

Optional Quantifier Raising*

Chigusa Morita

McGill University/University of Tokyo

cmorit@po-box.mcgill.ca

Abstract

This paper discusses the operation of Quantifier Raising (QR). Following Bruening (2001) and Sauerland (2000), I assume that QR must obey Superiority and is driven by a P-feature on the head v. This 'Superiority account' can give a correct explanation for quantifier scope interactions in English. However, it does not hold in Japanese, which seems to be a scope rigid language. Although the Superiority account assumes that QR always applies to all quantifiers at LF, I suggest that quantifiers can undergo QR in the overt syntax as well as at LF; covert QR applies optionally to a quantifier which undergoes overt movement. When a quantified NP undergoes overt movement, it does not have to undergo QR. That is, overt movement can function as QR although overt movement such as scrambling is not motivated for scope reasons. This analysis is based on a fundamental principle of the architecture for grammar, which says 'It is not necessary to do covertly what you can do overtly.'

Keywords: quantifier, scope, Japanese, double object construction, optionality

1. Introduction

Let us consider the following sentence.

- (1) A boy climbed every tree.

The sentence (1) has two meanings; it can express that there is a single boy who climbed all of the trees, or alternatively, it can express that for each tree there is a (different) boy such that the boy climbed the tree. This ambiguity has motivated the claim that covert raising of quantifiers, that is, Quantifier Raising (QR), can change the hierarchical order of quantifiers. Each interpretation can be derived from the following LF representations, as in (2).

- (2) a. $[_{IP} [_{a\ boy}]_i [_{VP} [_{every\ tree}]_j [_{VP}\ t_i\ climbed\ t_j]]]$
b. $[_{IP} [_{every\ tree}]_j [_{IP} [_{a\ boy}]_i [_{VP}\ t_i\ climbed\ t_j]]]$

It has been assumed that there are two types of QR, IP-adjunction and VP-adjunction.

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Assuming the VP-internal subject hypothesis, a subject moves to [Spec, IP] independently of scope considerations. In order to get the surface scope interpretation in (1), the object QNP must be in a lower position than the subject quantified NP (QNP), even though the operation of QR applies to the object QNP. In this case, the object QNP moves to the VP-adjoined position, as in (2a). On the other hand, the inverse scope interpretation can be obtained when the object QNP moves to a higher position, i.e., the IP-adjoined position, as in (2b).

However, there is a problematic phenomenon that the QR account cannot explain. Consider the following sentences.

- (3) a. I gave a child each doll. IO >> DO, *DO >> IO
 b. I gave a doll to each child. IO >> DO, DO >> IO
(Bruening 2001: 234)

In a double object construction such as (3a), the second object QNP cannot take scope over the first; there must be a single child receiving all of the dolls. In contrast, a dative construction such as (3b) can be interpreted ambiguously. That is, the child can vary with the dolls in this sentence. The phenomenon observed in (3a) is called the “scope freezing” effect.

The same phenomenon can be found in Japanese, as in (4).

- (4) a. Kootyoosensei-ga [hutari-no gakusei]-ni [sannin-no sensei]-o syookaisita.
 principal-NOM [two-GEN student]-DAT [three-GEN teacher]-ACC introduced
 ‘The principal introduced three teachers to two students.’
 b. Kootyoosensei-ga [sannin-no sensei]-o [hutari-no gakusei]-ni syookaisita.
 principal-NOM [three-GEN teacher]-ACC [two-GEN student]-DAT introduced
 ‘The principal introduced three teachers to two students.’

The sentence (4a) has only the interpretation that for each student, the principal introduced three teachers to them. That is, the only interpretation of this sentence is that the dative object QNP takes scope over the accusative object QNP. On the other hand, the sentence (4b) has the two interpretations; in addition to the interpretation of (4a), it can have the interpretation that there are three teachers each of who are introduced two students by the principle. In this sentence, the accusative object QNP can also have a wide scope.

In this paper, I consider the operation of QR by observing quantifier scope interactions in English and Japanese. In the following section, I summarize the previous analyses suggested by Bruening (2001) and Sauerland (2000). In section 3, I show that this ‘Superiority account’ would not hold for quantifier scope interactions in Japanese, which seems to be a scope rigid language. In section 4, I suggest that covert QR applies “optionally” to a QNP which undergoes overt movement. Although overt movement such as scrambling is not motivated

for scope reasons, it can function as QR. This analysis is based on a fundamental principle for the architecture of grammar, which says ‘It is not necessary to do covertly what you can do overtly.’ This principle is a modified version of the principle ‘Don’t do covertly what you can do overtly,’ suggested by Chierchia (1998: 360). The last section is a brief summary.

2. The Superiority Account

In this section, I review the Superiority account, suggested by Bruening (2001) and Sauerland (2000). First, let us consider the “scope freezing” phenomenon in (3a), repeated in (5).

- (5) I gave a child each doll. IO >> DO, *DO >> IO

In (5), the direct object QNP cannot take scope over the indirect object QNP. In order to explain the inability of the direct object QNP to have a wide scope, it has been assumed that the direct object QNP would not undergo QR. However, Bruening (2001) claims that both direct and indirect object QNPs must undergo the operation of QR. As evidence, he demonstrates the fact that a direct object can also take scope over a subject, as in (6).¹

- (6) a. A (different) teacher gave me every book. Subj >> DO, DO >> Subj
 b. At least two judges awarded me every medal. Subj >> DO, DO >> Subj

Bruening also mentions antecedent contained deletion (ACD) as another test for the availability of QR to a direct object QNP. Consider the following sentence.

- (7) I [_{VP1} read a book that you did [_{VP2} Δ].

