

# 5 Scrambling

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## 0 Introduction

In Japanese, word order is flexible: the verb must come at the end of the sentence, but the order of the other phrases are free. For example, all the sentences in (1) are perfectly grammatical and mean virtually the same.<sup>1</sup>

- (1) a. Taroo-ga ano mise-de hon-o katta (koto)  
Taro-Nom that store-at book-Acc bought  
“Taro bought a book at that store”  
b. Hon-o Taroo-ga ano mise-de katta (koto)  
book-Acc Taro-Nom that store-at bought  
c. Ano mise-de Taroo-ga hon-o katta (koto)  
that store-at Taro-Nom book-Acc bought  
d. Hon-o ano mise-de Taroo-ga katta (koto)  
book-Acc that store-at Taro-Nom bought  
e. Taroo-ga hon-o ano mise-de katta (koto)  
Taro-Nom book-Acc that store-at bought  
f. Ano mise-de hon-o Taroo-ga katta (koto)  
that store-at book-Acc Taro-Nom bought

The flexible word order phenomenon has been one of the major issues in Japanese linguistics in conjunction not only with the theory of movement but also with phrase structure and Case assignment, among others.

In this chapter, we consider two basic questions regarding the flexible word order phenomenon: (i) are all the sentences (1a–f) base-generated or are (1b–f) derived from (1a) by movement?; (ii) if the word order change in (1) is due to movement, what kind of characteristic does this movement exhibit?

# 1 Word Order in Japanese

We first examine whether any of the orders in (1) can be considered as the basic order in Japanese.

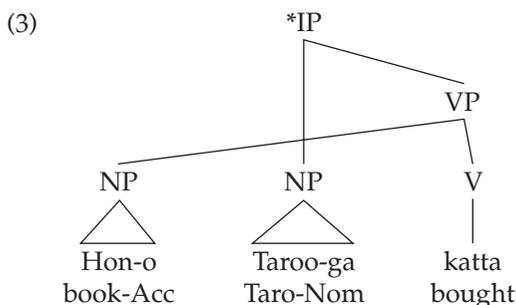
## 1.1 *Configurational vs. nonconfigurational dichotomy*

In the early 1980s, K. Hale proposed the configurationality parameters (see Hale 1980, 1982, 1983).<sup>2</sup> Hale (1980) and Farmer (1980, 1984) categorize Japanese as a typical example of a nonconfigurational language (see also Whitman 1979 and Miyagawa 1980). One of the motivations for analyzing Japanese as a nonconfigurational language is its flexible word order. Hale (1980) and Farmer (1980, 1984) propose to generate all the sentences in (1) by means of a phrase structure rule like (2), without appealing to a movement rule.

$$(2) \quad x' \rightarrow x'^* x$$

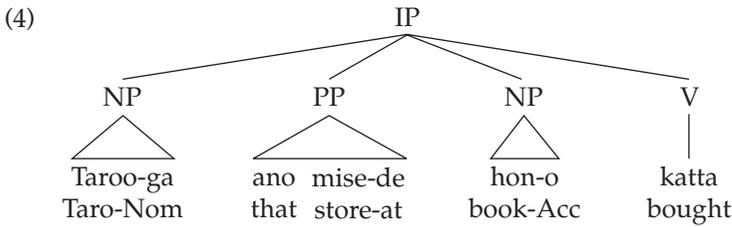
(2) expresses that Japanese is a head-final language. The symbol  $x$  stands for a head and  $x'$  is a higher level than  $x$ .  $x'^*$  means any number of  $x$ s.

As noted in Saito (1985), this nonconfigurational analysis of Japanese crucially depends on the hypothesis that Japanese lacks VP (see Hinds 1973 and Fukui 1986). This is because crossing of phrase-marker branches as illustrated in (3) is not allowed.<sup>3</sup>

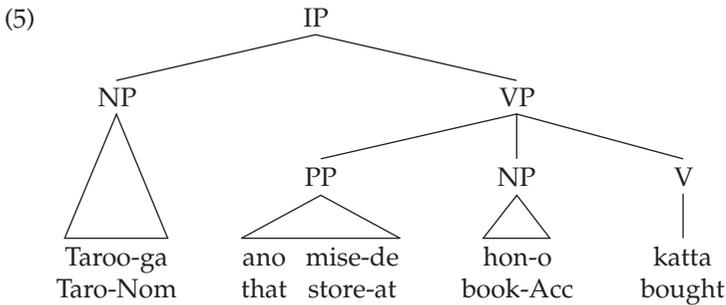


If we assume VP and a phrase structure rule  $IP \rightarrow NP VP$ , we also assume the basic word order in Japanese is SOV.

We may, however, say that since Japanese allows the OSV order, a verb and its object need not be a constituent. Under this hypothesis, (1a) has the following structure. Notice that there is no VP in (4).



Saito and Hoji (1983), Saito (1985), and Hoji (1985, 1987), on the other hand, argue that Japanese has VP. With a VP node, (1a) has the following structure.<sup>4</sup>



## 1.2 Evidence for the VP node

Since the existence of VP is crucial to argue for the configurationality of Japanese as noted above, we now examine Saito's (1985) arguments for the VP node in Japanese.

### 1.2.1 Pronominal coreference

Saito (1985) argues for VP in Japanese appealing to a subject/object asymmetry in pronominal coreference (see also Whitman 1982/87, Huang 1982, and Saito 1983). Let us first observe a paradigm in English in (6). Note that the intended reading where *John* and *he* are coindexed is not available in (6b). Note also the grammaticality of (6d) indicates that the crucial notion in binding is not precedence (Reinhart 1976).<sup>5</sup>

- (6) a. John<sub>i</sub> loves his<sub>i</sub> mother  
 b. \*He<sub>i</sub> loves John<sub>i</sub>'s mother  
 c. John<sub>i</sub>'s mother loves him<sub>i</sub>  
 d. His<sub>i</sub> mother loves John<sub>i</sub>

This paradigm can be accounted for by Binding Theory (N. Chomsky 1981a). We can simply state the following.

(7) A pronoun cannot c-command its antecedent. (Saito, 1985: 36)<sup>6</sup>

Note that the existence of VP is crucial to account for this paradigm in terms of (7): without a VP node, in (6c), the pronoun *him* would c-command *John* and the grammaticality difference between (6b) and (6c) cannot be accounted for.

Whitman (1982/87) and Saito (1985) show that Japanese exhibits exactly the same paradigm as (6) with respect to pronominal coreference. Let us observe the Japanese paradigm cited from Saito (1985: 37).<sup>7</sup> (8d) indicates that the crucial notion in binding is not precedence in Japanese.

- (8) a. John<sub>i</sub>-ga [Mary-ga kare<sub>i</sub>-ni okutta tegami]-o  
 John-Nom Mary-Nom he-to sent letter-Acc  
 mada yonde inai (koto)  
 yet read not  
 "John has not yet read the letter Mary sent him"
- b. \*Kare<sub>i</sub>-ga [Mary-ga John<sub>i</sub>-ni okutta tegami]-o mada  
 he-Nom Mary-Nom John-to sent letter-Acc yet  
 yonde inai (koto)  
 read not  
 "He has not yet read the letter Mary sent John"
- c. [John<sub>i</sub>-kara okane-o moratta hito]-ga kare<sub>i</sub>-o  
 John-from money-Acc received person-Nom he-Acc  
 suisensita (koto)  
 recommended  
 "The person (who) received money from him recommended John"
- d. [Kare<sub>i</sub>-kara okane-o moratta hito]-ga John<sub>i</sub>-o  
 he-from money-Acc received person-Nom John-Acc  
 suisensita (koto)  
 recommended  
 "The person (who) received money from him recommended John"

If Japanese lacks VP, in (8c), we expect that the pronoun *kare* "he" c-commands its antecedent *John*, and therefore, the sentence should be ill-formed. (8c) is, however, well-formed. Whitman (1982/87) and Saito (1985) argue that the grammaticality of (8c) demonstrates that VP exists in Japanese.

### 1.2.2 Weak crossover

Saito and Hoji (1983) argue for VP in Japanese using data that involve weak crossover (henceforth, WCO). Let us first consider the contrast in (9a–b) and (9c–d). In (9c–d), the intended reading is not available: *his* cannot be construed as a bound pronoun.

- (9) a. Everyone<sub>i</sub> loves his<sub>i</sub> mother  
 b. Who<sub>i</sub> loves his<sub>i</sub> mother?  
 c. \*His<sub>i</sub> mother loves everyone<sub>i</sub>  
 d. \*Who<sub>i</sub> does his<sub>i</sub> mother love?

Quantified NPs (henceforth, QNPs) are considered to move at the level of logical form (henceforth, LF) to take a scope. The LF representations of (9) are given in (10).

- (10) a. [everyone<sub>i</sub> [t<sub>i</sub> loves his<sub>i</sub> mother]]  
 b. [who<sub>i</sub> [t<sub>i</sub> loves his<sub>i</sub> mother]]  
 c. \*[everyone<sub>i</sub> [his<sub>i</sub> mother loves t<sub>i</sub>]]  
 d. \*[who<sub>i</sub> [his<sub>i</sub> mother loves t<sub>i</sub>]]

The ill-formedness of (9c–d) is analyzed in terms of WCO, whose configuration is illustrated in (11).

- (11) \*[operator<sub>i</sub> [ . . . pronoun<sub>i</sub> . . . t<sub>i</sub> . . . ]] (WCO)  
 A variable cannot be the antecedent of a pronoun that it does not c-command.<sup>8</sup>

Note that the existence of VP is also crucial here. If there is no VP, a variable would c-command the pronoun in the ill-formed examples too.

Let us now observe Japanese examples from Saito and Hoji (1983). In these, an anaphor *zibun* “self” is used instead of a pronoun. This is because the pronoun *kare* “he” cannot have the bound variable interpretation.<sup>9</sup> This is illustrated in (12).

- (12) \*Dare<sub>i</sub>-ga kare<sub>i</sub>-no hahaoya-o aisiteiru no  
 who-Nom his mother-Acc love Q  
 “Who loves his mother?”

