

Studies in Generative Grammar 69

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The Free Word Order Phenomenon

Its Syntactic Sources and Diversity

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Further notes on the interpretation of scrambling chains

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1. Introduction

The precise semantic effect of Japanese (and Korean) scrambling has been a matter of controversy in the recent years. In Saito (1989), I discussed examples like (1b) and proposed that scrambling can be literally “undone” in the LF component.¹

- (1) a. [_{TP} Taro-ga [_{CP} [_{TP} Hanako-ga dono hon-o yonda] ka]
-NOM -NOM which book-ACC read Q
siriagatte inu] (koto)
eager-to-find out is fact
‘Taro is eager to find out which book Hanako read’,
- b. ?[_{TP} Dono hon-o_i [_{TP} Taro-ga [_{CP} [_{TP} Hanako-ga _i yonda] ka]
which book-ACC -NOM -NOM read Q
siriagatte inu]] (koto)
eager-to-find out is fact
‘Taro is eager to find out which book Hanako read’

(1b), which is only slightly deviant, is derived from (1a) by scrambling the wh-phrase *dono hon-o* ‘which book-ACC’ from the embedded object position to the initial position of the matrix clause. The surface position of the wh-phrase, as a result, is outside the embedded question CP. Yet, the wh-phrase is interpreted as part of this CP. This suggests that it is placed back to a position within this CP at LF. This kind of “undoing” has been called radical reconstruction so that it can be distinguished from the standard kind of reconstruction often assumed to explain, for example, connectivity with binding.

In later works, I have tried to provide an explanation for the radical reconstruction effects by making the mechanism of chain interpretation precise. The most recent attempt was made in Saito (2003).² If the copy and deletion analysis of movement is adopted, (2a) can be represented as in (2b).

- (2) a. *Who_i did John see t_i*
 b. [_{CP} *Who* [_{C'} *did* [_{TP} *John see who*]]]
 { π , O, $\#\#\mathbf{E}$ } { $\#\mathbf{E}$, Θ , arg}

The wh-phrase in the object position is copied at CP Spec. A wh-phrase is nothing but a bundle of features, including phonetic features (π), a wh-operator feature (O), and a feature, say, argument-feature (arg), that is closely tied with the referential properties of the phrase and participates in binding relations.³ Then, deletion may apply to these features to yield the proper interpretation of the movement chain as indicated in (2b). The phonetic features are retained at the head position of the chain. This is the defining property of overt movement. On the other hand, the wh-operator feature and the arg-feature are interpreted at the CP Spec and at the object position respectively. This suggests that formal/semantic features are retained at the positions where they are selected. Thus, the consideration of a simple example like (2) leads us to the initial hypothesis in (3) for the mechanism of chain interpretation.

- (3) *Initial hypothesis:*
 a. Deletion applies so that every feature is retained at exactly one position.
 b. The π -features are retained at the head of the chain.
 c. Other features are retained at the positions where they are selected.

The application of (3) to scrambling automatically yields its “undoing” property. Let us consider (4).

- (4) a. [_{TP} *Sono hon -o_i* [_{Yamada-ga t_i yonda}]] (*koto*)
 that book-ACC -NOM read fact
 ‘Yamada read that book’
 b. [_{TP} *Sono hon-o* [... *sono hon-o* ...]]
 { π , $\#\#\mathbf{E}$ } { $\#\mathbf{E}$, arg}

As scrambling is not operator movement, the proposed phrase lacks an operator feature. Thus, only phonetic features are retained at the head position of the chain. In this particular case, then, scrambling is indistinguishable from PF movement. One purpose of Saito (2003) was to show that this analysis of scrambling accounts for the well-known A/A’ properties of scrambling discussed in detail in Mahajan (1990), Tada (1993), and Nemoto (1993).

The aim of the present paper is to extend this analysis by examining the distributions and the interpretations of other formal/semantic features, specifically, those that are not selected by a lexical head or an interrogative C. In particular, I will discuss the effects of scrambling on quantifier scope and the licensing of negative polarity items (NPIs). The discussion will be speculative and the proposals tentative since the analysis is still controversial even for the basic examples of quantifier scope interaction and NPI licensing. Nevertheless, I will suggest that ‘selection’ in (3c) should be generalized to ‘licensing’ so that it covers the quantificational feature (q-feature) and the NPI-feature as well. Further, I will propose that every formal/semantic feature that participates in compositional semantics must be licensed internal to a phase, or more precisely, within the information unit that syntax transfers to semantics upon the completion of a phase. This amounts to saying that each derivational phase is subject to Full Interpretation (FI) in the sense of Chomsky (1986).