In (7), the ellipsis is interpreted as the VP *read a book*. However, if we consider the matrix VP as the actual antecedent, the sentence is uninterpretable because the ellipsis would be never filled by the antecedent, as in (8).

- (8) a. I read a book that you did [_{VP} Δ].

¹ Bobaljik (p.c.) points out that when the adjective *different* modifies a direct object QNP, it can also take scope over an indirect object in double object constructions, as in (i).

(i) I gave a different child each doll.

On the other hand, when the subject QNP in (6a) is not modified by the adjective *different*, it becomes difficult to have the interpretation that the direct object has a wide scope, as in (ii).

(ii) A teacher gave me every book. Subj >> DO, ?DO >> Subj

I leave this matter open here. In this paper, following Bruening (2001), I assume that an indirect object QNP always takes scope over a direct object QNP in dative constructions.

- b. I read a book that you did [_{VP} read a book that you did [_{VP} Δ]].
- c. I read a book that you did [_{VP} read a book that you did [_{VP} read a book that you did [_{VP} Δ]]].

The standard resolution of ACD is the application of QR to the NP hosting the ellipsis. By the application of QR, the matrix VP *read x* can serve as an appropriate antecedent for the ellipsis.

- (9) a. I [_{VP antecedent} read [a book [that you did]]]
- b. [a book [that you did <read t>]] I [_{VP antecedent} read t]

According to (9), ACD is grammatical only when QR applies to the host NP; QR obligatorily applies to the direct object QNP, as in (9b). Thus, Bruening claims that a direct object QNP must undergo QR as well as an indirect object QNP in a double object construction such as (3a), even though QR does not seem to reorder the two object QNPs.

If a direct object must undergo QR as well as the indirect object in a double object construction, it is necessary to explain the rigidity of scope relations between the two objects. Following Richards (1997), Bruening suggests that QR is subject to Superiority as well as other types of movement; *Attract* forces the operation of QR to move a structurally higher quantifier prior to any lower one, and *Shortest* constrains paths to cross when more than one element moves to specifiers of the same projection. The definitions of *Attract* and *Shortest* are given in (10) and (11).

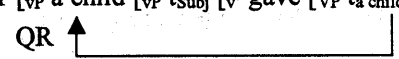
(10) *Attract*

An attractor K attracts a feature F, creating a copy α' of an element α containing F, and merging α' with K. The relations between α' , K, and F must all obey *shortest*.

(11) *Shortest*

A pair of elements $[\alpha, \beta]$ obeys *Shortest* iff there is no well-formed pair P' which can be created by substituting γ for either α or β , and the set of nodes c-commanded by one element of P' and dominating the other is smaller than the set of nodes c-commanded by one element of P and dominating the other. (Richards 1997: 113)

Now consider the sentence (5) again. If QR obeys *Attract* and *Shortest*, the LF representation of this sentence is derived as in (12).

- (12) a. [_{TP} I [_{T'} T [_{VP} a child [_{VP} t_{Subj} [_{v'} gave [_{VP} t_{a child} [_{v'} each doll]]]]]]]
- QR ↑
- 

b. [TP I [T' T [vP a child [vP each doll [vP t_{Subj} [v' gave [VP1 t_{a child} [v' t_{each doll}]]]]]]]
 QR ↑

Bruening assumes that QR must be vP-adjunction, since an arbitrary feature called “P-feature” on the head v attracts quantifiers to its specifiers (Chomsky 2000). As in (12), the first object QNP undergoes QR, adjoining to [Spec, vP]. Then, the second object QNP undergoes QR, “tucking-in” beneath the first object, obeying Shortest, as in (12b).

However, Bruening’s account cannot give a clear-cut explanation for the ambiguity in dative constructions such as (3a), repeated in (13).

(13) I gave a doll to each child.

IO >> DO, DO >> IO

If both quantifiers in (13) would undergo QR, the sentence (13) could not have the inverse scope interpretation, since the second object cannot move prior to the first. In order to maintain the claim that QR obeys Superiority, Bruening assumes that NP and PP are sisters in the same domain in dative constructions. He refers to two possibilities of the structure of dative constructions. One possibility is that the theme NP and the goal PP form a “small clause” constituent, in which the NP is in the specifier position of PP, as in (14).

(14) [vP v [vP give [pP a book [p' to each child]]]]

As Bruening mentions, however, the structure (14) requires one to assume some movement operations that target the P', since this constituent can undergo movement such as locative inversion and *wh*-movement.

The second alternative is a ternary-branching; the verb in a dative construction takes both the theme NP and PP as its complements. Bruening points out that this structure is ruled out by theoretical principles in the recent framework, although it can make a correct prediction for movement and binding. Thus, even if either possibility is correct, it is necessary to assume some additional explanations for the structure of dative constructions.

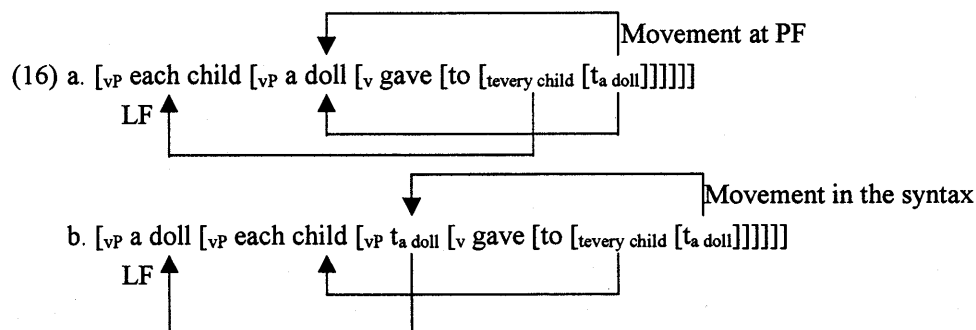
Bruening also argues for another approach to this problem suggested by Pesetsky (1995) and Takano (1998). According to this approach, the theme moves overtly across the goal PP, which is base-generated below it. By reconstruction, the theme can be interpreted in its trace position, as in (15).

