

# Studies in Japanese and Korean Linguistics

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# Semantic and Discourse Effects of Scrambling\*

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## 1. Introduction

The correspondence between syntactic structure and semantic interpretation does not seem very rigid in Japanese and Korean. One reason for this is that these languages have a unique movement rule called scrambling. This rule preposes a constituent to the beginning of a sentence freely and optionally, as the Japanese examples in (1) illustrate.

- (1) a. [<sub>TP</sub> Taroo-ga        sono    hon -o        katta] (koto)  
              -NOM    that    book-ACC    bought fact  
              ‘Taroo bought that book’
- b. [<sub>TP</sub> Sono    hon -o<sub>i</sub> [<sub>TP</sub> Taroo-ga    t<sub>i</sub>        katta]] (koto)

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that    book-ACC    -NOM        bought fact

I show in this paper that scrambling is “optional” not only in its application but also in its semantic and discourse effects. That is, it can contribute to the semantic and discourse interpretation of a sentence but it need not. When it does not, a mismatch between the syntactic form of a sentence and its interpretation arises. In the course of the discussion, I try to pinpoint when and how scrambling can have semantic and discourse effects. The basic idea that is pursued here is that it contributes to interpretation only when it mimics other semantically significant movement operations such as quantifier raising and topicalization. This hypothesis has already been discussed in various forms, notably by Abe (1993) in relation to quantifier raising. Then, I consider the general mechanism for the interpretation of movement and suggest a formal analysis that captures this unique property of scrambling.

In the following section, I discuss examples of Japanese *wh*-construction and show that scrambling need not be represented in semantics. Then, I consider the effects of scrambling on quantifier scope. After presenting Kuroda’s (1970) classical paradigm that indicates that scrambling need not but may create a new scope relation, I discuss Abe’s (1983) hypothesis that a new scope relation obtains when scrambling mimics quantifier raising. Section 3 concerns topicalization. I first introduce Kuno’s (1973) observation that only a sentence-initial *wa*-phrase can be construed as a thematic topic, and then examine the interpretation of scrambled *wa*-phrases. Based on this, I argue that scrambling can optionally count as topicalization.<sup>86</sup> In Section 4, I present an interpretive mechanism for scrambling that accounts for the data in the preceding sections. Section 5 concludes the paper.

## 2. Optional Semantic Effects of Scrambling

### 2.1. Scrambling as Semantically Vacuous Movement

The fact that scrambling need not be represented in the semantic form of a sentence can probably be best illustrated with the *wh*-construction. Let us

<sup>86</sup>This is the discourse effect of scrambling that I consider in this paper. It is pointed out by Kuno (1978) and others that there is a tendency to present old information before new information within a sentence. Although scrambling obviously interacts with this, this type of discourse effect is not discussed here.

first consider the pair of examples in (2).<sup>87</sup>

- (2) a. [<sub>TP</sub> Hanako-ga [<sub>CP</sub> [<sub>TP</sub> dare-ga sono hon -o  
-NOM who-NOM that book-ACC  
katta] ka] siritagatteiru] (koto)  
bought Q want-to-know fact  
'[Hanako wants to know [Q [who bought that book]]]'  
= 'Hanako wants to know who bought that book'
- b. \*[<sub>TP</sub> Dare-ga [<sub>CP</sub> [<sub>TP</sub> Hanako-ga sono hon -o  
-NOM -NOM that book-ACC  
katta] ka] siritagatteiru] (koto)  
bought Q want-to-know fact  
'[Who wants to know [Q [Hanako bought that book]]]'

(2a) is straightforward. The embedded clause is a question, as indicated by the question marker *ka*, and the *wh*-phrase *dare* 'who' is contained within this question sentence. The example is interpreted as in (3), where the *wh*-phrase takes scope at the embedded clause.

(3) Hanako wants to know [[which x: x a person] x bought that book]

(2b), on the other hand, is totally ungrammatical. In this example, the *wh*-phrase *dare* 'who' belongs to the matrix clause and is not contained in the question sentence it should be interpreted with. The semantic form it induces simply does not make sense as shown in (4).

(4) x wants to know [[which x: x a person] Hanako bought that book]

We thus arrive at the following generalization, first discussed by Harada (1972):

(5) In order for a *wh*-phrase to be interpreted, it must be contained within the question CP (clause) where it takes scope.

The generalization in (5), not surprisingly, holds in English as well, as the examples in (6) indicate.

- (6) a. [<sub>CP</sub> Who<sub>i</sub> [<sub>TP</sub>  $t_i$  wonders [<sub>CP</sub> where<sub>j</sub> [<sub>TP</sub> he saw whom  $t_j$ ]]]]  
b. [<sub>CP</sub> Who<sub>i</sub> [<sub>TP</sub>  $t_i$  asked whom to find out [<sub>CP</sub> where<sub>j</sub> [<sub>TP</sub> he bought the book  $t_j$ ]]]]

(6a) contains three *wh*-phrases. As *wh*-movement locates *wh*-phrases in their scope positions, *who* takes matrix scope and *where* embedded scope. The third *wh*-phrase, which sits in the embedded object position, is contained within the matrix question sentence as well as the embedded question. Hence it can take either scope. When it takes matrix scope, the sentence is a matrix multiple *wh*-question and (7a) is a proper answer.

- (7) a. John wonders where he saw Mary, and Bill wonders where he saw Susan  
b. John wonders where he saw whom

On the other hand, when *whom* takes embedded scope, the matrix clause is a simple *wh*-question and (7b) is an appropriate answer. In (6b) also, *who* takes matrix scope and *where* embedded scope. But the third *wh*-phrase, *whom*, is in the object position of the matrix clause. As it is contained in the matrix question but not in the embedded question, it can take only matrix scope as predicted by (5). Thus, the answer to (6b) should have the form in (8).

- (8) John asked Mary, and Bill asked Susan, to find out where he bought the book

The generalization in (5) extends further to the examples in (9).

- (9) a. [<sub>CP</sub> Who<sub>i</sub> [<sub>TP</sub>  $t_i$  wonders [<sub>CP</sub> [which picture of whom]<sub>j</sub> [<sub>TP</sub> he saw  $t_j$ ]]]]  
b. ??[<sub>CP</sub> [Which picture of whom]<sub>j</sub> does [<sub>TP</sub> he wonder [<sub>CP</sub> who<sub>i</sub> [<sub>TP</sub>  $t_i$  saw  $t_j$ ]]]]

(9a) is discussed in detail in van Riemsdijk and Williams (1981). In the embedded clause, *which* moves to the initial position, carrying along *picture of whom*. This determines the scope of *which* but not of *whom*. The latter *wh*-phrase, being contained in both matrix and embedded questions, can take matrix or embedded scope. Thus, (10a-b) are both possible answers for this sentence.

- (10) a. John wonders which picture of Mary he saw, and Bill wonders

<sup>87</sup>In (2) and some examples that follow, the rough structure of the sentence is shown in single quotes instead of (or in addition to) the English translation.

which

picture of Susan he saw

b. John wonders which picture of whom he saw

In contrast, (9b) is unambiguous. The sentence is degraded because a *wh*-phrase is extracted out of a question. Yet, its interpretive property is clear. Since *whom* is not contained in the embedded clause, and it must take matrix scope as predicted by the generalization in (5). The answer must have the form in (11).