In the following section, I will briefly go over the analysis of the A/A’ properties of scrambling proposed in Saito (2003). Section 3 concerns the scope of quantified NPs. I will first present a preliminary analysis for the scope rigidity phenomenon observed with quantifiers in Japanese. Then, I will discuss and analyze the fact that only clause-internal scrambling (as opposed to scrambling across a CP boundary) can affect quantifier scope. The analysis is based on the proposal that a quantified NP is licensed by virtue of binding a variable within its chain. In Section 4, I will discuss the so called *sika* ... *nai* construction, a representative example of negative polarity constructions in Japanese. It will be argued that when scrambled, NPIs exhibit patterns of radical reconstruction quite similar to those observed with quantified NPs and hence, should be analyzed in basically the same way. Finally, in Section 5, I will briefly speculate on the ways syntax sends various kinds of information to semantics.

2. The A/A’ problem

The investigation of the A/A’ properties of its landing site has been one of the central issues in the analysis of scrambling since Weibelhuth 1989 and Mahajan 1990. The typical paradigms obtain in Japanese as well, as discussed in detail in Tada 1993 and Nemoto 1993. I will start the discussion in this section by considering examples that contain *otagai* ‘each other’.

- (5) shows that *otagai* ‘each other’ requires a c-commanding antecedent.

- (5) a. [_{TP} *Karera-ga* [_{otagai} -no *sensei*]-o *hihansita*] (*koto*)
 they -NOM each other-GEN teacher-ACC criticized fact
 'They criticized each other's teachers'
 b. ?* [_{TP} [_{otagai} -no *sensei*]-ga *karera-o* *hihansita*] (*koto*)
 each other-GEN teacher-NOM they -ACC criticized fact
 'Lit. Each other's teachers criticized them'

The ungrammatical (5b) dramatically improves when the antecedent *karera* 'they' is preposed to the sentence-initial position by scrambling, as shown in (6).

- (6) ? [_{TP} *Karera-o*_i [_{otagai} -no *sensei*]-ga *t_i hihansita*] (*koto*)
 they -ACC each other-GEN teacher-NOM criticized fact

This is not surprising because *karera* c-commands *otagai* in this example. It also shows that scrambling affects interpretation at least in some cases, and is to be distinguished from PF movement.

But (7) indicates that the same kind of improvement is not observed with long scrambling out of a CP. That is, (7b) is ungrammatical despite the fact that *karera* 'they' is scrambled to a position that c-commands *otagai* 'each other'.

- (7) a. * [_{TP} [_{otagai} -no *sensei*]-ga [_{CP} [_{TP} *Tanaka-ga* *karera-o*
 each other-GEN teacher-NOM -NOM they -ACC
hihansita] *to*] *itai*] (*koto*)
 criticized that said fact
 'Lit. [Each other's teachers] said that Tanaka criticized them'
 b. * [_{TP} *Karera-o*_i [_{otagai} -no *sensei*]-ga [_{CP} [_{TP} *Tanaka-ga*
 they -ACC each other-GEN teacher-NOM -NOM
t_i hihansita] *to*] *itai*] (*koto*)
 criticized that said fact

Based on a similar distinction in Hindi between clause-internal scrambling and long scrambling, Mahajan (1990) argues that the former can be A-movement while the latter is necessarily A'-movement. Then, if *otagai* is an anaphor and requires A-binding, the contrast between (6) and (7b) readily follows.

I suggested in Saito (2003), however, that this is not the only possible conclusion that can be drawn from the contrast between (6) and (7b), and

that there is a way to maintain a uniform analysis of scrambling in Japanese. Let us first consider how the chain interpretation mechanism briefly introduced in the preceding section applies in the case of successive-cyclic movement.⁴

- (8) [_{CP} *Who_i* [_{C'} *do* [_{TP} *you think* [_{CP} *t_i* [_{TP} *John saw t_j*]]]]]

The first step of the movement in (8) is illustrated in (9).