(15) I gave [a doll] to each child t_{theme}.
 ↑ Reconstruction

However, Bruening claims that ‘a quantifier would not be interpreted in a position below the

PP and should be unable to be reconstructed in that position (Bruening 2001: 266),⁷ because all quantifiers would be attracted by a P-feature on *v* in order to have their interpretations. Moreover, if reconstruction is available, the scope freezing effect would not exist.

Sauerland (2000) explains the ambiguity of the sentence in (13) by suggesting two types of movement for a direct object. Following Pesetsky and Takano, he assumes that a direct object is base-generated beneath the goal PP. When the sentence in (13) has the interpretation in which the direct object QNP has a narrow scope, the direct object does not move overtly; it moves to a higher position at PF. Since the direct object remains in a lower position than the PP, Shortest forces the operation of QR to apply the QNP in the goal PP first. This derivation is illustrated in (16a). On the other hand, when the sentence in (13) has the interpretation that the direct object QNP takes scope over the QNP in the PP, movement of the direct object takes place in the overt syntax, as shown in (16b). In this case, the direct object QNP moves to [Spec, *v*P] prior to the QNP in the PP, because the direct object is in a higher position than the goal PP.

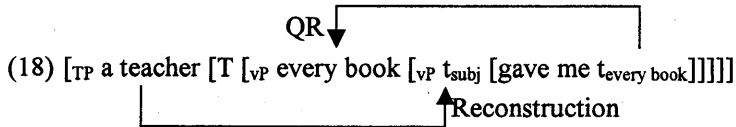


Last, let us consider the case in which a direct object QNP takes scope over a subject QNP. Consider the sentence in (6a), repeated as in (17).

(17) A (different) teacher gave me every book.

Subj >> DO, DO >> Subj

As mentioned above, an object QNP moves to [Spec, *v*P], which is the interpretable position for quantifiers. However, the position where the object QNP moves by QR is still under the subject position. Bruening assumes that a subject QNP can be reconstructed to its base position, since overt movement of a subject to [Spec, TP] is motivated for “unrelated reasons”, that is, the EPP-feature of the head T. Thus, the inverse scope interpretation in (17) is derived from the following LF representation, as in (18).



In contrast, when the subject QNP is not reconstructed, the sentence (17) has the surface scope interpretation.

In sum, Bruening suggests that QR is constrained in the same way as other types of movement; (i) QR is subject to Superiority, and (ii) it is a feature-driven movement, motivated for a P-feature on the head *v*. However, Bruening's analysis requires some additional assumptions for the structure of dative constructions in order to explain the ambiguity between two QNPs in these constructions. Sauerland solves this problem by suggesting two types of movement of a direct object in dative constructions; the direct object moves either at PF or in the overt syntax. When a direct object remains in a position lower than the goal PP in the overt syntax, QR applies to the QNP in the goal PP prior to the direct object, and thus the surface scope interpretation can be obtained. In contrast, when the direct object moves across the goal PP in the overt syntax, it undergoes QR prior to the QNP in the PP. Thus, Sauerland's account can also maintain the hypothesis that QR obeys Superiority. It should be also noted that this account depends crucially on the hypothesis that constraints apply only to movements that take place in the same component. QR takes place after Spell-Out, at which all elements relevant to PF slip away from the derivation, while PF movement occurs in the component after Spell-Out to PF. Therefore, PF movement does not obey Superiority in the same way as a covert movement such as QR.

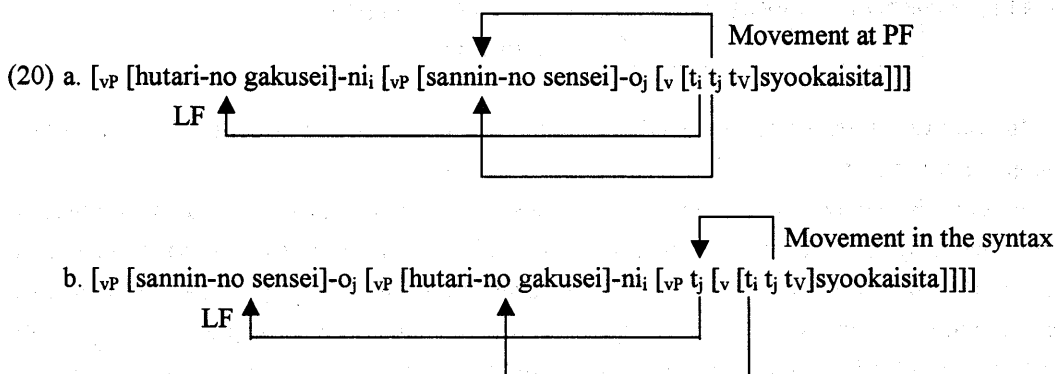
3. Quantifier Scope Interactions in Japanese

In this section, I examine whether the Superiority account can be extended to Japanese. First, let us consider double object constructions such as in (4), repeated below.

- (19) a. Kootyoosensei-ga [hutari-no gakusei]-ni [sannin-no sensei]-o syookaisita.
 principal-NOM [two-GEN student]-DAT [three-GEN teacher]-ACC introduced
 'The principal introduced three teachers to two students.'
- b. Kootyoosensei-ga [sannin-no sensei]-o [hutari-no gakusei]-ni syookaisita.
 principal-NOM [three-GEN teacher]-ACC [two-GEN student]-DAT introduced
 'The principal introduced three teachers to two students.'