(11) He wonders who saw the high school picture of Mary

Having seen that (5) is well-motivated, let us now consider the Japanese examples in (12).

- (12) a. [TP Taroo-ga [CP [TP Hanako-ga dono hon -o  
-NOM -NOM which book-ACC  
katta] ka] siritagatteiru] (koto)  
bought Q want-to-know fact  
'[Taroo wants to know [Q [Hanako bought which book]]]'  
= 'Taroo wants to know which book Hanako bought'
- b. [TP Dono hon -o<sub>i</sub> [TP Taroo-ga [CP [TP Hanako-ga  $\bar{t}_i$   
which book-ACC -NOM -NOM  
katta] ka] siritagatteiru]] (koto)  
bought Q want-to-know fact  
'[Which book<sub>i</sub>, Taroo wants to know [Q [Hanako bought  $\bar{t}_i$ ]]]'

(12a) is straightforward. The *wh*-phrase *dono hon* 'which book' is contained within the embedded question and takes embedded scope. In (12b), on the other hand, the *wh*-phrase is scrambled out of the embedded question all the way to the initial position of the matrix clause. Interestingly, this example is grammatical and receives the same interpretation as (12a). But (5) predicts that this should be impossible because the *wh*-phrase is not contained within the embedded question.

Based on examples like (12b), I argued in Saito (1989) that scrambling can be semantically vacuous and can be ignored in interpretation. Given this, (12b), for example, can be interpreted as if scrambling did not take place, i.e., exactly as (12a), where the *wh*-phrase is contained in the embedded clause. The contrast between (9b) and (13b) shows that scrambling differs from *wh*-movement in this respect.

- (13) a. [TP Taroo-ga [CP [TP minna-ga [CP Hanako-ga dono  
-NOM all -NOM -NOM which  
hon -o katta to] omotteiru] ka]  
book-ACC bought that think Q  
siritagatteiru] (koto)  
want-to-know fact  
'[Taroo wants to know [Q [everyone thinks [that Hanako bought  
which book]]]]'  
= 'Taroo wants to know which book everyone thinks that Hanako  
bought'
- b. ? [TP [CP Hanako-ga dono hon -o katta to]<sub>i</sub>  
-NOM which book-ACC bought that  
[TP Taroo-ga [CP [TP minna-ga  $\bar{t}_i$  omotteiru] ka]  
-NOM all -NOM think Q  
siritagatteiru]] (koto)  
want-to-know fact  
'[[[That Hanako bought which book]<sub>i</sub>, Taroo wants to know [Q  
[everyone thinks  $\bar{t}_i$ ]]]'

(13a) is slightly more complex than (12a). The *wh*-phrase *dono hon* 'which book' is within the most deeply embedded CP and takes scope at the middle clause headed by *ka*. In (13b), the most deeply embedded CP is scrambled out of the middle clause. As a result, the *wh*-phrase is no longer contained in the question clause where it takes scope. The example is degraded like (9b), but clearly allows the interpretation of the *wh*-phrase with the embedded question sentence. And this is not surprising if scrambling can be ignored in interpretation. Note that (13b) parallels (9b) in configuration. In the latter, *wh*-movement locates *whom* outside the embedded question, and *whom* is not able to take embedded scope because of this. In (13b), on the other hand, scrambling locates *dono hon* 'which book' outside the embedded question. In this case, the *wh*-phrase can still be interpreted with the embedded clause. This contrast shows that *wh*-movement must feed into semantic interpretation but scrambling need not.

It was observed in this section that scrambling need not have semantic effects. This raises the possibility that scrambling is a stylistic rule that does not feed into interpretation at all. But I show in the following subsection that scrambling can affect the semantic interpretation of a sentence.

## 2.2. Scrambling as Quantifier Raising

Japanese is known to be a language with scope rigidity. Thus, the Japanese

(14b) only allows the wide scope construal of *dareka* ‘someone’ while the English (14a) is scopally ambiguous.<sup>88</sup>

- (14) a. Someone loves everyone  
 ‘There is a person that loves everyone’ ( $\exists > \forall$ )  
 ‘For everyone, there is a person that loves her/him’ ( $\forall > \exists$ )  
 b. *Dareka* -ga daremo -o aisiteiru  
 someone-NOM everyone-ACC love  
 ‘There is a person that loves everyone’ ( $\exists > \forall$ )

It is widely assumed since May (1977) that scope interpretation of quantifiers is achieved by the rule of quantifier raising (QR). This interpretive rule raises quantified phrases to their scope positions and creates the semantic form of the sentence. Suppose that QR raises *someone* and *everyone* in (14a) as in (15a).

- (15) a. [<sub>TP</sub> Someone<sub>i</sub> [<sub>TP</sub> everyone<sub>j</sub> [<sub>TP</sub> *t<sub>i</sub>* loves *t<sub>j</sub>*]]]  
 b. [ $\exists x$ : x a person] [ $\forall y$ : y a person] x loves y

Then, the sentence is interpreted as in (15b) with *someone* taking wide scope over *everyone*. On the other hand, if QR raises the quantified phrases as in (16a), we obtain the wide scope reading of *everyone* over *someone* as in (16b).

- (16) a. [<sub>TP</sub> Everyone<sub>j</sub> [<sub>TP</sub> someone<sub>i</sub> [<sub>TP</sub> *t<sub>i</sub>* loves *t<sub>j</sub>*]]]  
 b. [ $\forall y$ : y a person] [ $\exists x$ : x a person] x loves y

In Japanese, then, QR applies in a way that preserves the hierarchical relation of quantified phrases. In (14b), for example, *dareka* ‘someone’ is structurally higher than *daremo* ‘everyone’, as illustrated in (17a).

- (17) a. [<sub>TP</sub> *Dareka*-ga [<sub>VP</sub> daremo-o aisiteiru]]  
 b. [<sub>TP</sub> *Dareka*-ga<sub>i</sub> [<sub>TP</sub> daremo-o<sub>j</sub> [<sub>TP</sub> *t<sub>i</sub>* [<sub>VP</sub> *t<sub>j</sub>* aisiteiru]]]]]  
 c. [ $\exists x$ : x a person] [ $\forall y$ : y a person] x loves y

<sup>88</sup>This does not seem to be a clear-cut distinction between English and Japanese. First, some English speakers do find (14a) unambiguous. Second, scope rigidity is absolute for some Japanese speakers while it is only a matter of preference for others, including myself. What is important for the discussion here is that the wide scope reading of *dareka* ‘someone’ is at least clearly preferred in (14b).

If this relation has to be maintained in the semantic form, QR can only create the configuration in (17b). Thus, (14b) is construed as in (17c) with the wide scope reading of *dareka* ‘someone’.

It is noted in Kuroda (1970), however, that scrambling creates scope ambiguity. When the object is scrambled over the subject, either can take wide scope as shown in (18).