(13) is an example of *backward reflexivization* in N. A. McCawley (1976): the antecedent of *zibun* is *Mary*. It shows that *zibun* can be bound by the antecedent which does not c-command the anaphor.

- (13) [[John-ga zibun<sub>i</sub>-no kuruma-o kowasita] koto]-ga  
 John-Nom self's car-Acc broke fact-Nom  
 Mary<sub>i</sub>-o odorokaseta  
 Mary-Acc surprised  
 “The fact that John broke her car surprised Mary”

(14) shows that the anaphor *zibun* can be a bound anaphor when it is c-commanded by the QNP.

- (14) a. Daremo<sub>i</sub>-ga/Dareka<sub>i</sub>-ga [[Mary-ga zibun<sub>i</sub>-no kuruma-o  
 everyone-Nom/someone-Nom Mary-Nom self's car-Acc  
 kowasita] koto]-ni odoroitā  
 broke fact-Dat be surprised  
 “Everyone/someone was surprised by the fact that Mary broke  
 his car”

- b. Dare<sub>i</sub>-ga [[Mary-ga zibun<sub>i</sub>-no kuruma-o kowasita] koto]-ni  
 who-Nom Mary-Nom self's car-Acc broke fact-Dat  
 odoroitā no  
 was surprised Q  
 "Who was surprised by the fact that Mary broke his car?"

Now let us observe WCO examples from Saito and Hoji (1983).

- (15) a. ?\*[[Mary-ga zibun<sub>i</sub>-no kuruma-o kowasita] koto]-ga  
 Mary-Nom self's car-Acc broke fact-Nom  
 daremo<sub>i</sub>-o/dareka<sub>i</sub>-o odorokaseta  
 everyone-Acc/someone-Acc surprised  
 "The fact that Mary broke his car surprised everyone/someone"
- b. ?\*[[Mary-ga zibun<sub>i</sub>-no kuruma-o kowasita] koto]-ga  
 Mary-Nom self's car-Acc broke fact-Nom  
 dare<sub>i</sub>-o odorokaseta no  
 who-Acc surprised Q  
 "Whom did the fact that Mary broke his car surprise?"

Saito and Hoji (1983) argue that although an anaphor is used instead of a pronoun in Japanese examples, the contrast displayed in (14) and (15) is parallel to the contrast in (9a–b) and (9c–d). The configuration of the ill-formed examples, namely (15a–b), is illustrated in (16).

- (16) \*[Operator<sub>i</sub> [ . . . anaphor<sub>i</sub> . . . t<sub>i</sub> . . . ]]  
 A variable cannot be the antecedent of an anaphor that it does not c-command.

Note that the existence of VP is crucial in order to rule out (15) in terms of WCO. In this light, Saito and Hoji (1983) argue that VP exists in Japanese. The existence of VP argues against the nonconfigurational approach to Japanese.

In this section, we first reviewed the difference between the nonconfigurational hypothesis and the configurational hypothesis for Japanese. We next observed Saito's (1985) argument that VP exists in Japanese. Given that VP exists, we now assume that Japanese is a configurational language.

## 2 Arguments for Movement Analysis of Flexible Word Order

We assume that the basic word order in Japanese is SOV. We must now account for the other orders. Saito (1985) provides evidence that the flexible word order of Japanese is due to movement, which is called "scrambling" following Ross (1967).

## 2.1 Pronominal coreference

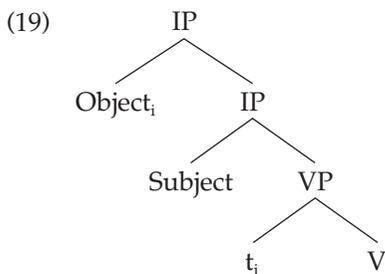
Saito (1985) shows that the OSV order influences pronominal coreference. We observed in section 1.2.1 that the crucial notion in the pronominal coreference is c-command. Let us examine the following examples cited from Saito (1985: 39). In (17b), the object is located in the sentence-initial position.

- (17) a. \*Kare<sub>i</sub>-ga [Mary-ga John<sub>i</sub>-ni okutta tegami]-o mada  
 he-Nom Mary-Nom John-to sent letter-Acc yet  
 yonde inai (koto)  
 read not  
 "He has not yet read the letter Mary sent to John"
- b. [Mary-ga John<sub>i</sub>-ni okutta tegami]-o kare<sub>i</sub>-ga mada  
 Mary-Nom John-to sent letter-Acc he-Nom yet  
 yonde inai (koto)  
 read not  
 "The letter Mary sent to John, he has not yet read"

In (17a), the pronoun *kare* "he" c-commands its antecedent *John*; it is ruled out by the condition stated in (7), which is repeated in (18).

- (18) A pronoun cannot c-command its antecedent. (Saito, 1985: 36)

The grammaticality difference demonstrated in (17a–b) suggests that the subject does c-command the object in (17a) but not in (17b). The grammaticality of (17b) can be accounted for if we assume that the object moved to the position where the subject cannot c-command it. Saito (1985), therefore, argues that (17b) involves movement and its structure is as illustrated in (19).



In (19), the object, which was base-generated in the VP, moved to the sentence-initial position, leaving its trace in the original position. The trace is coindexed with the moved constituent and assumed to be the same type as the moved constituent. As illustrated in (19), when the order is OSV, the subject no longer c-commands the moved object. The subject pronoun, therefore, does not c-command its antecedent in the object phrase in (17b).

## 2.2 Crossover

Saito (1985) also appeals to the crossover data to argue for a movement approach to flexible word order. Let us observe the following examples cited from Saito (1985: 47).

- (20) a. John<sub>i</sub>-no sensei-ga kare<sub>i</sub>-o (zibun-de) syookaisita (koto)  
 John's teacher-Nom he-Acc (herself) introduced  
 "John's teacher herself introduced him"
- b. ??/?\*John<sub>i</sub>-no sensei-o [kare<sub>i</sub>-ga (zibun-de) syookaisita] (koto)  
 John's teacher-Acc he-Nom (himself) introduced  
 "John's teacher, he himself introduced"

The subject precedes the object in (20a) and the subject contains the antecedent of the pronoun. The object precedes the subject in (20b) and the object contains the antecedent of the pronoun. As long as the c-command relationship between the pronoun and its antecedent is concerned, there is no difference between (20a) and (20b). However, (20a) is well-formed and (20b) is ill-formed. Moreover, compare (20b) and (17b), which is repeated as (21).

- (21) [Mary-ga John<sub>i</sub>-ni okutta tegami]-o kare<sub>i</sub>-ga mada yonde inai (koto)  
 Mary-Nom John-to sent letter-Acc he-Nom yet read not  
 "The letter that Mary sent to John, he has not yet read"

In both (20b) and (21), the object phrase contains the antecedent of the subject pronoun and precedes the subject. (20b) is ill-formed, whereas (21) is well-formed.

Saito (1985) proposes to account for the contrast in (20b) and (21) in the same way as the contrast in (22) (see Reinhart 1976, 1983). The verb *put* subcategorizes a locative PP; we consider that PP is moved to the sentence-initial position in (22). The contrast displayed in (22a) and (22b) is parallel to the contrast in (20b) and (21).

- (22) a. \*[In Ben<sub>i</sub>'s box]<sub>j</sub>, he<sub>i</sub> put his cigars t<sub>j</sub>  
 b. [In the box that Ben<sub>i</sub> brought from China]<sub>j</sub>, he<sub>i</sub> put his cigars t<sub>j</sub>

Saito (1985) appeals from the ill-formedness of (20b) to Postal's (1971) "crossover," which is stated in (23).

- (23) When a pronoun c-commands its antecedent at D-structure but this c-command relation does not obtain at S-structure due to a movement to an A'-position, the sentence is grammatical only if the antecedent is embedded *deeply enough* in the moved phrase. (Saito 1985: 49)

In (20b), the antecedent of the pronoun is not embedded deeply enough, whereas in (21) the antecedent of the pronoun *is* embedded deeply enough.

Note also that this phenomenon is observed only when movement is involved. In (20a), for example, the antecedent of the pronoun is not deeply embedded; it is, however, well-formed. (20a) does not involve movement. The contrast in the grammaticality in (20b) and (21) suggests that movement of the object phrase is involved in (20b) and (21).

### 2.3 Quantifier floating

Saito (1985) argues that a subject–object asymmetry found in *quantifier floating*, discussed in Kuroda (1980, 1983) and Haig (1980), argues for scrambling analysis of flexible word order in Japanese.<sup>10</sup> It is known that a floating numeral quantifier (henceforth, NQ) and its host NP comprise a constituent in Japanese (Kamio 1977).

Kuroda (1980) shows that NQs that modify object NPs can be separated from the objects by an intervening subject, whereas NQs that modify subject NPs cannot be separated from the subject by an intervening object. Let us observe Kuroda’s (1980: 27) examples. The NQ in (24) modifies the object.

- (24) a. Igrisuzin-ga utide-no kozuti-o hutatu katta  
 Englishman-Nom striking-Gen mallet-Acc 2 objects bought  
 “An Englishman bought 2 *mallets of luck*”  
 b. Utide-no kozuti-o igirisuzin-ga hutatu katta  
 striking-Gen mallet-Acc Englishman-Nom 2 objects bought  
 “*Mallets of luck*, an Englishman, 2 pieces, bought”

In (24a), the object and its NQ are adjacent. In (24b), on the other hand, the object and its NQ are not adjacent: there is a subject NP between them. Both (24a) and (24b) are well-formed, however. The NQ in (25), on the other hand, modifies the subject.

- (25) a. Igrisujin-ga sannin utide-no kozuti-o katta  
 Englishman-Nom 3 people striking-Gen mallet-Acc bought  
 “Three Englishmen bought (the) *mallet of luck*”  
 b. \*Igrisujin-ga utide-no kozuti-o sannin katta  
 Englishman-Nom striking-Gen mallet-Acc 3 people bought  
 “Englishmen bought (the) *mallet of luck*, three people”

In (25a), the subject and its NQ are adjacent, whereas in (25b), they are not. In (25b), there is an object NP between the subject and its NQ, and the sentence is ill-formed. Kuroda (1980) argues that the contrast displayed in (24b) and (25b) indicates that the basic word order in Japanese is Subject–Object–Verb and the other word orders are due to movement.