The sentence in (19a) has only the interpretation in which the indirect object QNP takes scope over the direct object, whereas the sentence in (19b) is ambiguous. Adapting Sauerland's account to the sentence in (19b), the ambiguity of this sentence is due to the fact that it can

have the following two LF representations.



As in English, let us suppose that the theme is base-generated below the goal in Japanese. As shown in (20a) and (20b), the direct object moves from a position lower than the indirect object by vP-adjunction scrambling, which takes place either at PF or in the overt syntax. When the direct object remains in its base position in the overt syntax, as in (20a), the indirect object must undergo QR first by Shortest and thus the sentence would have the inverse scope interpretation. When the direct object moves overtly to a higher position as in (20b), the surface scope interpretation can be obtained since QR applies to the direct object prior to the indirect object. On the other hand, since both direct and indirect object QNPs remain in their base positions, Shortest forces QR to apply to the first object QNP (i.e., the indirect object) prior to the second. As far as scope interactions in double object constructions, the Superiority account also seems to hold in Japanese.

As we have seen in the previous section, Bruening suggests that all quantifiers must undergo QR. This claim is supported by the fact that an object QNP can take scope over a subject QNP in English. However, Japanese does not allow an object QNP to take scope over a subject QNP without any overt movement.^{2,3} Let us compare each pair of the sentences in (21) and (22).

² It is generally assumed that Japanese is a scope rigid language. However, some researchers argue that an object QNP can also take scope over a subject QNP in Japanese, as in (i).

(i) [Hutatuijoo-no ginkoo]-ga [itutu-no kouriten]-o siensita.
[two-or-more-GEN bank]-NOM [five-GEN retailshop]-ACC supported

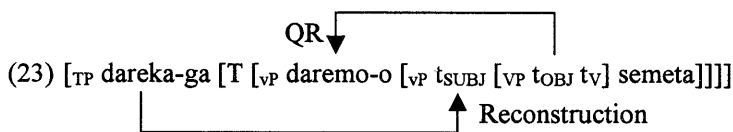
‘Two or more banks supported five retail shops.’ √Obj >> Subj (Hayashishita 2000)

This sentence can be interpreted ambiguously. Hayashishita (2000) suggests that a certain type of quantifiers can take scope over other quantifiers. Although this matter needs further consideration, I will leave it open here. In this paper, I tentatively assume that the syntactic movements seem to affect scope relations in Japanese, following the traditional observation.

³ Although the sentences in (21) and (22) are considered to involve movement of a subject to [Spec, TP], I do not count this as a syntactic movement here. I will argue this in the next section.

- (21) a. Dareka-ga daremo-o semeta.
 someone-NOM everyone-ACC criticized
 'Someone criticized everyone.' Subj >> DO, *DO >> Subj
- b. Daremo-o dareka-ga semeta.
 everyone-ACC someone-NOM criticized
 'Everyone, someone criticized.' Subj >> DO, DO >> Subj
- (22) a. [Hutari-no gakusei]-ga [sannin-no sensei]-ni atta.
 [two-GEN student]-NOM [three-GEN teacher]-DAT met
 'Two students met three teachers.' Subj >> IO, *IO >> Subj
- b. [sannin-no sensei]-ni [Hutari-no gakusei]-ga atta.
 [three-GEN teacher]-DAT [two-GEN student]-NOM met
 'Three teachers, two students met.' Subj >> IO, IO >> Subj

The (a)-sentences in (21) and (22) have only the interpretation that the subject QNP takes scope over the object QNP, while the (b)-sentences are ambiguous. Thus, it seems that the surface order is crucial to determining the scope relations in Japanese; when a sentence does not involve any syntactic movement, as in the (a)-sentences, only the surface scope interpretation could be obtained. In contrast, when an object QNP is fronted by scrambling, as in the (b)-sentences, the sentence can be ambiguous. The Superiority account cannot explain the fact that the object QNP cannot take scope over the subject QNP in the (b)-sentences; since overt movement of a subject is motivated for "unrelated reasons," the subject is permitted to reconstruct in its base position, which is below the position where object QNPs are interpretable. If the movement of a subject to [Spec, TP] in Japanese is also motivated for the same reason as in English, the subject is permitted to reconstruct in [Spec, vP] in the (a)-sentences. For example, the sentence (21a) could have the following LF representation, which allows the object QNP to take scope over the subject QNP. However, the inverse scope interpretation is not allowed in this sentence.



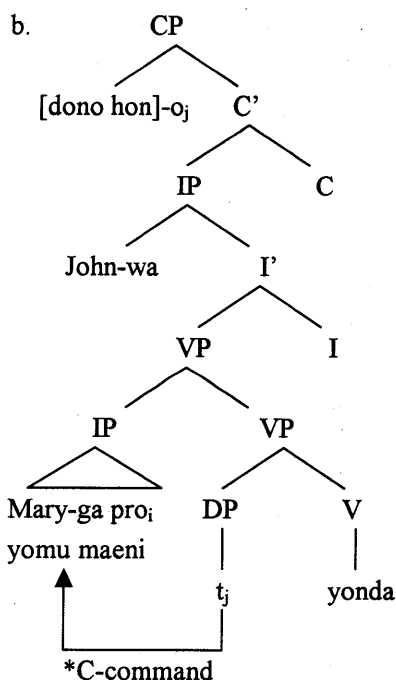
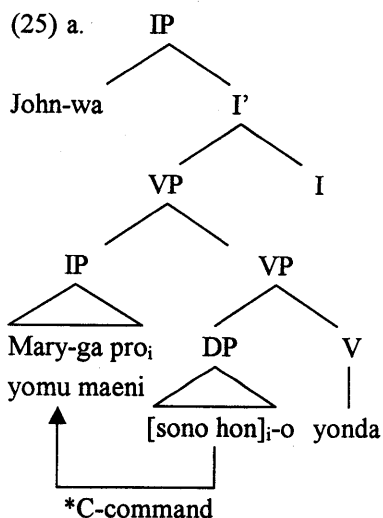
One possible explanation for the scope rigidity in (21a) and (22a) might be to assume that Japanese does not allow the operation of QR because a P-feature on the head *v* is inactive or absent in this language. According to the Superiority account, QR is assumed to be a feature-driven movement; a P-feature on *v* attracts quantifiers to [Spec, vP]. The notion of "P-feature" is originally used to explain the phenomenon of object shift in Germanic languages (Chomsky 2000). Due to the fact that the phenomenon of object shift cannot be