- (18) a. Daremo -o<sub>i</sub> dareka -ga *t<sub>i</sub>* aisiteiru  
 everyone-ACC someone-NOM love  
 ‘Someone loves everyone’ ( $\forall > \exists, \exists > \forall$ )  
 b. *Dareka* -o<sub>i</sub> daremo -ga *t<sub>i</sub>* aisiteiru  
 someone-ACC everyone-NOM love  
 ‘Everyone loves someone’ ( $\forall > \exists, \exists > \forall$ )

(18a) can have the reading, ‘for everyone, there is a person that loves her/him,’ with the scrambled object taking wide scope. (18b), on the other hand, can be interpreted as ‘for everyone, there is a person that she/he loves,’ with the subject taking wide scope over the scrambled object.

This state of affairs indicates that scrambling need not, but still can contribute to the interpretation of a sentence. Suppose that the scrambling in (18b) is ignored for the purpose of scope interpretation. Then, QR applies to (19a), the structure of (18b) without scrambling, and produces the representation in (19b).

- (19) a. [<sub>TP</sub> Daremo-ga [<sub>VP</sub> dareka-o aisiteiru]]  
 b. [<sub>TP</sub> Daremo-ga<sub>i</sub> [<sub>TP</sub> dareka-o<sub>j</sub> [<sub>TP</sub> *t<sub>i</sub>* [<sub>VP</sub> *t<sub>j</sub>* aisiteiru]]]]]  
 c. [ $\forall x$ : x a person] [ $\exists y$ : y a person] x loves y

This results in the wide scope construal of *daremo* ‘everyone’ for the example, as in (19c). For (18a), on the other hand, if scrambling can count for scope interpretation, QR can apply to the structure in (20a).

- (20) a. [<sub>TP</sub> Daremo-o<sub>i</sub> [<sub>TP</sub> dareka-ga [<sub>VP</sub> *t<sub>i</sub>* aisiteiru]]]]]  
 b. [<sub>TP</sub> Daremo-o<sub>i</sub> [<sub>TP</sub> dareka-ga<sub>j</sub> [<sub>TP</sub> *t<sub>j</sub>* [<sub>VP</sub> *t<sub>i</sub>* aisiteiru]]]]]  
 c. [ $\forall y$ : y a person] [ $\exists x$ : x a person] x loves y

In this case, *daremo* ‘everyone’ is already in a position to take scope. Thus, QR raises *dareka* ‘someone’ to a position below *daremo* as in (20b), so that the hierarchical relation of the two quantified phrases is preserved after its application. This yields the wide scope construal of *daremo* as in (20c).

Abe (1993) points out that the analysis above implies that scrambling in effect can serve as QR. This is so because it moves *daremo* ‘everyone’ in (20a) to its scope position exactly like QR. He further argues that scrambling can count as QR only when it creates a structure that can be derived by QR. To see this point, let us first consider (21), which illustrates the clause-bound property of QR.

(21) Someone thinks that John loves everyone

In this example, *someone* occupies the matrix subject position, and *everyone* is in the embedded clause. It can be interpreted as (22a), but not as (22b), where *everyone* takes scope over *someone*.

- (22) a.  $[\exists x: x \text{ a person}] x \text{ thinks [that } [\forall y: y \text{ a person}] x \text{ loves } y]$   
 b.  $[\forall y: y \text{ a person}] [\exists x: x \text{ a person}] x \text{ thinks [that } x \text{ loves } y]$

This shows that QR can create the structure in (23a) but not the one in (23b), which in turn implies that QR is clause-bound.

- (23) a.  $[_{TP} \text{Someone}_i [_{TP} t_i \text{ thinks [that } [_{TP} \text{everyone}_j [_{TP} \text{John loves } t_j]]]]]$   
 b.  $*[_{TP} \text{Everyone}_j [_{TP} \text{Someone}_i [_{TP} t_i \text{ thinks [that } [_{TP} \text{John loves } t_j]]]]]$

With this property of QR in mind, let us now turn to the following example of scrambling, discussed by Oka (1989) and Tada (1993):

- (24) a.  $[_{TP} \text{Dareka} \text{ -ga} [_{CP} [_{TP} \text{Taroo-ga} \text{ daremo} \text{ -o} \text{ aisite iru}] \text{ to}] \text{ itta}] \text{ (koto)}$   
 someone-NOM -NOM everyone-ACC love  
 that said fact  
 ‘Someone said that Taroo loves everyone’ ( $\exists > \forall$ )  
 b.  $[_{TP} \text{Daremo} \text{ -o}_i [_{TP} \text{dareka} \text{ -ga} [_{CP} [_{TP} \text{Taroo-ga} \text{ } t_i \text{ aisiteiru}] \text{ to}] \text{ itta}]] \text{ (koto)}$   
 everyone-ACC someone-NOM -NOM  
 love that said fact  
 ‘Someone said that Taroo loves everyone’ ( $\exists > \forall$ )

(24a) is the Japanese counterpart of (21) and *daremo* ‘everyone’ cannot take scope over *dareka* ‘someone’ as expected. In (24b), *daremo* ‘everyone’ is scrambled out of the embedded clause to the initial position of the matrix clause. But in this case, scrambling does not allow *daremo* ‘everyone’ to

take wide scope, in contrast with (18a). Oka (1989) and Tada (1993) conclude then that long-distance scrambling out of a clause does not affect scope interpretation.

Given the clause-boundedness of QR and the contrast between (18a) and (24b), Abe (1993) proposes that scrambling can affect scope interpretation when and only when it produces a structure that can be created by QR. Clause-internal scrambling in (18a) can count as QR because it does what QR does. Long-distance scrambling in (24b), on the other hand, preposes the embedded object in a way that QR cannot, and hence, cannot count as QR. Consequently, it cannot affect quantifier scope and is semantically vacuous. Note that scrambling itself is not an operation that applies in order to determine quantifier scope. Yet, it can affect quantifier scope when it mimics the operation that determines quantifier scope, namely, QR. I argue in the following section that scrambling can mimic topicalization in the same way.

### 3. Scrambling and Topicalization

In this section, I first discuss Kuno’s (1973) observation that only a sentence-initial *wa*-phrase can be interpreted as a thematic topic and propose a slight revision of his generalization. Then, I show that a phrase preposed by scrambling need not, but can count as sentence-initial. In particular, I demonstrate that a *wa*-phrase scrambled to the sentence-initial position can receive thematic interpretation. Based on this, I argue that scrambling can count as topicalization when it mimics the operation.

#### 3.1. The First Position Effects: Exhaustive Listing Focus and Thematic Topic

As noted in Kuno (1973) and discussed more recently in Heycock (1993, 2007), Japanese is abundant with what may be called “first-position effects.”<sup>89</sup> For example, the sentence-initial nominative phrase is interpreted as an “exhaustive listing focus” when the predicate is stative (or individual level in the sense of Carlson 1977). Thus, while (25a) can be a neutral description of an event, (25b) must be interpreted with focus on *Hanako*.<sup>90</sup>

<sup>89</sup>Kuno (1973) presents the basic facts while Heycock (1993, 2007) proposes an analysis in terms of the way syntactic structure is mapped to information structure. As far as I can see, the discussion that follows is consistent with Heycock’s analysis.