Saito (1985), moreover, argues that under the hypothesis that (24b) involves movement and syntactic movement leaves a trace, we may say that the floating

NQ is licensed by the trace which is adjacent to the NQ. The generalization that a floating NQ cannot be related to an NP across another NP argument can be maintained and the well-formedness of (24b) can still be accounted for. The structure of (24b) is illustrated in (26).

(26) [Utide-no kozuti]<sub>i</sub>-o [igirisuzin-ga t<sub>i</sub> hutatu katta]

In this section, we examined Saito's (1985) evidence for a movement approach to flexible word order in Japanese. The OSV order creates a different c-command relationship between the subject and the object. The OSV order, moreover, exhibits the crossover phenomenon (Postal 1971), which is typically observed when A'-movement is involved. The OSV order, furthermore, appears to have a trace in the position between the subject and the verb.

### 3 Long-Distance Preposing

#### 3.1 Long-distance scrambling

Saito (1985), furthermore, shows that long-distance preposing affects the possibility of pronominal coreference. In so doing, he argues for S.-I. Harada's (1977) hypothesis that scrambling is not clause-bound.<sup>11</sup> The relevant examples are cited in (27) from Saito (1985: 161).

- (27) a. \*Kare<sub>i</sub>-ga [dareka-ga [Mary-ga John<sub>i</sub>-ni okutta tegami]-o  
 he-Acc someone-Nom Mary-Nom John-to sent letter-Acc  
 nusumiyomisita to] omotte iru (koto)  
 took-a-peek-at that thinking  
 "He thinks that someone took a peek at the letter Mary wrote to John"
- b. [Mary-ga John<sub>i</sub>-ni okutta tegami]<sub>j</sub>-o kare<sub>i</sub>-ga [dareka-ga  
 Mary-Nom John-to sent letter-Acc he-Nom someone-Nom  
 t<sub>j</sub> nusumiyomisita to] omotte iru (koto)  
 took-a-peek-at that thinking  
 "The letter Mary wrote to John, he thinks someone took a peek at"

In (27b), the complex NP object is scrambled across the clause boundary to the sentence-initial position. The well-formedness of (27b) as opposed to the ill-formedness of (27a) demonstrates that the movement makes the coreference between *John* and *he* possible. Saito, therefore, argues that in the case of long-distance preposing also, the preposed phrase is in a position the matrix subject does not c-command.

Saito (1985), thus, argues that long-distance preposing shares the properties of scrambling discussed in section 2 and it is reasonable to assume that long-distance preposing is a subcase of scrambling.

### 3.2 Long-distance scrambling of the subject and VP-scrambling

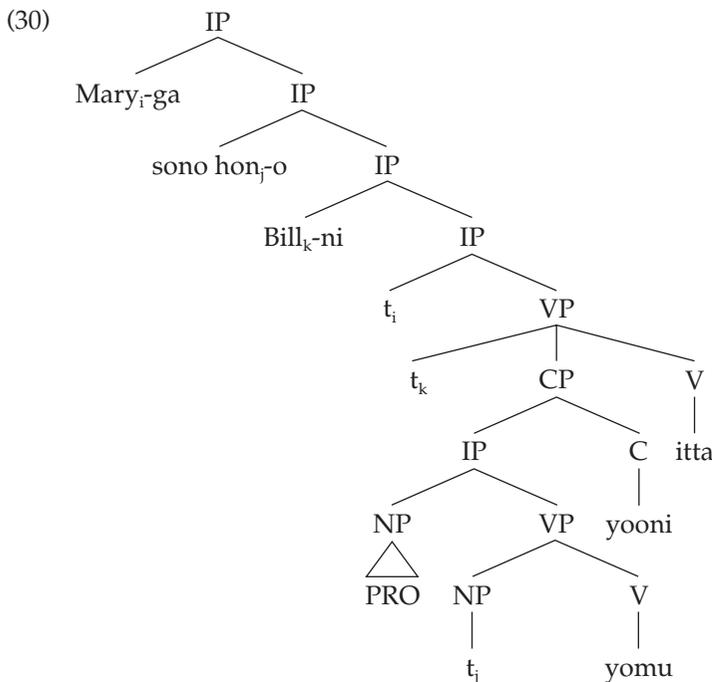
Saito (1985: 192) argues that the subject does not scramble long-distance, on the basis of the ill-formedness of (28b).<sup>12,13,14</sup>

- (28) a. Mary-ga John-ni [kono giron-ga okasii to] itta  
 Mary-Nom John-Dat this argument-Nom strange that told  
 "Mary told John that this argument is strange"  
 b. \*[Kono giron]<sub>i</sub>-ga [Mary-ga John-ni [t<sub>i</sub> okasii to] itta]  
 this argument-Nom Mary-Nom John-Dat strange that told  
 "This argument, Mary told John that is strange"

In (28b), the embedded subject was scrambled to the matrix sentence-initial position and the sentence is ill-formed. Given that the subject does not scramble long-distance, Saito argues that VP must be a possible adjunction site for scrambling. Let us observe (29) cited from Saito (1985: 225).

- (29) Mary-ga [sono hon]<sub>i</sub>-o Bill-ni [PRO t<sub>i</sub> yomu yooni] itta (koto)  
 Mary-Nom that book-Acc Bill-Dat read to told  
 "Mary, that book, told Bill to read"

It is not possible for (29) to have a structure like (30).<sup>15</sup>



This is because the matrix subject *Mary* cannot be preposed long-distance. Therefore, the well-formedness of (29) demonstrates that VP is a possible adjunction site for long-distance scrambling.

Saito (1985: 267 fn 34) notes that long-distance scrambling from a tensed clause results in marginal grammaticality. His example is cited in (31).

- (31) ??<sub>[IP]</sub>John-ga    <sub>[VP]</sub>[sono hon]<sub>i</sub>-o    <sub>[VP]</sub>minna-ni    <sub>[CP]</sub>Mary-ga    <sub>t<sub>i</sub></sub>  
           John-Nom    that book-Acc    everyone-Dat    Mary-Nom  
           motte iru to]]] itta] (koto)  
           have        that told  
           “John, that book, told everyone that Mary has”

In (31), the embedded object is scrambled to VP adjoined position in the matrix clause. This observation of the contrast between (29) and (31) later becomes important in discussing the nature of scrambling.<sup>16</sup>

In this section, we observed long-distance scrambling in Japanese. Saito (1985), however, shows that long-distance scrambling of the subject is not possible. Given that, Saito (1985) argues that VP is a possible scrambling site. He, however, notes that long-distance VP-scrambling from a finite clause results in marginal grammaticality, while long-distance VP-scrambling from a control clause results in perfect grammaticality.

## 4 The Landing Positions for Scrambled Phrases

We observed the evidence that Japanese has VP and the flexible word order is due to movement. Traditionally, it is considered that there are two types of Maximal Projection movement: A-movement such as Passive and Raising in English (also called NP-movement) and A'-movement such as WH-movement and topicalization in English. A question arises as to whether Japanese scrambling behaves like A-movement or A'-movement.<sup>17</sup> This question amounts to asking where the scrambled phrases land: A-movement is typically to a Case position (N. Chomsky 1986b) such as the Spec of IP, whereas A'-movement is operated either by adjunction or by movement to the Spec of CP.

### 4.1 Scrambling as semantically vacuous A'-movement (Saito 1989)

Saito (1985, 1989) considers that scrambling is an adjunction operation; therefore, it is an instance of A'-movement. Saito (1989), however, demonstrates

that scrambling is different from typical A'-movement such as WH-movement.<sup>18</sup>

Saito (1989) argues that scrambling can be freely undone at LF. First, he shows that the traces created by LF WH-movement in Japanese are subject to the Proper Binding Condition (see also K. Harada 1972). The Proper Binding Condition is stated in (32) (cf. Fiengo 1977, May 1977).

(32) Traces must be bound.

Now let us examine the relevant examples cited from Saito (1989: 190).

- (33) a. [<sub>NP</sub> [<sub>CP</sub> John-ga [<sub>CP</sub> dare-ga sono hon-o katta ka]  
           John-Nom    who-Nom that book-Acc bought Q  
           siritagatteiru] koto]  
           want-to-know the fact  
           “the fact that John wants to know who bought that book”  
   b. \*[[<sub>NP</sub> [<sub>CP</sub> Dare-ga [<sub>CP</sub> John-ga sono hon-o katta ka]  
           who-Nom    John-Nom that book-Acc bought Q  
           siritagatteiru] koto]  
           want-to-know the fact  
           “the fact that who wants to know John bought that book”

In Japanese, the Spec of an embedded CP is [+WH] if and only if its head contains the interrogative particle *ka*. Note that in the examples of (33) there are two embedded CPs and only the most deeply embedded C is [+WH]. Since WH-phrases must be at [+WH] CP at LF, in (33b), the WH-phrase *dare* “who” in (33a–b) must move to the most deeply embedded CP at LF.

Saito attributes the ill-formedness of (33b) to an unbound trace of *dare* as illustrated in (34), which is the LF structure of (33b).

- (34) [<sub>NP</sub> [<sub>CP</sub> [<sub>IP</sub> t<sub>i</sub> [<sub>CP</sub> [<sub>IP</sub> John-ga sono hon-o katta] dare<sub>i</sub>-ga]  
           John-Nom that book-Acc bought who-Nom  
           siritagatte iru]] koto]  
           want-to-know the fact

The trace in (34) is unbound, and it violates the Proper Binding Condition.

Saito (1989: 192), on the other hand, shows that (35) is well-formed.

- (35) ?[[<sub>NP</sub> [<sub>CP</sub> [<sub>IP</sub> Dono hon<sub>i</sub>-o [<sub>IP</sub> Mary-ga [<sub>CP</sub> [<sub>IP</sub> John-ga t<sub>i</sub>  
           which book-Acc    Mary-Nom    John-Nom  
           tosyokan-kara karidasita] ka] siritagatteiru]]] koto]  
           library-from borrowed Q want-to-know the fact  
           “the fact that which book, Mary wants to know John borrowed from  
           the library”

In (35), the embedded object WH-phrase *dono hon* “which book” is scrambled long-distance. At LF, the WH-phrase moves into the embedded Comp marked by *ka*. The LF structure of (35) is given in (36).