observed in all languages, Chomsky assumes that the presence of a P-feature on the head *v* is parameterized across languages. Although English does not allow object shift but does QR, Bruening assumes that a P-feature on the head *v* in English attracts only quantifiers. Let us assume that a P-feature on the head *v* in Japanese does not attract quantifiers, and thus Japanese does not have the operation of QR. If this assumption is correct, the rigidity of the scope relations in (21) and (22) might be explained. Since a P-feature is inactive (or absent) in Japanese, it is not necessary to assume that only [Spec, *v*P] must be the interpretable position for quantifiers. Thus, both subject and object QNPs would be interpreted either in their surface positions or in their trace positions.

However, it is still necessary to assume that QR does exist in Japanese. Let us consider the Weak Crossover phenomenon in Japanese.

- (24) a. John-wa [Mary-ga *pro*_i yomu mae-ni] [sono hon_i]-o yonda.
 John-TOP [Mary-NOM read before] [that book]-ACC read
 ‘John, before Mary read it_i, read [the book]_i.’
 b. *John-wa [Mary-ga *pro*_i yomu mae-ni] [dono hon_i]-o yonda no?
 John-TOP [Mary-NOM read before] [which book]-ACC read Q
 ‘John, before Mary read it_i, read [which book]_i?’ (Nishigauchi 1990: 63)

In order to capture this phenomenon, Nishigauchi assumes that ‘a variable cannot be the antecedent of a pronoun it does not c-command (Nishigauchi 1990: 63).’ Note that the antecedent DP does not c-command *pro* in the adjunct clause in both sentences. However, in (24a), the DP *sono hon* can be the antecedent of *pro*, while the *wh*-phrase *dono hon* in (24b) cannot. Assuming *wh*-movement at LF, *pro* in (24b) will not be c-commanded by the variable created by movement of the *wh*-phrase, which violates Nishigauchi’s assumption, as in (25b).

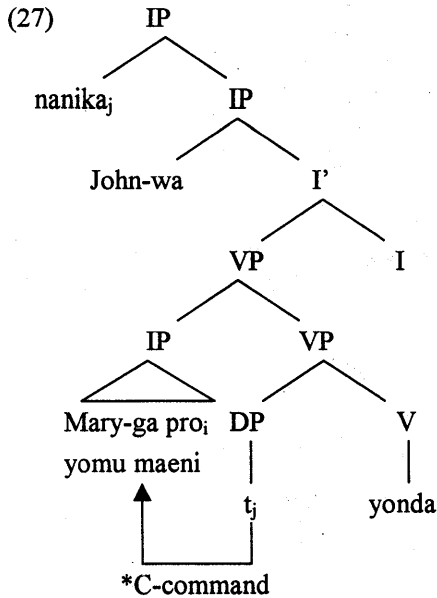


This phenomenon can be observed in other constructions involving QNPs, as in (26).

- (26) a. *John-wa [Mary-ga pro_i yomu mae-ni] nanika $_i$ -o yonda.
 John-TOP [Mary-NOM read before] something-ACC read
 'John, before Mary read it $_i$, read something $_i$.'
- b. *John-wa [Mary-ga pro_i yomu mae-ni] nanimo $_i$ yom-anakatta.
 John-TOP [Mary-NOM read before] anything read-not
 'John, before Mary read it $_i$, did not read anything $_i$.' (Nishigauchi 1990: 65)

The ungrammaticality of the sentences (26) can be explained by assuming that QNPs *nanika* and *nanimo* move to the adjoined position of the matrix IP.⁴ For example, the sentence (26a) would have the following LF representation in (27).

⁴ If these QNPs are assumed to adjoin to the VP, the same result would be gained.



Since the trace of the QNP *nanika* cannot c-command *pro* in the adjunct clause, which is in violation of Nishigauchi's assumption, the sentence in (26a) is ungrammatical for the same reason as the one in (24b). If the DP *nanika* does not undergo QR, this sentence would have the same structure as (24a) and thus it should be grammatical. Due to this fact, it is necessary to assume that the operation of QR exists in Japanese as well as in English.

Thus, it is difficult for the Superiority account to capture quantifier scope interactions in Japanese.

4. Optional Quantifier Raising

We have observed in the previous section that the Superiority account cannot give a correct explanation for scope relations in Japanese. In this section, I suggest that the operation of QR can take place in the overt syntax as well as at LF. That is, overt movement can fill the role of QR, although it is motivated for other reasons. First, let us consider the sentences in (21) and (22), repeated in (28) and (29), again.

- (28) a. Dareka-ga daremo-o semeta.
 someone-NOM everyone-ACC criticized
 'Someone criticized everyone.'
 b. Daremo-o dareka-ga semeta.
 everyone-ACC someone-NOM criticized
 'Everyone, someone criticized.'