<sup>90</sup>The first-position effects discussed in this section are “matrix phenomena,” as predicted by Heycock’s analysis. Thus, in (i), for example, *Hanako* need not be interpreted with exhaustive listing focus because it belongs to the embedded clause.

(i) Taroo-wa  $[_{CP} \text{Hanako-ga} \text{ atama-ga} \text{ ii} \text{ to}] \text{ omotteiru}$

- (25) a. Hanako-ga kooen-o aruiteita  
 -NOM park -ACC walking-was  
 'Hanako was walking in the park'
- b. Hanako-ga atama-ga ii  
 -NOM head -NOM good  
 'It is Hanako that is smart'

Note that it is only the sentence-initial nominative phrase that obligatorily receives focus. (26a) means that monkeys are the creatures that are smart.

- (26) a. Saru -ga kasikoi  
 monkey-NOM smart  
 'It is monkeys that are smart'
- b. Nihon-ga saru -ga kasikoi  
 Japan-NOM monkey-NOM smart  
 'It is Japan where monkeys are smart'

(26b), on the other hand, means that Japan is the place where monkeys are smart, with focus on Japan but not necessarily on monkeys. In other words, it is interpreted as 'It is Japan where monkeys are smart' but not necessarily as 'It is Japan where it is monkeys that are smart'. It does not exclude the possibility that creatures other than monkeys are smart in Japan.

Similarly, Kuno (1973) points out that a phrase marked by *-wa* can be interpreted as a thematic topic only when it is sentence-initial. The particle *-wa* can be attached to any phrase and can induce contrastive topic interpretation. But the thematic topic interpretation is possible only when the *wa*-phrase is in the initial position of a matrix clause, as the examples in (27) illustrate.

---

-TOP -NOM head -NOM good that think  
 'Taroo thinks that Hanako is smart'

- (27) a. Taroo-wa (kyonen) sono hon -o katta  
 -TOP last year that book-ACC bought  
 A. 'Spaking of Taroo, he bought that book (last year)'  
 (Taroo-*thematic*)  
 B. 'Taroo bought that book (last year), but I don't know about other people'  
 (Taroo-*contrastive*)
- b. Taroo-ga (kyonen) sono hon -wa katta  
 -NOM last year that book-TOP bought  
 'Taroo bought that book (last year), but I don't know about other books' (that book-*contrastive*)
- c. Taroo-ga [NP [TP Hanako-wa sukina] hon] -o katta  
 -NOM -TOP like book-ACC bought  
 'Taroo bought a book that Hanako likes, but I don't know if other people like the book' (Hanako-*contrastive*)

In all of these examples, the *wa*-phrase can receive contrastive topic interpretation. But *Taroo-wa* in (27a) can in addition be construed as a thematic topic because it is in the initial position of a matrix clause. If we are to make *sono hon-wa* 'that book-TOP' in (27b) a thematic topic, we must place it at the sentence-initial position as in (28).

- (28) Sono hon -wa Taroo-ga (kyonen) katta  
 that book-TOP -NOM last year bought  
 A. 'Speaking of that book, Taroo bought it (last year)'  
 (that book-*thematic*)  
 B. 'Taroo bought that book (last year), but I don't know about other books' (that book-*contrastive*)

The first-constituent effects discussed above provide an excellent testing ground for the hypothesis that scrambling need not affect interpretation. Let us consider (29).

- (29) Sono hon -o<sub>i</sub> Taroo-wa (kyonen) t<sub>i</sub> katta  
 that book-ACC -TOP last year bought  
 A. 'Spaking of Taroo, he bought that book (last year)'  
 (Taroo-*thematic*)  
 B. 'Taroo bought that book (last year), but I don't know about other people' (Taroo-*contrastive*)

Because the object is scrambled to the sentence-initial position, *Taroo-wa* is not sentence-initial in this example. Hence, if scrambling must count in the interpretation of *wa*-phrases, we would not expect the thematic topic reading of *Taroo-wa* to be possible. Yet, as indicated, *Taroo-wa* can receive either thematic or contrastive interpretation. This shows that scrambling can be ignored in the interpretation of *wa*-phrases. That is, (29) can be interpreted exactly like (27a) without scrambling, where *Taroo-wa* occupies the sentence-initial position. In the following subsection, I argue that scrambling need not, but still can count in the thematic interpretation of *wa*-phrases. But before moving on to this, I suggest a slight revision of Kuno's (1973) generalization in the remainder of this subsection.

First, the following example with two *wa*-phrases supports Kuno's generalization that only the sentence-initial *wa*-phrase can be construed as a thematic topic:

- (30) *Taroo-wa* (kyonen) sono hon -wa katta  
 -TOP last year that book-TOP bought
- A. 'Speaking of Taroo, he bought that book (last year), but I don't know about other books'  
 (*Taroo-thematic*, that book-contrastive)
- B. 'Taroo bought that book (last year), but I don't know about other people and other books'  
 (*Taroo-contrastive*, that book-contrastive)

As indicated, only the sentence-initial *Taroo-wa* can be interpreted as a thematic topic, and *sono hon-wa* 'that book-TOP' must receive contrastive interpretation. However, a different picture emerges when *sono hon-wa* is placed at the sentence-initial position as in (31).

- (31) Sono hon -wa Taroo-wa (kyonen) katta  
 that book-TOP -TOP last year bought
- A. 'Speaking of that book, Taroo bought it (last year), but I don't know about other people'  
 (that book-*thematic*, *Taroo-contrastive*)
- B. 'Speaking of Taroo, he bought that book (last year), but I don't know about other books'  
 (*Taroo-thematic*, that book-contrastive)
- C. 'Speaking of that book and speaking of Taroo, he bought it (last year)'  
 (that book-*thematic*, *Taroo-thematic*)
- D. 'Taroo bought that book (last year), but I don't know about other books and other people'  
 (that book-contrastive, *Taroo-contrastive*)

The sentence is ambiguous in four ways. The non-initial *Taroo-wa* can receive thematic interpretation as in B and C. Further, the initial *sono hon-wa* 'that book-TOP' can also be construed as a thematic topic as in A and C. Overall, the sentence-initial *wa*-marked object and the *wa*-marked subject can both optionally be interpreted as thematic topics.

Given the patterns observed in (30) and (31), I suggest a revision of Kuno's generalization as follows:

- (32) Let  $\omega = \langle XP_1-wa, XP_2-wa, \dots, XP_n-wa \rangle$  be the maximal matrix-initial sequence of *wa*-phrases, where  $XP_i-wa$  either precedes the matrix subject or is the matrix subject. Then, a *wa*-phrase can be interpreted as a thematic topic of the sentence if and only if it is part of this  $\omega$ -sequence.

In (30), *sono hon-wa* 'that book-TOP' cannot be part of an  $\omega$ -sequence because it neither precedes the subject nor is the subject. Hence, it cannot be construed as a thematic topic. In (31), on the other hand, the two *wa*-phrases constitute an  $\omega$ -sequence, and consequently, both allow thematic interpretation.

(32), like Kuno's generalization, predicts correctly that a matrix-initial non-subject phrase, such as *sono hon-wa* 'that book-TOP' in (28) and (31), can be interpreted as a thematic topic. In the following subsection, I argue that there are cases in which those phrases are preposed to the sentence-initial position by scrambling and that scrambling mimics topicalization in those cases.