(36) [... t<sub>i</sub>' [<sub>CP</sub>... [... t<sub>i</sub>... ] WH<sub>i</sub>] ...]

We expect the intermediate trace t<sub>i</sub>' in (36) to violate the Proper Binding Condition just as t<sub>i</sub> in (34) does. (35) is, however, well-formed. Recall that the ill-formedness of (33b) indicates that LF WH-movement in Japanese is subject to the Proper Binding Condition. We must account for the well-formedness of (35).

Saito (1989) argues that unlike other types of A'-movement, such as WH-movement in English, scrambling does not establish a semantically significant operator-variable relation (see also Weibelhuth 1989, 1992). This is a reason that scrambling was considered as a *stylistic* movement in Ross (1967), N. A. McCawley (1976), and N. Chomsky and Lasnik (1977). Hence, Saito argues that there should be no trace at the scrambled site at the LF representation. This means that t<sub>i</sub>' in (36) should not exist; there is no Proper Binding Condition violation.

Saito (1989) speculates this characteristic of scrambling is related to the nature of its landing position. More specifically, he hypothesizes that the existence of the major subjects (see Kuno 1973, Kuroda 1988, Ueda 1990, Tateishi 1991, among others) in Japanese is related to this phenomenon. An example with major subjects is given in (37).

(37) [<sub>IP</sub> Nagano-ga [<sub>IP</sub> yama-ga [<sub>IP</sub> ki-ga kirei-da]]]  
 Nagano-Nom mountain-Nom tree-Nom beautiful-is  
 “It's Nagano where in mountains trees are beautiful”

The first two nominative phrases *Nagano-ga* and *yama-ga* are major subjects.

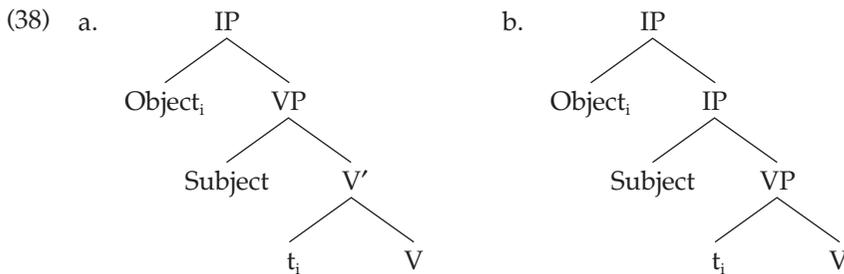
Saito (1989) notes that the positions for the major subjects are A'-positions in the sense that they are not assigned a theta role at D-structure. However, they are different from other A'-positions in the sense that they are base-generated in the position adjoined to IP (Shibatani and Cotton 1977, Saito 1982, among others). Japanese has such ambiguous positions. Since scrambling can land in such a position, he argues, it exhibits somewhat different characteristics from typical A'-movement.

## 4.2 The VP-internal subject hypothesis

The VP-internal subject hypothesis, proposed in Koopman and Sportiche (1991), Fukui and Speas (1986), Fukui (1986), Kuroda (1988), and Y. Kitagawa (1986),

among others, raises a new possibility for scrambling. Under this hypothesis, the subject is base-generated at D-structure within VP. In Kuroda's (1988) hypothesis, for example, the subject is base-generated at the Spec of VP as illustrated in (38a) at D-structure.<sup>19</sup> Kuroda (1988) further hypothesizes that in English the subject raises to the Spec of IP to get Case, whereas in Japanese, the subject can stay at the Spec of VP since INFL has nothing to do with the subject Case in Japanese.<sup>20</sup>

Moreover, Kuroda (1988) hypothesizes that in Japanese, since the subject can stay at the Spec of VP, the object can raise to the Spec of IP as illustrated in (38a). Compare (38a) with (19), which is repeated as (38b). In (38b), scrambling is considered to be an adjunction. In (38a), on the other hand, scrambling is not an adjunction.<sup>21</sup>

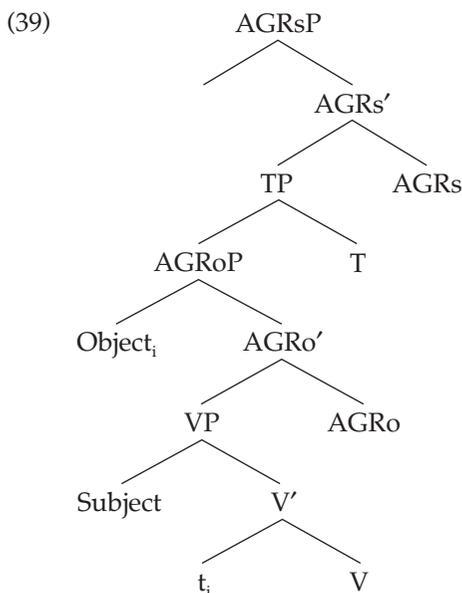


Under the hypothesis that scrambling is an adjunction, it is naturally assumed that scrambling is A'-movement. Kuroda's (1988) hypothesis, on the other hand, raises a theoretical possibility for scrambling to be considered as A-movement.

Note, however, that the VP-internal subject hypothesis makes the status of the Spec of IP with respect to the A/A' distinction unsettled. This is because "A-position" had been traditionally defined as a potential theta position (N. Chomsky, 1981a: 47). If the subject receives its theta role within VP as assumed in the VP-internal subject hypothesis, the Spec of IP is no longer a potential theta position. On the other hand, the Spec of IP is assumed to be a Case position at least in English, and A-movement is typically to a Case position such as the Spec of IP (N. Chomsky 1986b).

### 4.3 The split IP hypothesis

In the late 1980s to early 1990s, the split IP hypothesis proposed in Pollock (1989), N. Chomsky (1989, 1992, 1995a), and N. Chomsky and Lasnik (1993) enabled us to hypothesize that the object raises to a Case position as illustrated in (39). (See also Mahajan 1989, Déprez 1989, Nemoto 1993, Koizumi 1993, and Miyagawa 1997a, among many others.)<sup>22</sup>



Since A-movement is typically to a Case position (N. Chomsky 1986b), it was not plausible to consider scrambling as A-movement under the hypothesis that the object receives its Case within the VP. The split IP hypothesis and Case checking theory (N. Chomsky 1989, 1992, 1995a, Chomsky and Lasnik 1993), which assumes that the subject and the object raise to a specifier of a functional category to check its Case off, provides a theoretical background for scrambling to be analyzed as movement to a Case position.

## 5 On the Nature of Clause-Internal Scrambling

In section 5, we examine the data which suggest that clause-internal scrambling has some properties of A-movement and some properties of A'-movement.

### 5.1 *Scrambling as A-movement*

In this section, we examine data which suggest that clause-internal scrambling has some properties of A-movement. More specifically, we examine data involving anaphor binding and WCO.

#### 5.1.1 *Anaphor binding*

First, let us observe data regarding anaphor binding. Mahajan (1989) shows that anaphors can be bound by a scrambled phrase in Hindi. Saito (1992)

shows that that is possible in Japanese too. As is well known, *zibun* “self” exhibits subject-orientation: it cannot be bound by an object phrase. On the other hand, *otagai* “each other” is a local anaphor and does not exhibit subject-orientation.<sup>23</sup> Let us now observe the examples cited from Saito (1992: 74–5). In (40), the anaphor *otagai* is not bound: they violate Condition A of Binding Theory (N. Chomsky 1981a), which requires anaphors to be locally bound by the antecedent which is located in an A-position.

- (40) a. ?\*Masao-ga otagai<sub>i</sub>-no sensei-ni karera<sub>i</sub>-o syookaisita  
 Masao-Nom each other’s teacher-to they-Acc introduced  
 “Masao introduced, to each other, them”  
 b. ?\*Otagai<sub>i</sub>-no sensei-ga karera<sub>i</sub>-o hihansita  
 each other’s teacher-Nom they-Acc criticized  
 “Each other’s teacher criticized them”

In (41), the object phrase is scrambled to the sentence-initial position.

- (41) a. Karera<sub>i</sub>-o [Masao-ga otagai<sub>i</sub>-no sensei-ni t<sub>i</sub> syookaisita]  
 they-Acc Masao-Nom each other’s teacher-to introduced  
 “Them, Masao introduced to each other”  
 b. ?Karera<sub>i</sub>-o [otagai<sub>i</sub>-no sensei-ga t<sub>i</sub> hihansita]  
 they-Acc each other’s teacher-Nom criticized  
 “Them, each other’s teacher criticized”

(40a–b) differ from (41a–b) only in that the object *karera* “they” is preposed to the sentence initial position. The grammaticality of (41), however, differs sharply from the grammaticality of (40). Saito (1992) argues that if (40a–b) are ill-formed because the anaphor lacks an A-binder, then the well-formedness of (41a–b) indicates that the anaphor has an A-binder. If so, the scrambled object must be in an A-position. This conclusion implies that scrambling can be A-movement.<sup>24</sup>

### 5.1.2 Weak crossover

Let us next observe WCO examples. There are two problems in WCO with scrambling in Japanese. First, the pronoun *kare* “he” cannot have a bound variable interpretation. Therefore, Saito and Hoji (1983) and Hoji (1985, 1987) use an anaphor or empty pronominal. This problem was solved by the observation that the *so* pronouns such as *sore* “it” and *soitu* “the guy” allow bound variable interpretation (Yoshimura 1989, Hoji 1990, 1991a, and Tada 1990, among others). This is illustrated in (42). In (42a), *kare* cannot have a bound variable interpretation, and therefore is ill-formed under the intended reading. In (42b), on the other hand, *sono hito* “that person” can have a bound variable interpretation.