Subj >> DO, *DO >> Subj

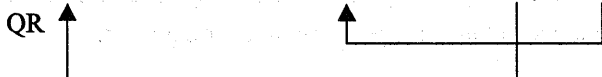
Subj >> DO, DO >> Subj

- (29) a. [Hutari-no gakusei]-ga [sannin-no sensei]-ni atta.
 [two-GEN student]-NOM [three-NOM teacher]-ACC met
 'Two students met three teachers.' Subj >> IO, *IO >> Subj
- b. [sannin-no sensei]-ni [Hutari-no gakusei]-ga atta.
 [three-NOM teacher]-ACC [two-GEN student]-NOM met
 'Two students met three teachers.' Subj >> IO, IO >> Subj

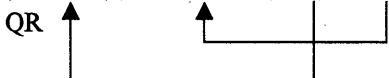
As mentioned above, the surface order seems to determine quantifier scope interactions in Japanese. In (28) and (29), the (a)-sentences have only the surface scope interpretation since they do not involve overt movement such as scrambling, while the (b)-sentences in which the object QNP is fronted by scrambling are ambiguous. Since the ambiguity of the (b)-sentences can be explained by the fact that the object QNP seems to be interpretable either in its surface position or in its trace position, it has been widely assumed that Japanese is a scope rigid language. However, as we have seen in the previous section, we have to assume that Japanese does also have the operation of QR.

Let us consider the interpretation of the (a)-sentences in (28) and (29). The Superiority account seems to be correct in explaining the fact that the (a)-sentences can have only the surface scope interpretation. If both subject and object QNPs must undergo QR, each movement seems to be subject to Superiority. Following Bruening, I also suggest that QR is motivated by a P-feature on the head *v* and must obey Superiority. Thus, the (a)-sentences in (28) and (29) would have the following LF-representations. (Tentatively, I do not mention the positions to which quantifiers adjoin by QR.)

- (30) a. [dareka-ga [daremo-o [_{VP} t_{Subj} [_{VP} t_{Obj} tv] semeta]]]]


b. [_{VP} [hutari-no gakusei]-ga [_{VP} [sannin-no sensei]-ni [_{VP} t_{Subj} [_{VP} t_{Obj} tv] atta]]]]


If all quantifiers must undergo QR which must obey Superiority, however, the inverse scope interpretation in the (b)-sentence still cannot be explained; since QR would always apply to the subject QNP prior to the object QNP, only the surface scope interpretation would be available in these sentences, as in (31).

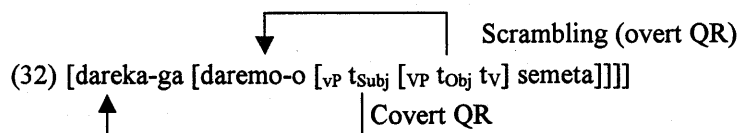
- (31) a. [_{VP} daremo-o [dareka-ga [t_{Obj} [_{VP} t_{Subj} [_{VP} t_{Obj} tv] semeta]]]]


b. [[sannin-no sensei]-ni [[hutari-no gakusei]-ga [t_{Obj} [v_P t_{Subj} [v_P t_{Obj} tv] atta]]]]



Before considering the inverse scope interpretation of the (b)-sentences in (28) and (29), let us examine the operation of QR a little more fully here. According to the Superiority account, it is assumed that all quantifiers must undergo QR, since QR is motivated by a P-feature on the head *v* which attracts all quantifiers to [Spec, vP]. It should be noted that this account assumes that the operation of QR always takes place at LF. However, we do not have any facts on which to base an assumption that QR must occur at LF. Now let us suppose that quantifiers can undergo QR in the overt syntax. Even if all quantifiers must move to their interpretable positions by QR, these movements do not have to take place at LF. According to Chierchia, there is a fundamental principle for the architecture of grammar, which says ‘Don’t do covertly what you can do overtly (Chierchia 1998: 360)⁵.’ Given this principle, it might be better for QR to occur in the overt syntax rather than at LF. However, this principle is too strong. Slightly modifying this principle, I suggest that it is ‘not necessary’ to move covertly what you can move overtly. If this principle applies to the operation of QR, we might say that a QNP which undergoes some overt movement such as scrambling does not have to move covertly by QR. Indeed, overt movement such as scrambling is not motivated for scope reasons. However, even though a QNP seems to move overtly for some other reasons, I suggest that overt movement can also function as QR.

Let us return now to the (b)-sentences in (28) and (29). Since the direct object QNP moves overtly to a higher position by scrambling, it does not have to undergo QR covertly. In this case, QR applies only to the indirect object QNP, and thus, the inverse scope interpretation can be obtained. For example, when the sentence in (28b) has the following LF representation as in (32), it has the inverse scope interpretation. It should be noted that overt movement such as scrambling is not subject to Superiority in the same way as QR, assuming that constraints apply only to the movements that take place in the same component.



Yet, when QR applies to both indirect and direct object QNPs, the (b)-sentences in (28) and (29) have the surface scope interpretation.

This account can also explain the scope freezing effect in double object constructions. Let

⁵ See also Pesetsky (1988) for a similar discussion.

us consider the sentences in (4), repeated below.

- (33) a. Kootyoosensei-ga [hutari-no gakusei]-ni [sannin-no sensei]-o syookaisita.
 principal-NOM [two-GEN student]-DAT [three-GEN teacher]-ACC introduced
 'The principal introduced three teachers to two students.'
 b. Kootyoosensei-ga [sannin-no sensei]-o [hutari-no gakusei]-ni syookaisita.
 principal-NOM [three-GEN teacher]-ACC [two-GEN student]-DAT introduced
 'The principal introduced three teachers to two students.'