- (9) [_{CP} *Who_i* [_{TP} *John saw who_j*]]
 { π , O, $\#\#\#$ } { $\#\$, Θ , arg}

All features of the wh-phrase are copied at the embedded CP Spec. Further, the deletion of features must apply at this point if cyclic interpretation in the sense of Chomsky (1998) is assumed. Suppose that Transfer Operation sends information to PF and semantics at the completion of each phrase. The TP is the complete unit subject to this transfer in the case of (9) because the edge of the CP participates in operations in the higher phase: the C head satisfies the selectional requirement of the higher V and the wh-phrase in CP Spec undergoes further movement. Then, the TP must be in a form accessible to PF and semantics upon the completion of the derivation of the CP phase in (9). This requires the deletion of the phonetic features and the operator feature in the object position. Otherwise, the wh-phrase would be pronounced there and the object would have to be interpreted as an operator.

As the matrix CP is constructed, the wh-phrase moves on to the matrix CP Spec as in (10).

- (10) [_{CP} *Who_i* [_{C'} *do* [_{TP} *you think* [_{CP} *who_j* [_{TP} ...]]]]]]
 { π , O} { $\#\$, Θ }

The phonetic features and the operator feature are copied at the matrix CP Spec and then, are deleted at the embedded CP Spec in accordance with (3). The deletion of the features at the embedded CP Spec is equivalent to the deletion of the intermediate trace in an operator-variable chain.

Let us suppose that scrambling chains are interpreted in roughly the same way. The clause-internal scrambling in (6) takes place as in (11).

- (11) [_{TP} *Karera-o* [_{...} *otagai* ... *karera-o* ...]]
 { π , $\#\#\#$ } { $\#\$, arg}

On the other hand, the derivation of (7b) is more involved. First, the following chain is formed in the embedded CP:

- (12) [_{CP} *Karera-o* [_{TP} ... *karera-o* ...]]
 {π, #E} {#, arg}

Then, the matrix clause is constructed as in (13).

- (13) [_{TP} *Karera-o* [... *otagai* ... [_{CP} *karera-o* [_{TP} ...]]]]
 {π} {#}

Note that there is a clear difference between (11) and (13). In the latter, the movement that places *karera* 'they' in a position c-commanding *otagai* 'each other' carries only the phonetic features, and is literally PF-movement. Hence, the arg-feature of *karera* never c-commands *otagai* in this derivation. On the other hand, the arg-feature of *karera* is in a position c-commanding *otagai* prior to the application of deletion in the case of (11). Thus, if the licensing condition on *otagai* is an anywhere condition, the contrast between (6) and (7b) is accounted for.

It has been controversial whether *otagai* is an anaphor and hence is subject to Condition (A), or contains a hidden pronoun that is subject to the licensing condition on bound pronouns.⁵ But it has been argued that both of these conditions are anywhere conditions. (See, for example, Belletti and Rizzi 1988, Lebeaux 1988, Epstein, et al. 1998, and Sabel 2002.) Presenting further arguments for this hypothesis, I argued for the copy and deletion analysis just illustrated of the contrast between (6) and (7b) in Saito (2003). According to this analysis, there are no A- and A'-scramblings as proposed in Mahajan (1990) and argued for in many subsequent works including Saito (1992, 1994). The landing site of scrambling is uniformly a position from where the licensing of *otagai* 'each other' is possible, i.e., an A-position in traditional terminology. Long scrambling fails to license this element because it only copies phonetic features at the landing site.

This analysis of (6) and (7b) straightforwardly extends to the similar contrast between (14b) and (15b), also discussed by Tada (1993) and Nemoto (1993).

- (14) a. ?*[_{TP} [_{Sono}: *tyosya*]-*ga dono hon-ni-mo keti-o tuketa*]
 its author -NOM which book-to-also gave-criticism
 'Lit. Its author criticized every book.'

- b. [_{TP} *Dono hon-ni-mo* [[_{sono}: *tyosya*]-*ga t_i keti-o tuketa*]]
 which book-to-also its author -NOM gave-criticism

- (15) a. *[_{TP} [_{Sono}: *tyosya*]-*ga* [_{CP} [_{Hanako-ga dono hon-ni-mo},
 its author -NOM -NOM which book-to-also
keti-o tuketa] *to*] *itaa*]]
 gave-criticism that said
 'Lit. Its author said that Hanako criticized every book.'