### 3.2. Scrambling as Topicalization

It has been widely assumed since Kuno (1973) that sentence-initial topics can be generated directly at the sentence-initial position. One piece of evidence comes from examples such as the following:

- (33) Sono  $e_i$  -wa Taroo-ga [<sub>NP</sub> [<sub>TP</sub>  $e_i$  kaita] hito] -o  
 that painting-TOP -NOM drew person-ACC  
 (yoku) sitteiru  
 well know  
 'Speaking of that painting, Taroo knows the person who drew it (well)'

As discovered by Ross (1967), it is a general property of movement operations that extraction out of a relative clause is prohibited. Thus, the English example in (34) is out.<sup>91</sup>

- (34) ?\*That painting<sub>i</sub>, John knows [<sub>NP</sub> the person [<sub>CP</sub> who owns  $t_i$ ]]

The grammaticality of (33), then, indicates that the topic need not be moved from within the relative clause but can be generated directly at the sentence-initial position.

Perlmutter (1972) relates the grammaticality of examples like (33) to the fact that Japanese has pronouns without phonetic content.<sup>92</sup> Note that pronouns are customarily unpronounced in Japanese, as the following discourse shows:

- (35) A. Taroo-wa sono hon -o mottekimasita ka  
 -TOP that book-ACC brought Q  
 'Did Taroo bring that book?'  
 B. Hai, (kare-wa) (sore-o) mottekimasita  
 yes he -TOP it -ACC brought  
 'Yes, he brought it'

The use of overt pronouns in (35B) is not ungrammatical but extremely awkward. Given this, Perlmutter points out that (33) can be the counterpart

<sup>91</sup>It is known that judgment varies with English topicalization. The point here is that (34) is degraded even for those who consider examples like (i) fully grammatical.

(i) That painting<sub>i</sub>, John owns  $t_i$

<sup>92</sup>Perlmutter (1972) actually discusses relative clauses, but his analysis can readily be restated for the topic construction.

not of the English (34) but of (36) with a pronoun occupying the object position of the relative clause.

- (36) That painting<sub>i</sub>, John knows [<sub>NP</sub> the person [<sub>CP</sub> who owns it<sub>i</sub>]]

This example is grammatical like (33) because the sentence-initial topic is not moved out of a relative clause. (33), then, is exactly like (37) with the pronoun unpronounced.

- (37) Sono  $e_i$  -wa Taroo-ga [<sub>NP</sub> [<sub>TP</sub> sore<sub>i</sub>-o kaita]  
 that painting-TOP -NOM it -ACC drew  
 hito] -o (yoku) sitteiru  
 person-ACC well know  
 'Speaking of that painting, Taroo knows the person who drew it (well)'

Given this analysis of sentence-initial topics in Japanese, (31), for example, can have the structure in (38).

- (38) Sono hon<sub>i</sub> -wa [<sub>TP</sub> Taroo-wa (kyonen) (sore<sub>i</sub>-o) katta]  
 that book-TOP -TOP last year it -ACC bought

However, I argued in Saito (1985) that sentence-initial PP topics, as opposed to NP topics, must be moved to its surface position by scrambling. First, PP topics, unlike NP topics, cannot correspond to a position within a relative clause, as (39) indicates.

- (39) ?\*Osuro-de<sub>i</sub>-wa Taroo-ga [<sub>NP</sub> [<sub>TP</sub> (yonenkan)  $e_i$  benkyoosita]  
 Oslo -in -TOP -NOM for four years studied  
 hito] -o sitteiru  
 person-ACC know  
 'Speaking of Oslo, Taroo knows a person who studied there (for four years)'

This already suggests that a PP topic cannot be generated directly at the sentence-initial position but must be moved to that position. Then, the contrast between (39) and (40) follows because only the former involves extraction out of a relative clause.

- (40) a. Osuro-de<sub>i</sub>-wa [<sub>TP</sub> Taroo-ga (yonenkan)  $t_i$  benkyoosita]  
 Oslo -in -TOP -NOM for four years studied

- ‘Speaking of Oslo, Taroo studied there (for four years)’
- b. Osuro-de<sub>i</sub>-wa Hanako-ga [<sub>CP</sub> Taroo-ga (yonenkan) <sub>t<sub>i</sub></sub>  
 Oslo -in -TOP -NOM -NOM for four years  
 benkyoosita to] itteita  
 studied that said  
 ‘Speaking of Oslo, Hanako said that Taroo studied there (for four years)’

Secondly, PP topics, as opposed to NP topics, do not allow overt resumptive pronouns. For example, (41) contrasts sharply with (37).

- (41) \*Osuro-de<sub>i</sub>-wa Taroo-ga [<sub>NP</sub> [<sub>TP</sub> (yonenkan) soko -de<sub>i</sub>  
 Oslo -in -TOP -NOM for four years there -in  
 benkyoosita] hito] -o sitteiru  
 studied person-ACC know  
 ‘Speaking of Oslo, Taroo knows a person who studied there (for four years)’

This indicates that (39) cannot be generated with the PP topic in the sentence-initial position and an unpronounced pronoun within the relative clause. This is so because if an unpronounced pronoun can occur in (39), we would expect an overt pronoun to be also possible. (41), then, confirms that (39) must be derived by the movement of the PP topic from within the relative clause.<sup>93</sup>

If this analysis of PP topics is correct, it implies that scrambling of PP topics can affect the interpretation in an interesting way. For example, the PP topic in (42a) can only be a contrastive topic, but it can receive thematic interpretation when it is scrambled to the sentence-initial position as in (42b).

<sup>93</sup>It is speculated in Saito (1985) that (41) is ungrammatical and (39) must involve movement because a PP topic, as opposed to an NP topic, cannot be licensed on its own at the sentence-initial position by what Kuno (1973) calls the “aboutness” relation with the rest of the sentence. (41) is in fact much improved if an NP topic is substituted for the PP topic, as (i) shows.

- (i) Osuro<sub>i</sub>-wa Taroo-ga [<sub>NP</sub> [<sub>TP</sub> (yonenkan) soko<sub>i</sub>-de benkyoosita]  
 Oslo -TOP -NOM for four years there -in studied  
 hito] -o sitteiru  
 person-ACC know  
 ‘Speaking of Oslo, Taroo knows a person who studied there (for four years)’

- (42) a. Taroo-ga (kinoo) soko-e -wa itta  
 -NOM yesterday there-to-TOP went  
 ‘Taroo went to that place (yesterday), but I don’t know about other places’
- b. Soko-e -wa<sub>i</sub> [<sub>TP</sub> Taroo-ga (kinoo) <sub>t<sub>i</sub></sub> itta]  
 there-to-TOP -NOM yesterday went  
 A. ‘Speaking of that place, Taroo went there (yesterday)’  
 (that place-*thematic*)  
 B. ‘Taroo went to that place (yesterday), but I don’t know about other places’  
 (that place-*contrastive*)

If scrambling does not count for the thematic interpretation of *wa*-phrases, we would expect (42b) to allow only the contrastive interpretation of *soko-e-wa* ‘there-to-TOP’ just as (42a). The fact that thematic interpretation is possible shows that scrambling in this case has the effect of topicalization, or more precisely, thematic topicalization.