Recall that we have assumed above that the theme is base-generated in a position lower than the goal DP in a dative construction, following Pesetsky (1995) and Takano (1998). The sentence in (33b) involves an overt movement (i.e., scrambling), whereas (33a) does not. Since QR applies to both direct and indirect objects in (33a), the indirect object QNP must undergo QR prior to the direct object QNP, and the sentence (33a) has only the surface scope interpretation, as in (34).⁶

- (34) [[hutari-no gakusei]-ni_i [[sannin-no sensei]-o_j [_{VP} [_{VP} t_i [_{V'} t_j syookaisita]]]]]
 Covert QR ↑
-

⁶ There might be a possibility that both direct and indirect object QNPs undergo scrambling in the sentence that has IO-DO order, as in (i).

(i) ... IO DO ... [_{VP} t_{IO} [_{V'} t_{DO} V]]]

If these movements are possible, this structure could have the inverse scope interpretation, contrary to the fact; the claim that covert QR optionally applies to a QNP which undergoes overt movement would allow only the direct object QNP to undergo covert QR, since overt movement of the indirect QNP might function as QR. However, we can exclude this possibility; Kuno (p.c.) points out that these movements in (i) do not exist. Let us consider the following sentence.

(ii) [otagai-no ryousin]-o [John-to Mary]-ga t_i mita.
 each other-GEN parents-ACC [John-and Mary]-NOM saw
 'John and Mary saw each other's parents.'

In (ii), the direct object is fronted by scrambling since the anaphor *otagai* must be bound by the antecedent, it must be interpreted in its trace position. Thus, a scrambled element can be reconstructed to its base position.

Now consider the sentence (iii).

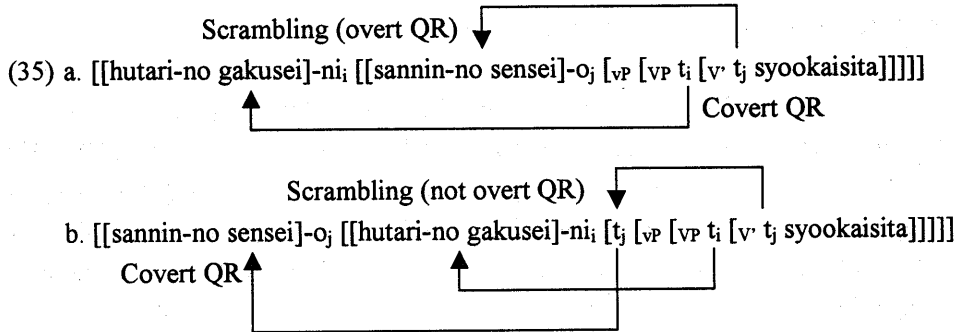
(iii) *John-ga otagai-ni [Hanako-to Mary]-o syookaisita.
 JohnNOM each other-DAT [Hanako-and Mary]-ACC introduced
 'John introduced Hanako and Mary to each other.'

Since the theme is assumed to be base-generated below the goal, the sentence (iii) does not seem to involve overt movement. Suppose that both direct and indirect objects undergo scrambling, as in (iv).

(iv) otagai-ni_j [Hanako-to Mary]-o [_{VP} t_i [_{V'} t_j syookaisita]]

If only the indirect object is reconstructed to its trace position, the antecedent could bind the anaphor and the sentence would be grammatical. However, it is ungrammatical. Therefore, it is necessary to assume that both objects remain in their base positions in this sentence.

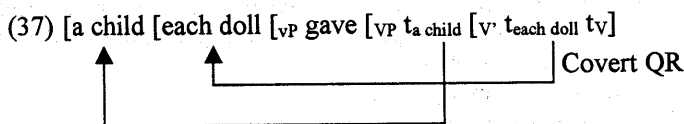
In contrast, in (33b), the application of covert QR to the direct object QNP *sannin-no sensei* is not obligatory. When QR applies only to the indirect object QR, the inverse scope interpretation would be obtained in (33b), as in (35a). However, it is also possible that QR also applies to both direct and indirect object QNPs. In this case, the sentence in (33b) would have the surface scope interpretation, as in (35b). Thus, overt movement in (35a) functions as QR, while it does not in (35b).



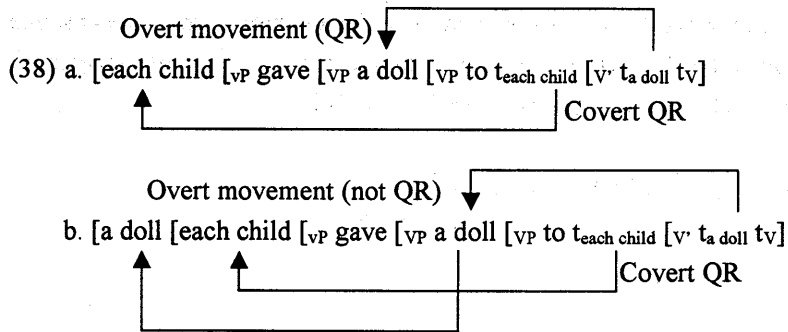
The same explanation can hold in English double object and dative constructions. Let us consider the sentences in (3), repeated in (36).

- (36) a. I gave a child each doll. IO >> DO, *DO >> IO
 b. I gave a doll to each child $\text{t}_a \text{ doll}$. IO >> DO, DO >> IO

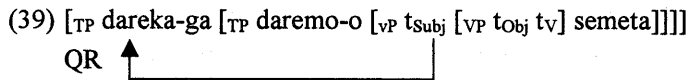
Since the double object construction (36a) does not involve overt movement, QR applies to the indirect object prior to the direct object, as in (37).



On the other hand, the direct object moves overtly from a lower position than the indirect object in (36b). Thus, covert QR optionally applies to the direct object. When the direct object remains in its surface position at LF, the sentence in (36b) would have the inverse scope interpretation, as in (38). When covert QR applies to both objects, the surface scope interpretation would be obtained, as in (38b).