- b. ?*[_{TP} *Dono hon-ni-mo* [[_{sono}: *tyosya*]-*ga* [_{CP} [_{Hanako-ga}
 which book-to-also its author -NOM -NOM
t_i keti-o tuketa] *to*] *itaa*]]]
 gave-criticism that said

(14a) is a typical example of weak crossover. As shown in (14b), clause-internal scrambling of the quantified phrase remedies the violation. (15b), in contrast, indicates that this effect is not observed with long scrambling. The derivation of (14b) is illustrated in (16).

- (16) [_{TP} *Dono hon-ni-mo* [[_{sono}: *tyosya*]-*ga dono hon-ni-mo keti-o tuketa*]]
 {π, #E} {#, arg}

Since the arg-feature of the quantified phrase appears at a position c-commanding *sono* 'its' at one point of the derivation, the latter is licensed as a bound pronoun. (15b), on the other hand, is derived as in (17).

- (17) a. [_{CP} *Dono hon-ni-mo* [_{TP} *Hanako-ga dono hon-ni-mo keti-o tuketa*] *to*]
 {π, #E} {#, arg}
- b. [_{TP} *Dono hon-ni-mo* [[_{sono}: *tyosya*]-*ga* [_{CP} *dono hon-ni-mo* [_{TP} ...] *to*]]
 {π} {#}
- itaa*]]

Dono hon-ni-mo 'to every book' first moves to the edge of the embedded CP phase as shown in (17a). Chain interpretation applies at this point and the arg-feature is deleted from the landing site. The quantified phrase, then, moves on to the initial position of the matrix clause as in (17b), but only the phonetic features are copied at the landing site. Hence, the arg-feature of the quantified phrase is never in a position c-commanding the pronoun *sono* 'its', and the ungrammaticality of (15b) is correctly accounted for.

One consequence of the analysis illustrated above is that Condition (C) is an "LF condition" or more precisely, that it applies after chains are inter-

preted by deletion of features. It has been known that examples of clause-internal scrambling such as (18a–b) are grammatical.

- (18) a. [_{TP} Zibunzisin-o_i [Taroo-ga t_i semeta]] (koto)
 self -ACC -NOM blamed fact
 'Taroo blamed himself'
- b. [_{TP} Otagai -o_i [Taroo-to Hanako-ga t_i semeta]] (koto)
 each other-ACC -and -NOM blamed fact
 'Taroo and Hanako blamed each other'

(18a), for example, is derived as in (19).

- (19) [_{TP} Zibunzisin-o [Taroo-ga zibunzisin-o semeta]]
 {π, #E} {#, arg}

If Condition (C) is an everywhere condition, as argued, for example, in Lebeaux (1998), (19) would violate this condition because the arg-feature of *zibunzisin* 'self' c-commands *Taroo* at the point the scrambled phrase is copied at the landing site. This problem does not arise if the condition applies after the arg-feature is deleted from this position. I will come back to the status of Condition (C) in Section 5, where I briefly discuss the general picture of the way syntax sends information to semantics.

3. Scrambling and the scope of quantified phrases

The formal/semantic features discussed in the preceding section, the operator feature and the arg-feature, are selected and licensed at specific positions by the appropriate heads. But there are features that do not have this property. In this section, I will discuss one clear case, that is, the quantificational feature (q-feature) of quantified phrases. I will suggest that it is licensed by virtue of binding a variable within its chain, and hence, can be retained in a position that establishes this binding relation. In Section 3.1, I will discuss the scope rigidity phenomenon observed in Japanese and at the same time, lay out the preliminary assumptions that are adopted in this paper for the analysis of quantifier scope. Then, in Section 3.2, I will examine the effects of scrambling on scope interaction.

3.1. Scope rigidity and preliminary assumptions on quantifier raising

Japanese is considered one of the typical languages with scope rigidity. Thus, the existential *dareka* 'someone' takes scope over the universal *daremo* 'everyone' in (20).