- (42) a. \*Dare<sub>i</sub>-ga kare<sub>i</sub>-no hahaoya-o aisiteiru no  
 who-Nom his mother-Acc love Q  
 "Who loves his mother?"  
 b. Dare<sub>i</sub>-ga [sono hito-]<sub>i</sub>-no hahaoya-o aisiteiru no  
 who-Nom that person's mother-Acc love Q  
 "Who loves that person's mother?"

Second, the lack of a WCO effect in scrambling has been pointed out as a problem under the hypothesis that scrambling is an adjunction, and therefore, A'-movement (see Saito 1985, Hoji 1985, 1987, and Webelhuth 1989, 1992).

Hoji (1985) presents the following paradigm. Let us assume that both *pro* and *e* are phonetically null pronouns in (43).

- (43) a. ?\*[pro<sub>i</sub> e<sub>j</sub> Hitome mita hito-]<sub>i</sub>-ga dare<sub>j</sub>-o suki-ni natta no  
 a glance saw person-Nom who-Acc fell-in-love Q  
 "A person who saw (him) once fell in love with whom?"  
 b. Dare<sub>j</sub>-o [[pro<sub>i</sub> e<sub>j</sub> hitome mita hito-]<sub>i</sub>-ga t<sub>j</sub> suki-ni natta no]  
 who-Acc a glance saw person-Nom fell-in-love Q  
 "Whom, a person who saw (him) once fell in love with?"

(43a) is a WCO violation. In (43b), the WH-phrase is scrambled. If scrambling is A'-movement like WH-movement in English, we expect (43b) to be ill-formed just like (44).

- (44) ?\*Who<sub>i</sub> does his<sub>i</sub> mother love?

(43b) is, however, well-formed. It appears that scrambling remedies a WCO violation. Under the hypothesis that scrambling is A'-movement, this is not what we expect.<sup>25</sup>

Moreover, using a *so* pronoun, Yoshimura (1989, 1992) shows that scrambling does not yield a WCO violation even with an overt pronoun.<sup>26</sup> The relevant examples are given in (45).

- (45) a. ?\*Soitu<sub>i</sub>-no hahaoya-ga dare<sub>i</sub>-o aisiteiru no  
 HIS mother-Nom who-Acc love Q  
 "His mother loves whom?"  
 b. ?Dare<sub>i</sub>-o [soitu<sub>i</sub>-no hahaoya-ga t<sub>i</sub> aisiteiru no]  
 who-Acc HIS mother-Nom love Q  
 "Whom, his mother loves?"

(45a) is a case of WCO violation just like (43a). The object in (45b) is scrambled to the sentence-initial position. If scrambling is necessarily A'-movement, we expect (45b) to be a WCO violation.

A-movement, on the other hand, remedies a WCO violation, as the well-formedness of (46) illustrates.

(46) Who<sub>i</sub> [t<sub>i</sub>' seems to his<sub>i</sub> mother [t<sub>i</sub> to be intelligent]]

The difference between (43) and (46) is that (46) undergoes A-movement (Raising) prior to A'-movement (WH-movement). The well-formedness of (46) as opposed to (43) indicates that A-movement remedies a WCO violation. On the basis of WCO data such as (45), Yoshimura (1992) argues that scrambling can be A-movement in Japanese.

## 5.2 Scrambling as A'-movement

In section 5.1, we observed that clause-internal scrambling in Japanese has some properties of A-movement. At the same time, clause-internal scrambling exhibits some properties of A'-movement. This is illustrated in (47), cited from Saito (1992: 76).<sup>27</sup>

(47) Zibun-zisin<sub>i</sub>-o [Hanako<sub>i</sub>-ga t<sub>i</sub> hihansita]  
 self-self-Acc Hanako-Nom criticized  
 "Herself, Hanako criticized"

If the object is scrambled to an A-position in (47), it should violate Condition C of Binding Theory (N. Chomsky 1981a), which prohibits referential expressions from being A-bound. The well-formedness of (47), therefore, indicates that scrambling can be A'-movement.

A question arises as to whether clause-internal scrambling can be either A or A'-movement. Tada (1990, 1993) observes that clause-internal scrambling exhibits a strong crossover (henceforth, SCO) effect. It would not be expected if clause-internal scrambling could be A-movement. First, observe SCO examples in English in (48).

(48) a. \*[Whose<sub>i</sub> mother]<sub>j</sub> did he<sub>i</sub> love t<sub>j</sub>  
 b. \*He<sub>i</sub> loves everyone<sub>i</sub>'s mother.

The examples in (48) yield an SCO violation: the pronoun *he* c-commands either the NP or the trace which contains the QNP coindexed with the pronoun (see Postal 1971, and Higginbotham 1983, among others). It is A'-movement and not A-movement which yields an SCO violation. (49), which includes A-movement (Raising) prior to A'-movement, is indeed well-formed.

(49) [Whose<sub>i</sub> mother]<sub>j</sub> [t<sub>j</sub>' seems to him<sub>i</sub> [t<sub>j</sub> to be intelligent]]

(49) shows that A-movement remedies SCO.

Given that, let us observe SCO examples from Tada (1993: 24). In (50b), the WH object is scrambled.

- (50) a. \*Soitu<sub>i</sub>-ga dare<sub>i</sub>-no sensei-o nagutta no  
 HE-Nom whose teacher-Acc hit Q  
 “He hit whose teacher?”  
 b. \*[Dare<sub>i</sub>-no sensei]<sub>j</sub>-o [soitu<sub>i</sub>-ga t<sub>j</sub> nagutta no]  
 whose teacher-Acc HE-Nom hit Q  
 “Whose teacher, he hit?”

Tada argues that if scrambling can be A-movement, (50b) should be grammatical.

In this section, we observed that clause-internal scrambling exhibits mixed properties. It behaves like A-movement with respect to anaphor binding and WCO. On the other hand, it behaves like A'-movement with respect to SCO.

## 6 Clause-Internal Scrambling vs. Long-Distance Scrambling

Saito (1985) argues that scrambling is not clause-bound. Saito (1992) and Tada (1990, 1993), however, demonstrate that long-distance scrambling behaves differently from clause-internal scrambling.<sup>28</sup> Let us examine similarities and differences between clause-internal scrambling and long-distance scrambling.

### 6.1 Weak crossover

Yoshimura (1989, 1992) shows that long-distance scrambling also remedies a WCO violation.<sup>29</sup> Let us examine the relevant examples. In (51b), the embedded object *dare* “whom” is scrambled long-distance to the sentence-initial position.

- (51) a. \*Soitu<sub>i</sub>-no hahaoya-ga [Hanako-ga dare<sub>i</sub>-o aisiteiru to]  
 HIS mother-Nom Hanako-Nom who-Acc love that  
 itta no  
 said Q  
 “His mother said that Hanako loves whom?”  
 b. ?Dare<sub>i</sub>-o [soitu<sub>i</sub>-no hahaoya-ga [Hanako-ga t<sub>i</sub> aisiteiru to]  
 who-Acc HIS mother-Acc Hanako-Nom love that  
 itta no]  
 said Q  
 “Whom, his mother said that Hanako loves?”

The grammaticality difference between (51a) and (51b) indicates, Yoshimura argues, that unlike in Hindi (Mahajan 1989), long-distance scrambling in Japanese can also be A-movement.<sup>30,31,32</sup>

## 6.2 Anaphor binding

Saito (1992), however, argues that long-distance scrambling cannot be A-movement, on the basis of anaphor binding data.<sup>33</sup> Let us observe the examples from Saito (1992: 76). In (52a), the anaphor *otagai* “each other” is not bound, and therefore, the sentence is ill-formed. In (52b), the embedded object *karera* “they” is scrambled long-distance to the sentence-initial position. (52b), however, remains ill-formed.

- (52) a. \*Masao-ga otagai<sub>i</sub>-no sensei-ni [Hanako-ga karera<sub>i</sub>-o  
Masao-Nom each other’s teacher-Dat Hanako-Nom they-Acc  
hihansita to] itta  
criticized that told  
“Masao told each other’s teacher that Hanako criticized them”
- b. \*Karera<sub>i</sub>-o [Masao-ga otagai<sub>i</sub>-no sensei-ni [Hanako-ga t<sub>i</sub>  
they-Acc Masao-Nom each other’s teacher-Dat Hanako-nom  
hihansita to] itta ]  
criticized that told  
“Them, Masao told each other’s teacher that Hanako criticized”

If long-distance scrambling can be A-movement just like clause-internal scrambling in (41b), we expect (52b) to be well-formed too. Saito (1992), therefore, argues that long-distance scrambling cannot be A-movement.

## 6.3 Additional differences

### 6.3.1 Quantifier scope relations

Tada (1990, 1993) observes that long-distance scrambling does not change scope relations as opposed to clause-internal scrambling. Kuroda (1970) and Hoji (1985, 1987) note that clause-internal scrambling changes scope relations.<sup>34</sup> The relevant examples are given in (53). (53b) involves scrambling. (53c) is an LF representation of (53b) after Q-raising.

- (53) a. Dareka-ga daremo-o aisite iru  
someone-Nom everyone-Acc love  
“Someone loves everyone”
- b. Daremo<sub>i</sub>-o [dareka-ga t<sub>i</sub> aisite iru]  
everyone-Acc someone-Nom love  
“Everyone, someone loves”
- c. [Dareka<sub>j</sub>-ga [daremo<sub>i</sub>-o [t<sub>j</sub> t<sub>i</sub> aisite iru]]]

(53a) is unambiguous: only *dareka* “someone” can take wide scope.<sup>35</sup> Lasnik and Saito (1992) accounts for the unambiguity proposing the rigidity condition

on quantifier scope. The condition states that  $Q_i$  cannot take wide scope over  $Q_j$  if  $t_i$  is c-commanded by  $t_j$ , where  $t_i$  and  $t_j$  are variables. (53b) is, however, ambiguous.

Murasugi and Saito (1992) argue that if scrambling is necessarily A'-movement, the ambiguity of (53b) constitutes a counterexample to Lasnik and Saito's rigidity condition. The trace left by scrambling in the object position is asymmetrically c-commanded by the trace left by Q-raising in the subject position as illustrated in (53c). Given these variables, the rigidity condition incorrectly predicts that the subject QNP must take wide scope. They argue that if scrambling can be A-movement, since the trace left by A-scrambling is not a variable, it is irrelevant for the rigidity condition. The ambiguity of (53b), therefore, does not constitute a counterexample to the rigidity condition.