The same conclusion is drawn from (43b), where a PP *wa*-phrase is scrambled over a *wa*-marked subject.

- (43) a. Taroo-wa (kinoo) soko-e -wa itta  
 -TOP yesterday there-to-TOP went  
 A. ‘Speaking of Taroo, he went to that place (yesterday), but I don’t know about other places’ (Taroo-*thematic*, that place-*contrastive*)  
 B. ‘Taroo went to that place (yesterday), but I don’t know about other people and other places’ (Taroo-*contrastive*, that place-*contrastive*)
- b. Soko-e -wa<sub>i</sub> [<sub>TP</sub> Taroo-wa (kinoo) <sub>t<sub>i</sub></sub> itta]  
 there-to-TOP -TOP yesterday went  
 A. ‘Speaking of that place, Taroo went there (yesterday), but I don’t know about other people’ (that place-*thematic*, Taroo-*contrastive*)  
 B. ‘Speaking of Taroo, he went to that place (yesterday), but I don’t know about other places’ (that place-*contrastive*, Taroo-*thematic*)  
 C. ‘Speaking of that place and speaking of Taroo, he went there (yesterday)’ (that place-*thematic*, Taroo-*thematic*)  
 D. ‘Taroo went to that place yesterday, but I don’t know about other places and other people’ (that place-*contrastive*, Taroo-*contrastive*)

In (43a), the PP topic *soko-e-wa* ‘there-to-TOP’ can only receive contrastive

interpretation. But once it is scrambled to the sentence-initial position as in (43b), it can be interpreted as a thematic topic as well, and this makes the sentence four-ways ambiguous. When the PP topic is a theme, the scrambling is clearly not vacuous but has the effect of (thematic) topicalization.

The general hypothesis pursued in this paper is that scrambling can have semantic or discourse effect when it mimics a significant movement operation. Given this hypothesis, the scrambling of a PP topic in (42b) and (43b) mimics topicalization. And this makes a clear prediction. Recall that only clause-internal scrambling can affect quantifier scope. (24), which shows that long-distance scrambling does not extend scope possibilities, is repeated in (44).

- (44) a. [<sub>TP</sub> Dareka -ga [<sub>CP</sub> [<sub>TP</sub> Taroo-ga daremo -o aisite iru]  
 someone-NOM -NOM everyone-ACC love  
 to] itta] (koto)  
 that said fact  
 ‘Someone said that Taroo loves everyone’ ( $\exists > \forall$ )
- b. [<sub>TP</sub> Daremo -o<sub>i</sub> [<sub>TP</sub> dareka -ga [<sub>CP</sub> [<sub>TP</sub> Taroo-ga  $\bar{t}_i$   
 everyone-ACC someone -NOM -NOM  
 aisiteiru] to] itta]] (koto)  
 love that said fact  
 ‘Someone said that Taroo loves everyone’ ( $\exists > \forall$ )

According to Abe’s (1993) analysis, this is because QR (quantifier raising) is clause-bound, and consequently, only clause-internal scrambling can mimic QR. However, topicalization is not clause-bound, as shown in (45).<sup>94</sup>

- (45) a. That book<sub>i</sub>, Mary liked  $\bar{t}_i$   
 b. That book<sub>i</sub>, I think Mary liked  $\bar{t}_i$

Hence, if clause-internal scrambling can mimic topicalization, it is predicted that long distance scrambling can do so as well.

This prediction is indeed borne out by (40b), which allows the thematic interpretation of the scrambled sentence-initial PP topic, and more clearly by the following example:

<sup>94</sup>The disclaimer in Footnote 6 applies here as well. The important point is that those who accept (44a) consider (44b) equally grammatical.

- (46) a. Hanako-ga [<sub>CP</sub> Taroo-ga (kinoo) soko-e -wa  
 -NOM -NOM yesterday there-to-TOP  
 itta to] itteita  
 went that said  
 ‘Hanako said that Taroo went to that place (yesterday), but I don’t know about other places’
- b. Soko-e -wa<sub>i</sub> [<sub>TP</sub> Hanako-ga [<sub>CP</sub> Taroo-ga (kinoo)  $\bar{t}_i$   
 there-to-TOP -NOM -NOM yesterday  
 itta to] itteita]  
 went that said  
 A. ‘Speaking of that place, Hanako said that Taroo went there (yesterday)’ (that place-*thematic*)  
 B. ‘Hanako said that Taroo went to that place (yesterday), but I don’t know about other places’ (that place-*contrastive*)

Long-distance scrambling of *soko-e-wa* ‘there-to-TOP’ to the sentence-initial position makes the thematic interpretation of this PP topic possible in (46b). This indicates that long-distance scrambling can mimic topicalization although it cannot mimic QR. The same pattern is observed when the matrix subject is itself a topic, as in (47).

- (47) a. Hanako-wa [<sub>CP</sub> Taroo-ga (kinoo) soko-e -wa  
 -TOP -NOM yesterday there-to-TOP  
 itta to] itteita  
 went that said  
 A. ‘Speaking of Hanako, she said that Taroo went to that place (yesterday), but I don’t know about other places’ (Hanako-*thematic*, that place-*contrastive*)  
 B. ‘Hanako said that Taroo went to that place (yesterday), but I don’t know about other people and other places’ (Hanako-*contrastive*, that place-*contrastive*)
- b. Soko-e -wa<sub>i</sub> [<sub>TP</sub> Hanako-wa [<sub>CP</sub> Taroo-ga (kinoo)  $\bar{t}_i$   
 there-to-TOP -TOP -NOM yesterday  
 itta to] itteita]  
 went that said  
 A. ‘Speaking of that place, Hanako said that Taroo went there (yesterday), but I don’t know about other people’ (that place-*thematic*, Hanako-*contrastive*)  
 B. ‘Speaking of Hanako, she said that Taroo went to that place (yesterday), but I don’t know about other places’ (that place-

*contrastive, Hanako-thematic*)

- C. 'Speaking of that place and speaking of Hanako, she said that Taroo went there (yesterday)' (that place-*thematic*, Hanako-*thematic*)
- D. 'Hanako said that Taroo went to that place (yesterday), but I don't know about other places and other people' (that place-*contrastive*, Hanako-*contrastive*)

The fact that (47b) can be interpreted as in A and C confirms that long-distance scrambling of a *wh*-phrase makes the thematic interpretation of the preposed phrase possible.

It was shown in the preceding sections that scrambling can be semantically vacuous, and also that clause-internal scrambling can broaden scope possibilities. The discussion in this section, on the other hand, has demonstrated that it is not just clause-internal scrambling that can affect interpretation. The relevant factor is not clause-internal vs. long-distance, but the nature of the movement operation scrambling plays the role of. Only clause-internal scrambling can play the role of QR because QR is clause-bound. Since topicalization can take place long-distance, even long-distance scrambling can count as topicalization. Then, what is scrambling after all? How can it play the roles of various movement operations? I try to answer these questions in the following section.

