anaphor. On the other hand, if it applies top-down, then the scrambling is undone. This accounts for the examples in (48b) and (49b).

Let us next consider the illicit VP-adjunction scrambling out of a finite clause.

The initial chain is shown in (56).



If deletion applies bottom-up, then the last XP is turned into a variable, and the intermediate one is deleted. The result is excluded since we end up with an A-bound variable. Let us then suppose that the deletion takes place top-down. In this case, since the top XP is in an A-position, and the second one is in an A'-position, the first one is turned into a variable. We therefore end up with a free variable, and thus, we fail to produce a legitimate chain. The last option is not to apply deletion at all. But then, we will be left with an illegitimate A-A'-A chain. Improper scrambling is thus excluded.

In the discussion above, I assumed that the case of long-distance movement out of control complements is the paradigm case of VP-adjunction scrambling. In that case, the movement is A-movement, but at the same time, it shares the reconstruction properties of A'-scrambling. Before I conclude this section, I would like to discuss one further fact concerning VP-adjunction scrambling, and show why I made this assumption.

As noted in Mahajan (1990), Tada (1990), and Nemoto (1993), among others, short-distance VP-adjunction scrambling strictly has all the properties of A-movement. The following examples illustrate this generalization:

(57)a. ?*[_{IP}John-ga [_{VP}otagai_i -no sensei-ni karera_i-o syookaisita]] (koto)
 -nom each other-gen teacher-to they -acc introduced fact

'John introduced them to [each other's teachers]'

b. [_{IP}John-ga [_{VP}karera-o_i [otagai_i-no sensei-ni _{t_i} syookaisita]]] (koto)

(58)a. [_{IP}John-ga [_{VP}karera_i-ni otagai_i -o syookaisita]] (koto)
 -nom they -to each other-acc introduced fact

'*John introduced each other to them'

b. *[_{IP}John-ga [_{VP}otagai-o_i [karera_i-ni _{t_i} syookaisita]]] (koto)

(57b) shows that a phrase preposed by short VP-adjunction scrambling can be the antecedent of a lexical anaphor. (58b), on the other hand, indicates that this type of scrambling, unlike the long VP-adjunction case in (48b) and (49b), cannot be undone. Note here that if we take the short VP-adjunction in (57)-(58) as the paradigm case of VP-adjunction scrambling, we can maintain the account of

improper movement suggested in Section 4.1. Since it is A-movement, it does not leave copies and hence, it cannot be undone.

But there seem to be some plausible independent accounts for (58b), as opposed to (48b) and (49b). One is the hypothesis that examples like (57b) and (58b) do not involve scrambling, but are generated as such. That is, the order of the direct object and the indirect object within VP is free to begin with. This is the hypothesis pursued in Miyagawa (1994). Another hypothesis, entertained in Nemoto (1993), is that "undoing" is impossible in these examples because the preposed objects must move to a higher, AGR_O SPEC position in LF. It has been argued, for example, in Saito (1982, 1985), that objective Case in Japanese is an abstract structural Case exactly like that in English. If this is correct, then it is plausible that it is licensed in an AGR projection at LF. The relevant LF movement applies in the configurations shown in (59).

(59)a. [_{AGRP} ... [... [_{VP} ... XP_i

b. [_{VP} XP_i [_{VP} ... [_{AGRP} _{t_i}' [... _{t_i}

c. [_{AGRP} ... [... [_{VP} XP_i [_{VP} ... _{t_i}

When the object is not scrambled, as in (59a), it simply moves to AGR_O SPEC in LF. When it is preposed by long-distance VP-adjunction scrambling, the movement goes through the AGR_O SPEC position, as in (59b).²⁵ The "undoing," in this case, is possible down to the AGR_O SPEC position. The case of short VP-adjunction scrambling is shown in (59c). Here, there are two options. The XP can directly move to AGR_O SPEC, or the movement can apply after the scrambling is undone. Nemoto (1993) suggests that the latter option is excluded by the Economy Condition, as the former involves shorter movement in the sense of Collins (1994).²⁶

Under either account for (58b), the long-distance case in (48b) and (49b) reflects the properties of VP-adjunction scrambling more directly. Thus, it seems reasonable to suppose that this type of scrambling can be undone, and consequently, the problem discussed above with respect to the explanation of improper movement

²⁵ See Bošković (1993b) for arguments that A'-movement of the object goes through the AGR_O SPEC position. I assume that this is the case also for A-scrambling of the object.

²⁶ Once we assume AGR_O in Japanese, nothing prevents scrambling from targeting an AGR_O projection as the landing site. In this sense, the analysis in this paper is, to a large extent, consistent with Nemoto (1993), where it is proposed that scrambling can be movement to AGR_O SPEC.

still remains.

5. Conclusion

In this paper, I discussed the properties of VP-adjunction scrambling, and suggested that scrambling is a kind of a substitution operation. Then, I considered the consequences of this hypothesis with respect to the directionality of "adjunction," and the optionality and the "radical reconstruction" property of scrambling. Finally, I speculated on the account for improper movement of the type A-A'-A. The discussion has been speculative, and whether the substitution hypothesis is tenable or not remains to be seen. It seems to me, however, that the hypothesis provides a plausible way to approach the controversial phenomenon of scrambling, and is worth pursuing.

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