Murasugi and Saito (1992), moreover, argue that if long-distance scrambling is necessarily A'-movement, we expect no quantifier scope change by long-distance scrambling. Tada (1990, 1993) indeed observes that neither (54a) nor (54b) is ambiguous. In (54b), the embedded object is scrambled long-distance to sentence-initial position.

- (54) a. Dareka-ga [John-ga daremo-o aisiteiru to] itta  
 someone-Nom John-Nom everyone-Acc love that said  
 "Someone said John loves everyone"  
 b. Daremo<sub>i</sub>-o [dareka-ga [John-ga t<sub>i</sub> aisiteiru to] itta ]  
 everyone-Acc someone-Nom John-Nom love that said  
 "Everyone, someone said that John loves"

The unambiguity of (54b) indicates that long-distance scrambling is A'-movement.

### 6.3.2 Licensing NQs

Déprez (1989) observes that when an object phrase is scrambled long-distance, its NQ can occur within the embedded sentence in all the positions in which the object can be scrambled but cannot occur in any position in the matrix sentence. As noted in section 2.3, a trace left by clause-internal scrambling can license an NQ. The relevant example is given in (55).

- (55) Hon<sub>i</sub>-o [gakusei-ga t<sub>i</sub> nisatu katta]  
 book-Acc student-Nom 2 bought  
 "A student bought two books"

Sportiche (1988: 436) observes that floating quantifiers can modify every kind of empty category except intermediate traces created by WH-movement. Given that, Déprez (1989) examines whether traces created by scrambling can license QNPs. Déprez's (1989: 182) example is cited in (56), where the symbol = is used to mark the positions in which an object NQ such as *ni-satu* "two volumes" can occur and \* to mark the position in which an object NQ cannot occur.

- (56) Hon<sub>i</sub>-o [John-ga \* Mary-ni \* kossorito [= Peter-ga = t<sub>i</sub> = katta  
 book-Acc John-Nom Mary-Dat quietly Peter-Nom bought  
 to] itta]  
 that told  
 “John told Mary quietly that Peter bought books”

(56) shows that an object QNP can occur in possible landing sites for clause-internal scrambling but not in possible landing sites for long-distance scrambling. Déprez (1989) argues that her observation, therefore, supports the hypothesis that long-distance scrambling cannot be A-movement.

In this section, we observed that long-distance scrambling behaves somewhat differently from clause-internal scrambling. In addition to what we examined, Tada (1990, 1993) discusses adjunct extraction and A. Watanabe (1992) and Saito (1994a, 1994b) discuss an additional WH effect, and they demonstrate the different behavior of clause-internal scrambling and long-distance scrambling. The data suggest that long-distance scrambling is A'-movement. It remedies WCO, however, just like clause-internal scrambling.

## 7 VP-Scrambling

We observed in section 6 that clause-internal scrambling and long-distance scrambling behave differently. Note, however, that all the examples we observed so far involve scrambling to the sentence-initial position. As noted in section 3.2, VP is also a possible scrambling site. We explore the nature of VP-scrambling in this section.<sup>36</sup>

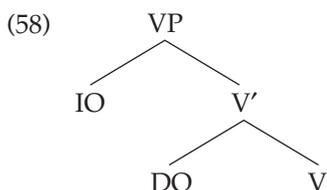
### 7.1 VP-internal structure

Before we discuss VP scrambling, however, we must examine the VP internal structure in Japanese. In section 1, we observed that the basic word order in Japanese is SOV and the OSV order is derived by movement. In this section, we consider the order of the indirect object and the direct object.<sup>37</sup> Hoji (1985, 1987) argues that the basic word order of Japanese is as follows.

- (57) Subject – (adjunct) – Indirect Object – Direct Object – Verb

#### 7.1.1 Weak crossover

Hoji (1985, 1987) argues that the WCO phenomenon indicates that the indirect object (IO) position is higher than the direct object (DO) position as illustrated in (58).<sup>38</sup>



Let us observe the examples cited from Hoji (1987: 178) in (59). In (59a), an empty category  $e_i$ , which is coindexed with the object WH, cannot have a bound variable interpretation. (59b) indicates that when the direct object WH precedes the indirect object,  $e_j$  can have a bound variable interpretation. If in (59b), but not in (59a), the direct object c-commands the indirect object, we can account for the ill-formedness of (59a) in terms of WCO.

- (59) a. \*Kimi-wa [[pro<sub>i</sub> e<sub>j</sub> tukutta] kodomo<sub>i</sub>]-ni [dono ningyoo]<sub>j</sub>-o ageta no  
 you-Top made child-to which doll-Acc gave Q  
 "You gave (it) to the child who made which doll?"
- b. Kimi-wa [dono ningyoo]<sub>j</sub>-o [[pro<sub>i</sub> e<sub>j</sub> tukutta] kodomo<sub>i</sub>]-ni ageta no  
 you-Top which doll-Acc made child-to gave Q  
 "You, which doll, gave to the child who made?"

Hoji, therefore, concludes that the indirect object is higher than the direct object position in (59a) as illustrated in (58), and (59b) is derived by movement. It follows that the basic order is S–IO–DO–V.

### 7.1.2 Quantifier scope

Hoji (1985, 1987) also appeals to the quantifier scope interpretation to argue for (58). As was noted in section 6.3.1, Kuroda (1970) observes that clause-internal scrambling changes scope relation. Kuno (1973) observes a similar phenomenon. Let us observe Kuno's (1973: 360) examples.

- (60) a. Sannin-no onna-ga hutari-no otoko-o semeta  
 3 (people) women-Nom 2 (people) men-Acc blamed  
 "Three women blamed two men"
- b. [Hutari-no otoko]<sub>i</sub>-o [sannin-no onna-ga t<sub>i</sub> semeta]  
 2 people men-Acc 3 people women-Nom blamed  
 "Two men, three women blamed"

In (60a), only the subject QNP can take wide scope with respect to the other QNP; in (60b), on the other hand, either the subject QNP or the object QNP can take wide scope with respect to the other.

Given Kuroda's (1970) as well as Kuno's (1973) observation and Saito's (1985) hypothesis that the OSV order derives by movement, Hoji (1987: 182) states:

- (61) a. When two quantified NPs are in their D-structure position at S-structure, the quantified NP that c-commands the other takes wide scope with respect to the other.  
 b. When a quantified NP is preposed over another quantified NP, the scope interpretation is ambiguous.

Hoji (1987: 183) considers (62), where the indirect object QNP and the direct object QNP interact. (62a) displays IO–DO order and (62b) displays DO–IO order.

- (62) a. John-ga sannin-no onna-ni hutari-no otoko-o syookaisita  
 John-Nom 3 woman-Dat 2 men-Acc introduced  
 “John introduced, to three women, two men”  
 b. John-ga hutari-no otoko-o sannin-no onna-ni syookaisita  
 John-Nom 2 men-Acc 3 women-Dat introduced  
 “John introduced two men to three women”

He observes that while the indirect object unambiguously takes wide scope over the direct object in (62a), either the indirect object or the direct object can take wide scope over the other in (62b).<sup>39</sup> Hoji, therefore, argues that the indirect object c-commands the direct object at the underlying structure but not vice versa.

## 7.2 Short-distance VP-scrambling

Given that the basic word order is S–IO–DO–V, let us examine the nature of VP-scrambling. We begin with short-distance VP-scrambling, which we call “S(hort)-scrambling,” adopting the term from Tada (1993: 12). Let us also call clause-internal scrambling to the sentence-initial position “M(iddle)-scrambling” and long-distance scrambling to the sentence-initial position “L(ong)-scrambling” as in Tada (1993: 12) for ease of exposition.

### 7.2.1 VP-scrambling as A-movement

Tada (1990, 1993) observes that S-scrambling differs from M-scrambling and L-scrambling in that only the first remedies an SCO violation. Recall that A-movement neutralizes an SCO violation. Let us observe (63), (64), and (65). (63a), (64a), and (65a) exhibit an SCO effect: WH-in-situ is c-commanded by a coindexed pronoun. The (b) examples of (63–5) involve S-scrambling, M-scrambling, and L-scrambling, respectively.

- (63) a. \*Taroo-ga soitu<sub>i</sub>-ni dare<sub>i</sub>-no sensei-o syookaisita no  
 Taro-Nom HE-Dat whose teacher-Acc introduced Q  
 “Taro introduced, to him, whose teacher?”

- b. Taroo-ga [dare<sub>i</sub>-no sensei]<sub>j</sub>-o [soitu<sub>i</sub>-ni t<sub>j</sub> syookaisita] no  
Taro-Nom whose teacher-Acc HE-Dat introduced Q  
“Taro introduced whose teacher to him?”
- (64) a. \*Soitu<sub>i</sub>-ga Hanako-ni dare<sub>i</sub>-no sensei-o syookaisita no  
HE-Nom Hanako-Dat whose teacher-Acc introduced Q  
“He introduced, to him, whose teacher?”  
b. \*[Dare<sub>i</sub>-no sensei]<sub>j</sub>-o [soitu<sub>i</sub>-ga Hanako-ni t<sub>j</sub> syookaisita no]  
whose teacher-Acc HE-Nom Hanako-Dat introduced Q  
“He introduced whose teacher to Hanako?”
- (65) a. \*Taroo-ga soitu<sub>i</sub>-ni [Hanako-ga dare<sub>i</sub>-no sensei-o  
Taro-Nom HE-Dat Hanako-Nom whose teacher-Acc  
syookaisita to] itta no  
introduced that told Q  
“Taro told him that Hanako introduced whose teacher?”  
b. \*[Dare<sub>i</sub>-no sensei]<sub>j</sub>-o [Taroo-ga soitu<sub>i</sub>-ni [Hanako-ga t<sub>j</sub>  
whose teacher-Acc Taro-Nom HE-Dat Hanako-Nom  
syookaisita to] itta no]  
introduced that told Q  
“Whose teacher, Taro told him that Hanako introduced?”