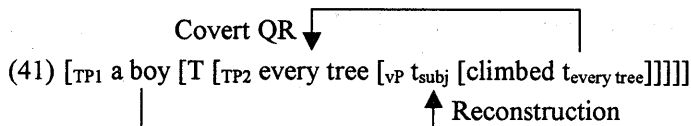
Last, let us consider the positions to which QNPs move by QR. Consider the sentence in (28b), in which the object is fronted by scrambling. If we assume that the surface subject position is [Spec, TP] in Japanese, the object overtly moves to the TP-adjoined position by scrambling. When this sentence has the inverse scope interpretation, the object QNP is assumed to remain in its surface position at LF because overt movement of the object QNP can function as QR. In this case, the subject QNP must move to a higher position than the object QNP. Thus, it is necessary to say that the subject QNP moves to the TP-adjoined position by QR, as in (39).



However, one problem arises. Consider the sentence in (1), repeated in (40).

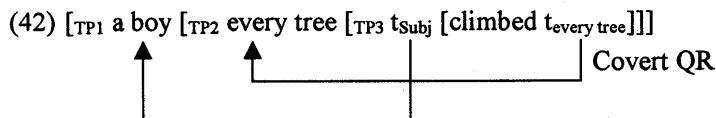
(40) A boy climbed every tree.

According to the Superiority account, the inverse scope interpretation of this sentence can be explained by reconstruction of the subject to [Spec, vP]. Since a subject moves to [Spec, TP] for unrelated reasons, it can reconstruct to its base position. Moreover, the Superiority account considers that QR is vP-adjunction, since it is motivated for a P-feature on the head v. Thus, when the sentence in (40) has the inverse scope interpretation, it has the following LF representation.



On the other hand, when the subject QNP remains in its surface position at LF, (40) has the surface scope interpretation.

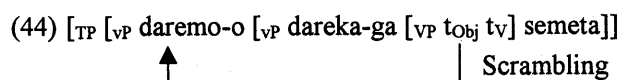
However, if, as we have seen in (39), QR is assumed to be TP-adjunction, the inverse scope interpretation cannot be obtained. The sentence in (40) does not involve any overt movement⁷, and thus, QR must apply to both subject and object QNPs, as in (42).



In order to solve this paradox, let us consider the surface subject position in Japanese. Kitagawa (1986) argues that an important difference between English and Japanese is that English raises its subject from [Spec, VP] to [Spec, I'], while Japanese does not raise its subject. Following Kitagawa, I also suggest that the subject remains in its base position in Japanese. That is, Japanese does not move a subject overtly to [Spec, TP], while English does. Thus, the structure of the sentence in (28a), for example, can be illustrated as in (43).

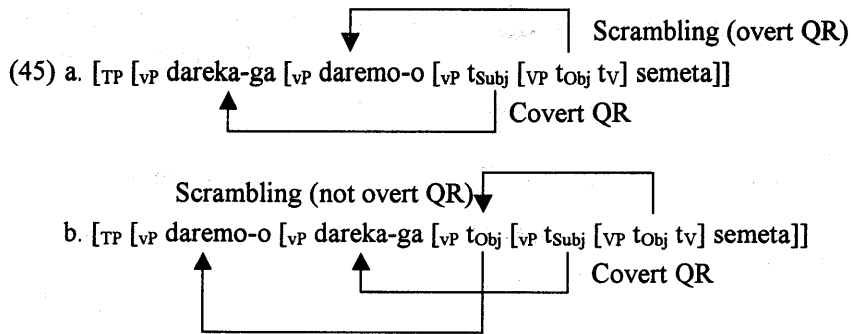


As we have seen in (39), scrambling is assumed to be TP-adjunction because a subject is considered to be in [Spec, TP] in Japanese as well as in English. However, if a subject does not raise overtly to [Spec, TP] in Japanese, it is possible to assume that the surface position of the scrambled object is [Spec, vP], not [Spec, TP]. Let us suppose further that scrambling is vP-adjunction, not TP-adjunction. Thus, the sentence in (28b) has the following structure.



Now let us turn to the positions where quantifiers move by QR. Let us take the sentence in (28b), for example. As mentioned above, assuming that scrambling is TP-adjunction, it is necessary to consider that the operation of QR moves the subject QNP to the higher specifier of TP. However, if the surface position of the scrambled object is [Spec, vP], the subject QNP does not have to move up to [Spec, TP]. Following Bruening, I also assume that QR is motivated by a P-feature on the head v in Japanese as well as in English. Therefore, the sentence (28b) has the following two LF representations, as in (45).

⁷ Although the subject moves overtly to [Spec, TP], I do not take this movement into account.



Since the object moves overtly to [Spec, vP], it does not have to undergo QR at LF. When covert QR applies only to the subject QNP, as in (45a), the sentence would have the inverse scope interpretation. When QR applies to both the subject and object QNPs at LF, as in (45b), the surface scope interpretation can be obtained.

5. Conclusion

In this paper, I have reconsidered the operation of QR. It has been assumed that the operation of QR always takes place in the covert syntax. Based on this assumption, the Superiority account, suggested by Bruening (2001) and Sauerland (2000), can give a correct explanation for quantifier scope relations in English. However, this account does not hold in Japanese, which seems to be a scope rigid language. I suggest that the operation of QR does not only take place at LF, but it can also occur in the overt syntax. That is, QR does not always apply to all quantifiers at LF; covert QR applies optionally to a QNP which undergoes overt movement. This is because overt movement can function as QR, although it is motivated for other reasons. Chierchia (1998) suggest that there is a fundamental principle for the architecture of grammar, which says ‘Don’t do covertly what you can do overtly (Chierchia 1998: 360).’ Weakening this principle, I assume that grammar has the principle that ‘It is not necessary to do covertly what you can do overtly.’ The approach for the operation of QR in this paper is compatible with this fundamental principle.

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