#### 4. The Interpretation of Scrambling Chains

Let me begin the discussion by considering the interpretive mechanism for movement operations in general terms. The clearest case would be *wh*-movement, shown in (48).

- (48) a. Who<sub>i</sub> did John see  $\bar{t}_i$   
b. [Which x: x a person] John saw x

(48a) is interpreted as in (48b). This means that the *wh*-phrase *who* is interpreted as the operator [*which x: x a person*] at the landing site and as the variable *x* at the initial site. Given that every linguistic object is a complex of features, it is then reasonable to suppose that *who* contains a feature, say [wh], that yields its interpretation as a *wh*-operator, and another feature, say [arg(ument)], that gives its interpretation as a variable, in addition to phonetic features, [phon]. The movement in (48a) then can be viewed as an operation that copies these features at the landing site, as illustrated in (49).

- (49) Who<sub>{wh, arg, phon}</sub> did John see who<sub>{wh, arg, phon}</sub>

The phonetic effect of the movement obtains when [phon] is interpreted at the landing site. The semantics, on the other hand, interprets the [wh] feature at the landing site and the [arg] feature at the initial site. Syntax should then delete the irrelevant instances of the features as in (50) before it sends information to the interpretive components.

- (50) Who<sub>{wh, arg, phon}</sub> did John see who<sub>{wh, arg, phon}</sub>

I assume that this is how *wh*-movement creates an operator-variable chain.<sup>95</sup>

Topicalization can be analyzed in a similar way. The movement in (51a) should contribute to the creation of the operator-variable relation in (51b).

- (51) a. Mary<sub>i</sub>, I respect  $\bar{t}_i$  (very much)  
b. [For x: x = Mary] I respect x

Here, *Mary* is interpreted as a topic operator at the landing site and as a variable at the initial site. Hence, it should contain a [top] feature as well as an [arg] feature, and topicalization should yield an operator-variable chain as in (52).

- (52) Mary<sub>{top, arg, phon}</sub>, I respect Mary<sub>{top, arg, phon}</sub>

Quantifier raising (QR) creates an operator-variable chain in the same way, except that it is covert. QR applies to (53a) as in (53b), and the latter is interpreted as in (53c).

- (53) a. John respects everyone  
b. Everyone<sub>i</sub> [<sub>TP</sub> John respects  $\bar{t}_i$ ]  
c. [Every x: x a person] John respects x

Again, *everyone* is interpreted at two positions: it is a (restricted) quantifier at the landing site and a variable at the initial site. The QR chain can be represented as in (54).

<sup>95</sup>This is a modified version of Chomsky's (1993) copy and deletion analysis of movement. See Saito (2005) for a more detailed discussion of this mechanism.

(54) Everyone<sub>{quant, arg, phon}</sub> John respects everyone<sub>{quant, arg, phon}</sub>

The [quant] feature yields the interpretation of *everyone* as the operator [*every x: x a person*] at the landing site, and the [arg] feature at the initial site is interpreted as a variable. Note that [phon] is deleted at the landing site and is retained at the initial site, as QR is covert, i.e., without phonetic effect.<sup>96</sup> Further, the clause-boundedness of QR indicates that the creation of a quantifier-variable chain by the deletion of [arg] at the landing site and of [quant] at the initial site can apply only clause-internally.

Having discussed the general mechanism for the interpretation of movement, let us now return to scrambling. Topicalization applies to create a topic-variable chain, and QR raises quantified phrases to their scope positions. But scrambling has no intrinsic purpose of its own. For example, a scrambled phrase need not be a topic or a quantifier, as shown in (55).

(55) Hanako-o<sub>i</sub> Taroo-wa <sub>t<sub>i</sub></sub> sonkeisiteiru  
 -ACC -TOP respect  
 ‘Speaking of Taroo, he respects Hanako’

In this case, *Hanako* is the object argument of the verb and should be equipped with an [arg] feature. Then, the movement can be represented as in (56).

(56) Hanako-o<sub>{arg, phon}</sub> [<sub>TP</sub> Taroo-wa Hanako-o<sub>{arg, phon}</sub> sonkeisiteiru]

As the movement is overt, [phon] is interpreted at the landing site. The [arg] feature, on the other hand, should be at the object position because that is where *Hanako* is interpreted as an argument. Thus, deletion of features applies as in (57) for the interpretation of this movement.

(57) Hanako-o<sub>{arg, phon}</sub> [<sub>TP</sub> Taroo-wa Hanako-o<sub>{arg, phon}</sub> sonkeisiteiru]

This represents a case where scrambling has no semantic or discourse effect, as the sole semantically significant feature of the scrambled phrase, [arg], appears at the initial site. Further, it is reasonable to suppose that semantics only cares about semantically significant features, and hence, ignores [phon]. If this is the case, *Taroo-wa* in (57) is sentence-initial, as far as semantics is concerned. Then, it is predicted correctly that the *wa*-phrase

<sup>96</sup>The analysis of covert movement with the deletion of phonetic features at the landing site is proposed, for example, in Bobaljik (1995). I simply adopt it here.

can receive thematic interpretation.

However, scrambling can apply to phrases that have features other than [arg] and [phon]. For example, we have seen in the preceding section cases where a *wa*-phrase with the [top] feature is scrambled. The simplest relevant example (42b) is repeated in (58).

(58) Soko-e-wa<sub>i</sub> [<sub>TP</sub> Taroo-ga (kinoo) <sub>t<sub>i</sub></sub> itta]  
 there-to-TOP -NOM yesterday went  
 A. ‘Speaking of that place, Taroo went there (yesterday)’ (that place-*thematic*)  
 B. ‘Taroo went to that place (yesterday), but I don’t know about other places’ (that place-*contrastive*)

Scrambling, as movement, copies all the features of *soko-e-wa* ‘there-to-TOP’ at the landing site as in (59).

(59) Soko-e-wa<sub>{top, arg, phon}</sub> [<sub>TP</sub> Taroo-ga (kinoo) soko-e-wa<sub>{top, arg, phon}</sub> itta]

For interpretation, the [arg] feature is deleted at the landing site and [phon] is deleted at the initial site, as before. But what about the [top] feature? As it is not the purpose of scrambling to create a topic-variable chain, I assume that it can be deleted at the landing site to yield the representation in (60a).

(60) a. Soko-e-wa<sub>{top, arg, phon}</sub> [<sub>TP</sub> Taroo-ga (kinoo) soko-e-wa<sub>{top, arg, phon}</sub> itta]  
 b. Soko-e-wa<sub>{top, arg, phon}</sub> [<sub>TP</sub> Taroo-ga (kinoo) soko-e-wa<sub>{top, arg, phon}</sub> itta]

Then, the scrambling is semantically vacuous as in the case of (55). Scrambling is invisible to semantics, and this yields the contrastive interpretation of the *wa*-phrase. But interestingly, nothing seems to prevent the deletion of [top] at the initial site instead of the landing site, because that would lead to a legitimate representation with a topic-variable chain, as shown in (60b). Then, the [top] feature in a scrambling chain can be retained either at the initial site or at the landing site. In the latter case, it is interpreted at the sentence-initial position (or more precisely, as part of an  $\omega$ -chain as defined in (32)), and as a result, can receive thematic interpretation. This accounts for the two interpretations of (58).