Only (63b) is well-formed. It follows that only S-scrambling remedies an SCO violation.

Moreover, Tada and Saito (1991) and Saito (1994b) argue that S-scrambling is necessarily A-movement, on the basis of examples such as (66).

- (66) a. Masao-ga [Taroo to Hanako]<sub>i</sub>-ni otagai<sub>i</sub>-o syookaisita  
Masao-Nom Taro and Hanako-Dat each other-Acc syookaisita  
“Masao introduced, to Taro and Hanako, each other”  
b. \*Masao-ga otagai<sub>i</sub>-o [Taroo to Hanako]<sub>i</sub>-ni t<sub>i</sub> syookaisita  
Masao-Nom each other-Acc Taro and Hanako-Dat introduced  
“Masao introduced each other to Taro and Hanako”

In (66b), the direct object is scrambled over the indirect object. Tada and Saito (1991) and Saito (1994b) compare (66b) and (67b).

- (67) a. [Taroo to Hanako]<sub>i</sub>-ga Masao-ni otagai<sub>i</sub>-o syookaisita  
Taro and Hanako-Nom Masao-Dat each other-Acc introduced  
“Taro and Hanako introduced, to Masao, each other”  
b. ?Otagai<sub>i</sub>-o [[Taroo to Hanako]<sub>i</sub>-ga Masao-ni t<sub>i</sub>  
each other-Acc Taro and Hanako-Nom Masao-Dat  
syookaisita]  
introduced  
“Each other, Taro and Hanako introduced to Masao”

Note first that the trace left by scrambling is A-bound in both (66b) and (67b). Tada and Saito (1991) and Saito (1994b) argue that the well-formedness of (67b) indicates that the ill-formedness of (66b) is not due to the fact that the trace is A-bound.

Tada and Saito (1991) and Saito (1994b) account for the ill-formedness of (66b) in terms of a Condition C violation (N. Chomsky 1981a): the scrambled phrase A-binds a coindexed referential expression. This amounts to saying that S-scrambling must be A-movement.<sup>40</sup> If S-scrambling can be A'-movement, we expect (66b) to have the same grammaticality as (67b).

### 7.2.2 Against short-distance VP-scrambling (S-scrambling)

Miyagawa (1997a), on the other hand, argues that both IO-DO order and DO-IO order are base-generated in Japanese.<sup>41</sup> His argument is based upon Rizzi's (1986) Chain Condition (see also Déprez 1989 and Koizumi 1993, 1995).<sup>42</sup> First, let us observe (68), cited from Miyagawa (1997a: 4). Both (68a) and (68b) involve M-scrambling.

- (68) a. [John-to Mary]<sub>i</sub>-o [otagai<sub>i</sub>-no sensei-ga t<sub>i</sub> mita]  
 John and Mary-Acc each other's teacher-Nom saw  
 "John and Mary, each other's teacher saw"  
 b. ???[John-to Mary]<sub>i</sub>-o [otagai<sub>i</sub>-ga t<sub>i</sub> mita]  
 John and Mary-Acc each other-Nom saw  
 "John and Mary, each other saw"

We observed that (68a) is well formed. And, based on that, Saito (1992), among others, argues that clause-internal scrambling can be A-movement. A question arises as to how we can account for (68b).

Miyagawa (1997a) argues that (68b) indicates that Japanese observes Rizzi's (1986) Chain Condition. Suppose that the examples in (68) involve A-movement. In (68a), the closest binder for the trace is *John-to Mary* and the chain is well-formed. In (68b), on the other hand, there exists a closer binder, namely *otagai*, between the antecedent and its trace. This yields a Chain Condition violation. As is also noted in Miyagawa, if (68b) involves A'-movement, (68b) violates Condition A of Binding Theory (N. Chomsky 1981a).

Given that, let us now observe (69), cited from Miyagawa (1997a: 5).

- (69) (?)John-ga [Hanako-to Mary]<sub>i</sub>-o (paatii-de) otagai<sub>i</sub>-ni  
 John-Nom Hanako and Mary-Acc (party-at) each other-Dat  
 syookaisita  
 introduced  
 "John introduced Hanako and Mary to each other at the party"

Miyagawa argues that if (69) involves A-movement, we expect to find the same Chain Condition violation as in (68b). (69) is, however, well-formed. Given that, Miyagawa argues that there should be no movement involved in (69), and therefore, both IO-DO and DO-IO are base-generated in Japanese.

### 7.3 Long-distance VP-scrambling

Let us now observe long-distance VP-scrambling. First of all, recall that as noted in section 3.2, Saito (1985: 267 fn 34) observes that long-distance VP-scrambling from a control clause is perfectly grammatical, while long-distance VP-scrambling from a finite clause results in marginal grammaticality. The relevant examples are repeated in (70).

- (70) a. John-ga [sono hon]<sub>i</sub>-o minna-ni [PRO t<sub>i</sub> yomu  
 John-Nom that book-Acc everyone-Dat read  
 yoo(ni)] itta  
 to told  
 "John, that book, told everyone to read"
- b. ??John-ga [sono hon]<sub>i</sub>-o minna-ni [Mary-ga t<sub>i</sub>  
 John-Nom that book-Acc everyone-Dat Mary-Nom  
 motte iru to] itta (koto)  
 have that told  
 "John, that book, told everyone that Mary has"

Tada and Saito (1991) and Saito (1994b) argue that the marginal status in (70b) supports their hypothesis that VP-scrambling, short-distance and long-distance, must be A-movement. A-movement across a CP boundary is prohibited (N. Chomsky 1986b and Lasnik and Saito 1992, among others).<sup>43</sup> They argue that (70b) results in marginal grammaticality (see also Fukui 1992).

Moreover, Nemoto (1993) observes that long-distance VP-scrambling from a control clause remedies SCO as illustrated in (71b).

- (71) a. \*Taroo-wa soitu<sub>i</sub>-ni [PRO dare<sub>i</sub>-no sensei-o naguru yooni]  
 Taro-Top HE-Dat whose teacher-Acc hit to  
 itta no  
 told Q  
 "Taro told him to hit whose teacher?"
- b. Taroo-wa [dare<sub>i</sub>-no sensei]<sub>j</sub>-o soitu<sub>i</sub>-ni [PRO t<sub>j</sub> naguru yooni]  
 Taro-Top whose teacher-Acc HE-Dat hit to  
 itta no  
 told Q  
 "Taro, whose teacher, told him to hit?"

The well-formedness of (71b) suggests that long-distance VP-scrambling can be A-movement.

Nemoto (1993), on the other hand, observes that long-distance scrambling from a control clause to the sentence-initial position does not remedy a SCO violation.

- (72) a. \*Soitu<sub>i</sub>-ga Taroo-ni [PRO dare<sub>i</sub>-no sensei-o naguru yooni]  
 HE-Nom Taro-Dat whose teacher-Acc hit to  
 itta no  
 told Q  
 "He told Taro to hit whose teacher?"
- b. \*[Dare<sub>i</sub>-no sensei]<sub>j</sub>-o [soitu<sub>i</sub>-ga Taroo-ni [PRO t<sub>j</sub> naguru yooni]  
 whose teacher-Acc HE-Nom Taro-Dat hit to  
 itta no]  
 told Q  
 "Whose teacher, he told Taro to hit?"

Recall that we observed that S-scrambling remedies an SCO violation but M-scrambling does not. It appears, therefore, that the landing position VP is a key for scrambling to be A-movement.

Nemoto (1993), however, argues that long-distance scrambling from a control clause can be A'-movement. The relevant examples are given in (73).

- (73) a. John<sub>i</sub>-ga Mary-ni [PRO kare<sub>i</sub>-o homeru yooni] tanonda  
 John-Nom Mary-Dat he-Acc praise to asked  
 "John asked Mary to praise him"
- b. John<sub>i</sub>-ga [kare<sub>i</sub>-o [Mary-ni [PRO t<sub>i</sub> homeru yooni] tanonda]]  
 John-Nom he-Acc Mary-Dat praise to asked  
 "John, him, asked Mary to praise"

Nemoto (1993) argues that if VP-scrambling is necessarily A-movement as argued in Tada and Saito (1991) and Saito (1994b), (73b) should be ruled out due to a Condition B violation (N. Chomsky 1981a), which prohibits a pronoun from being locally A-bound.<sup>44</sup>

Let us next consider (74). (74b) involves long-distance VP-scrambling. The anaphor in (74a) is not bound: the ill-formedness of (74a) is accounted for in terms of Condition A (N. Chomsky 1981a). The well-formedness of (74b) indicates that the scrambled phrase A-binds the anaphor. This is expected if long-distance VP-scrambling can be A-movement.

- (74) a. \*Taroo-ga otagai<sub>i</sub>-ni [PRO [Hanako-to Masao]<sub>i</sub>-o  
 Taro-Nom each other-Dat Hanako and Masao-Acc  
 hihansuru yoo(ni)] itta  
 criticized to told  
 "Taro told each other to criticize Hanako and Masao"
- b. ?Taroo-ga [Hanako-to Masao]<sub>i</sub>-o otagai<sub>i</sub>-ni [PRO t<sub>i</sub>  
 Taro-Nom Hanako and Masao-Acc each other-Dat  
 hihansuru yoo(ni)] itta  
 criticize to told  
 "Taro, Hanako and Masao, told each other to criticize"

Recall that in section 7.2.2, we observed Miyagawa's (1997a) example, which is repeated as (75).

- (75) (?)John-ga [Hanako-to Mary]<sub>i</sub>-o (paatii-de) otagai-ni  
 John-Nom Hanako and Mary-Acc (party-at) each other-Dat  
 syookaisita  
 introduced  
 "John introduced Hanako and Mary to each other at the party"

Miyagawa (1997a) argues that the well-formedness of (75) suggests that there is no movement involved in (75), on the basis of Rizzi's (1986) Chain Condition. Interestingly, however, it appears that (74b) has the same grammaticality as (75). If movement is involved in (74b) as we assume, the well-formedness of (74b) constitutes a counterexample to Miyagawa's (1997a) argument.<sup>45</sup>

In this section, we explored the nature of VP-scrambling. Both short-distance VP-scrambling (S-scrambling) and long-distance VP-scrambling remedy an SCO violation. VP-scrambling is the only kind of scrambling which remedies an SCO violation. VP-scrambling seems to have properties of A-movement. Tada and Saito (1991) and Saito (1994b), moreover, argue that VP-scrambling is necessarily A-movement. Miyagawa (1997a), on the contrary, questions the existence of S-scrambling itself.

## 8 Concluding Remarks and Future Perspectives

In this chapter, we first observed that flexible word order in Japanese is due to scrambling. We then examined the nature of scrambling. The data we observed demonstrate that scrambling exhibits some properties of traditional A-movement such as Passive and Raising in English and some properties of traditional A'-movement such as WH-movement in English. The nature of scrambling is, however, not yet clear at all. I conclude this chapter with three questions regarding scrambling.

First, we attempted to categorize scrambling within the traditional A/A' distinction using diagnostics such as anaphor binding and WCO. A question arises as to whether these diagnostics distinguish between Case-related movement (so-called A-movement) and nonCase-related movement (so-called A'-movement). For example, Weibelhuth (1989, 1992) and Saito (1989, 1992, 1994b) argue that whether or not movement establishes an operator-variable relation at LF is an important distinction. And J. Abe (1993) proposes to analyze scrambling without A/A' distinction.

Second, we observed that both the landing position, whether the sentence-initial position or VP position, and the distance of movement, whether or not movement crosses a clause boundary, are important factors when we discuss

the nature of scrambling. Why is this the case? See Saito (1994b), Murasugi and Saito (1995), and Fukui and Saito (1998) for the theory of adjunction in conjunction with the nature of scrambling.

Finally, it is not clear at all why scrambling, which is considered to be optional movement, exists in some languages. Under N. Chomsky's (1995a, 1995b) Minimalist Program, movement of  $\alpha$  is possible only when it is necessary for licensing morphological features of  $\alpha$  such as Case or [+WH]. Moreover, a question arises as to whether all types of scrambling are optional. Is any scrambling Case-related, for example? See Tada (1993), Fukui (1993), Ura (1996), Takano (1996), Miyagawa (1997a), and Fukui and Saito (1998), among others, for interesting discussion.

## NOTES

- \* I am grateful to Mamoru Saito for his class lectures on scrambling at the University of Connecticut while I was a graduate student there. I would also like to thank Shigeru Miyagawa for making unpublished material available to me. Special thanks go to Thomas Moran and Keiichi Sekiyama for editorial help. I would like to dedicate this chapter to Thomas Moran as a token of my gratitude for his extended help over many years. Needless to say, all shortcomings are mine.
- 1 It is common practice to add *koto* "the fact that" to some of the Japanese examples to avoid the unnaturalness resulting from the lack of topic in a matrix sentence. The purpose of English translations in quotes is to help readers understand the rough structure of Japanese examples, and they are not intended to be *grammatical* English sentences.
  - 2 Prior to Hale (1980), it was assumed that flexible word order is due to a transformation rule. See Muraki (1974) and S.-I. Harada (1977), among others.
  - 3 See Radford (1988: 120–2) for discussion. He states the following constraint.
    - (i) NO CROSSING BRANCHES Constraint (Radford 1988: 121) If one node X precedes another node Y, then X and all descendants of X must precede Y and all descendants of Y (A is a *descendant* of B iff A is dominated by B).
  - 4 Hoji (1985, 1987) argues that Japanese phrase structure is binary. See section 7.1.
  - 5 See also Kuno (1987), among others, who argues that precedence plays some role in Binding Theory.
  - 6 "C-command" is defined as follows: X c-commands Y if neither X nor Y dominates the other and the first branching node dominating X dominates Y. (Reinhart 1976: 32)
  - 7 The rough meaning of Japanese examples is given in English within quotes. These English sentences are not necessarily grammatical.
  - 8 A "variable" means a trace left by operator movement such as WH-movement and LF-movement.

- 9 Hoji (1991a) reports that this characteristic of *kare* “he” is discussed in Saito (1981), C. Kitagawa (1981), and S. Nakayama (1982), among others.
- 10 For more discussion on quantifier floating, see Hoji (1985), Ueda (1990), A. Watanabe (1993), Fujita (1994), Ura (1996), Miyagawa (1989b, 1997a), and references cited there.
- 11 See Saito (1985) and Tsujimura (1996b) for apparent counterexamples for this hypothesis.
- 12 Takezawa (1987: 129) argues that the *-ga* marked phrase can be preposed long-distance in nonaccusative sentences. His examples are cited in (i).
- (i) a. John-ga [Mary-ni  
John-Nom Mary-Dat  
nihongo-ga yomeru to]  
Japanese-Nom can read that  
omotteiru  
thinking  
“John thinks Mary can read  
Japanese”
- b. Nihongo<sub>i</sub>-ga [John-ga  
Japanese-Nom John-Nom  
[Mary-ni <sub>t<sub>i</sub></sub> yomeru to]  
Mary-Dat can read that  
omotteiru]  
thinking  
“Japanese, John thinks Mary  
can read”
- 13 See also Kuno’s (1980) anti-ambiguity device and Saito’s (1985) discussion about it.
- 14 Saito (1985) proposes to relate the nonscramblability of the subject to the Case system in Japanese. See also Saito (1982).
- 15 It is not clear whether *yoo(ni)* is a complementizer, nor is it clear whether a control clause is CP or IP. See Nemoto (1991, 1993) for some relevant discussion.
- 16 See Fukui (1992), Nemoto (1993), Saito (1994b), and Fukui and Saito (1998) for relevant discussion.
- 17 See J. Abe (1993), who argues that it is possible to account for the characteristics of scrambling without A/A’ distinction.
- 18 See also D. Takahashi (1994) for discussion on scrambling of WH-phrases.
- 19 Koopman and Sportiche (1991) hypothesizes that the subject is adjoined to VP.
- 20 See also Takezawa (1987), Ueda (1990), and Nemoto (1993), among others, for discussion about whether the subject in Japanese stays at the Spec of VP.
- 21 Kuroda (1988) also hypothesizes that Japanese IP has multiple Specs, and therefore, can accommodate multiple subjects and multiple scrambling.
- 22 See also N. Chomsky (1995b) and Ura (1996) for the more recent *agr-less* hypothesis.
- 23 See Yang (1983) and Y. Kitagawa (1986), among others, for discussion on the nature of *otagai* “each other.” See also Fukuhara (1993) for discussion on anaphor binding under Case checking theory.
- 24 Takano (1996) argues, however, that this does not mean that the scrambled object is in a Case position, since scrambled PPs can bind anaphors.
- 25 Since Hoji’s (1985, 1987) examples are with empty categories, he accounts for this paradox by appealing to “parasitic gaps.” He argues that *e* in (43b) need not be a null pronoun but can be a parasitic gap, which is licensed by A’-movement. In this way, the well-formedness of (43b) can be accounted for under the hypothesis that scrambling is A’-movement. For discussion of parasitic gaps,

- see also Engdahl (1983), Taraldsen (1981), and N. Chomsky (1982, 1986a), among others.
- 26 I will use upper-case "HIS," etc. to mark the relevant *so* pronoun, such as *soitu*, for ease of exposition.
- 27 For the nature of *zibun-zisin*, see Y. Kitagawa (1986) and Katada (1991), among others.
- 28 See Yoshimura (1992) for a different conclusion.
- 29 See Tada (1990, 1993) for a different judgment.
- 30 Cho (1994) attributes the difference between Hindi on the one hand and Japanese/Korean on the other to the fact that in Hindi, overt WH-movement is obligatory in complex sentences, whereas it is optional in Japanese/Korean. Overt WH-movement is optional in simplex sentences in Hindi.
- 31 See Nemoto (1991, 1993), Yoshimura (1992), and Saito (1992) for more discussion on long-distance A-movement in Japanese.
- 32 Nemoto (1995) questions the relevance of WCO data as evidence for scrambling to be A-movement. She points out that Lasnik and Stowell (1991) show that in certain A'-movement such as *tough*, parasitic gaps, and topicalization, expected WCO effects do not show up.
- 33 See Yoshimura (1992) for a different judgment.
- 34 See also Kuno (1973), Huang (1982), Lasnik and Saito (1992), J. Abe (1993), and Y. Kitagawa (1994), among others.
- 35 This is different from its equivalent in English. It is known that *someone loves everyone* is ambiguous (May 1977, among others). See Lasnik and Saito (1992) for detailed discussion.
- 36 Ura (1996) and Takano (1996) discuss VP-scrambling as object-shift.
- 37 See also Y. Kitagawa (1994), Ura (1996), Takano (1996), and Miyagawa (1997a) for relevant discussion.
- 38 See also Y. Kitagawa (1994) for relevant discussion. He observes that a WCO violation in double object constructions in Japanese is unexpectedly milder than the subject-object counterpart.
- 39 See Kuroda (1993b), Y. Kitagawa (1994), and Miyagawa (1997a) for different observation.
- 40 See Tada (1993) for differences between S-scrambling and *pure* A-movement.
- 41 Miyagawa (1997a) argues that when the order is IO-DO, *-ni* is a dative Case marker, whereas when the order is DO-IO, *-ni* is a postposition (to). See also A. Watanabe (1995).
- 42 Chain Condition (Rizzi 1986: 66)
- $C = (\alpha_1 \dots \alpha_n)$  is a chain iff, for  $1 \leq i < n$ ,  $\alpha_i$  is the local binder of  $\alpha_{i+1}$
- See also N. Chomsky (1981a: 333).
- 43 See also Yoshimura (1992) and Nemoto (1991) for relevant discussion.
- 44 Saito (1994b) argues that VP-scrambling can be undone at LF, and therefore, there is no Condition B violation in (73b).
- 45 Hiroto Hoshi (personal communication) pointed out to me that Y. Matsumoto (1996) has an interesting discussion on the structure of Control constructions in Japanese which might save Miyagawa's (1997a) argument.