The case discussed in Section 2, where a quantified phrase is scrambled, can be analyzed in basically the same way. Let us consider again (18a),

repeated below as (61).

- (61) Daremo -o<sub>i</sub>            dareka -ga     $\underline{t}_i$             aisiteiru  
 everyone-ACC            someone-NOM            love  
 ‘Someone loves everyone’ ( $\forall > \exists, \exists > \forall$ )

The movement copies the object at the sentence-initial position as in (62).<sup>97</sup>

- (62) Daremo-o<sub>{quant, arg, phon}</sub> [TP dareka-ga<sub>{quant, arg, phon}</sub> daremo-o<sub>{quant, arg, phon}</sub> aisiteiru]

Scrambling is semantically vacuous when the [quant] feature is deleted at the landing site as shown in (63).

- (63) Daremo-o<sub>{quant, arg, phon}</sub> [TP dareka-ga<sub>{quant, arg, phon}</sub> daremo-o<sub>{quant, arg, phon}</sub> aisiteiru]

Then, the rigidity condition on quantifier scope ensures that *dareka* ‘someone’ takes scope over *daremo* ‘everyone’. But the [quant] feature of *daremo* in (62) can be deleted at the initial site instead as in (64) because that creates a legitimate quantifier-variable chain.

- (64) Daremo-o<sub>{quant, arg, phon}</sub> [TP dareka-ga<sub>{quant, arg, phon}</sub> daremo-o<sub>{quant, arg, phon}</sub> aisiteiru]

In this case, scrambling is literally quantifier raising (QR) with phonetic effect. *Daremo* ‘everyone’ eventually ends up taking wide scope over *dareka* ‘someone’ due to rigidity. Also, recall from the discussion of QR that the formation of a quantifier-variable chain by deletion of [arg] at the landing site and deletion of [quant] at the initial site can take place only clause-internally. Then, when scrambling is long-distance, the [quant] feature must be deleted at the landing site. It follows that long-distance scrambling has no effect on scope relations.

In this section, I have suggested a formal mechanism to capture the fact that scrambling can mimic topicalization and QR. Note that scrambling itself has no specific purpose. In particular, it is not an operation to create a topic-variable chain or a quantifier-variable chain. However, given the general mechanism of movement and its interpretation, scrambling can end

<sup>97</sup>The features of the matrix subject are shown in (62) because they become relevant when the scope interaction between the scrambled phrase and the subject is discussed.

up creating these chains. If this analysis is correct, it suggests a partial answer to the question why scrambling exists at all. It may be considered mysterious why scrambling exists because it has no specific purpose and can totally lack semantic and discourse effects. But it can serve as anything precisely because it lacks a specific purpose. It can be interpreted as topicalization or QR as long as deletion of features at the landing site and the initial site yields appropriate chains. Scrambling is then like a joker in a card game, which can be used in place of any specific card.

## 5. Conclusion

In this paper, I examined scrambling, which is responsible for at least some cases of syntax-semantics mismatch observed in Japanese and Korean. In Section 2, I first considered Japanese *wh*-questions and showed that scrambling need not have semantic effects. Then, I discussed Abe’s (1993) hypothesis that it can affect scope interpretation when it mimics quantifier raising (QR). In Section 3, I examined the thematic interpretation of *wa*-phrases in some detail, and argued that scrambling can mimic topicalization as well. Finally, in Section 4, I pursued the question why scrambling can be interpreted as QR or topicalization, and presented a formal analysis as an answer.

Syntactic theory has been developed mainly on the basis of movement operations that are associated with specific interpretations. For example, QR moves a quantified phrase to create a quantifier-variable chain, and topicalization fronts a topic phrase to form a topic-variable chain. The Japanese/Korean type scrambling is quite unique as it lacks purpose and yet can contribute to interpretation in various ways. Scrambling provides significant data that cannot be observed with other movement operations because of this unique property. I hope to have shown in this paper that research on scrambling not only can serve to clarify the seemingly peculiar features of Japanese/Korean syntax but also can contribute to the understanding of the general mechanism of syntactic movement and its interpretation.

## References

- Abe, J. 1993. Binding and Scrambling without the A/A’ Distinction. Ph.D. dissertation, University of Connecticut.  
 Bobaljik, J. 1995. Morphosyntax: The Syntax of Verbal Inflection. Ph.D. dissertation, MIT.  
 Carlson, G. 1977. Reference to Kinds in English. Ph.D. dissertation, University of Massachusetts, Amherst.  
 Chomsky, N. 1993. A Minimalist Program for Linguistic Theory. In Kenneth Hale

- and S. Jay Keyser, eds., *The View from Building 20: Essays in Linguistics in Honor of Sylvain Bromberger*, Cambridge, Mass.: MIT Press. 1-52.
- Harada, K. 1972. Constraints on wh-Q Binding. *Descriptive and Applied Linguistics* 5:180-206.
- Heycock, C. 1993. Focus Projection in Japanese. *Proceedings of the North East Linguistic Society* 24:159-187.
- Heycock, C. 2007. Japanese *-wa*, *-ga*, and Information Structure. Unpublished manuscript, University of Edinburgh. To appear in S. Miyagawa and M. Saito, eds., *Handbook of Japanese Linguistics*, Oxford: Oxford University Press.
- Kuno, S. 1973. *The Structure of the Japanese Language*, Cambridge, Mass.: MIT Press.
- Kuno, S. 1978 *Danwa-no Bunpoo [Grammar of Discourse]*. Tokyo: Taishukan Shoten.
- Kuroda, S.-Y. 1970. Remarks on the Notion of Subject with Reference to Words like *also*, *even* or *only*: Part II." *Annual Bulletin* 4:127-152. Research Institute of Logopedics and Phoniatrics, University of Tokyo.
- May, R. 1977. The Grammar of Quantification. Ph.D. dissertation, MIT.
- Oka, T. 1989. On the Spec of IP. Unpublished manuscript, MIT.
- Perlmutter, D. 1972. Evidence for Shadow Pronouns in French Relativization. In P. M. Peranteau, et al., eds., *The Chicago Which Hunt*, Chicago Linguistic Society, University of Chicago, 73-105.
- Riemsdijk, H., W. Edwin. 1981. NP-structure. *The Linguistic Review* 1:171-217.
- Ross, J. 1967. Constraints on Variables in Syntax. Ph.D. dissertation, MIT.
- Saito, M. 1985. Some Asymmetries in Japanese and their Theoretical Implications. Ph.D. dissertation, MIT.
- Saito, M. 1989. Scrambling as Semantically Vacuous A'-Movement. In Mark Baltin and A. Kroch, eds., *Alternative Conceptions of Phrase Structure*, Chicago: University of Chicago Press, 182-200.
- Saito, M. 2005. Further Notes on the Interpretation of Scrambling Chains. In J. Sabel and M. Saito, eds., *The Free Word Order Phenomenon: Its Syntactic Sources and Diversity*, Berlin: Mouton de Gruyter, 335-376.
- Tada, H. 1993 A/A' Partition in Derivation. Ph.D. dissertation, MIT.