- (20) *Dareka -ga daremo -o aisite iru*
 someone-NOM everyone-ACC love
 'Someone loves everyone' (E > V)

It is not clear whether this scope rigidity should be considered an absolute condition or even a property that is parameterized for a language. First, it specifies the strongly preferred reading but only the strongly preferred reading for speakers like me. Thus, the wide scope interpretation of *daremo* 'everyone' is much less preferred but is still possible in (20), and it is easier in this example than in (21), where the two quantified NPs are separated by a CP boundary.

- (21) *Dareka -ga [_{CP} daremo -ga Taroo-o aisite iru to] omotte iru*
 someone-NOM everyone-NOM -ACC love that think
 'Someone thinks that everyone loves Taroo' (E > V)

Further, the condition is clearly relaxed when an indefinite NP is substituted for the existential quantifier. Responding to a claim in Lasnik and Saito (1992) that scope rigidity obtains in English as well, Chierchia (1992) presents examples such as the following as uncontroversial cases where the condition fails:

- (22) a. *A soldier was standing in front of every entrance*
 b. *An expert has inspected every plane*

In (22a), for example, the inverse reading is not only possible but is the normal interpretation of the sentence. However, when the subject position is occupied by an indefinite NP and the VP-internal universal quantifier is a complex expression as in (22), rigidity is not observed in Japanese either as (23) shows.⁶

- (23) a. *Heetai-ga dono mon-no mae-ni-mo tatte ita*
 soldier-NOM which gate-GEN front-at-also standing was
 'A soldier was standing in front of every gate'

- b. *Gisi -ga dono hikooki-mo tenkensita*
 mechanic-NOM which plane -also inspected
 'A mechanic inspected every plane'

The normal interpretation of (23a), for example, is the one with the distributive reading of 'every gate', and not the one that says there was a soldier who was standing in front of every gate.

Nevertheless, it remains a fact that the strongly preferred reading for examples like (20) is the one that observes scope rigidity. Hence, I will assume the generalization and confine the discussion to the scope interaction of *dareka* 'someone' and *daremo* 'everyone'. I will assume further that scope rigidity is explained by a constraint on the application or output of quantifier raising (QR), as suggested in Huang (1982), Hoji (1985), and Lasnik and Saito (1992). But before a concrete mechanism for scope rigidity is presented, some remarks on the status of QR are in order.

In classical works on QR, such as May (1977), the movement is assumed to apply in the mapping from S-structure to LF. The derivation of (24) is, then, as in (25).

- (24) *John wonders who_i t_i saw everyone*

- (25) D-structure: [_{TP} John wonders [_{CP} Δ [_{TP} who saw everyone]]]
 S-structure: [_{TP} John wonders [_{CP} who_i [_{TP} t_i saw everyone]]]
 (by wh-movement)
 LF: [_{TP} John wonders [_{CP} who_i [_{TP} everyone_j [_{TP} t_i saw t_j]]]]
 (by QR)

Here, QR adjoins the quantified NP *everyone* to TP (or alternatively to vP/VP) in the LF component. However, once cyclic interpretation is assumed, there cannot be an independent component for covert movement. Let us consider the embedded CP phase of (24) to illustrate the point.

- (26) [_{CP} who [_{TP} who saw everyone]]
 {τ, O, #q} {#, Θ, arg} {τ, q, arg}

When the CP is constructed as in (26), the shaded TP is transferred to semantics. But this implies that QR must have applied to the quantified NP *everyone* by then. In other words, QR must raise *everyone* as the embedded CP is constructed, before the derivation moves on to the matrix clause. The

application of covert movement, then, must be interwoven with that of overt movement.

This interwoven application of overt and covert movements has been suggested in the literature together with concrete mechanisms to make it technically possible. For example, Bobaljik (1995), among others, suggests that there is no distinction between overt and covert movements except that the phonetic features are retained at the initial site in the case of the latter. Then, the derivation of the embedded CP in (24) proceeds as in (27) with overt wh-movement and covert QR applying in a single cycle.

- (27) [_{CP} who [_{TP} everyone [_{TP} who saw everyone]]]
 {τ, O, #q} {#, q, #q} {#, Θ, arg} {τ, q, arg}

Another possibility proposed in Nissenbaum (2000) is that covert movement applies within each phase after Spell-Out but before information is sent to semantics. This theory states in essence that there are overt and covert "components" within each phase. I will adopt Bobaljik's analysis here, but at the same time, will assume for ease of exposition that QR is feature movement in the sense of Chomsky (1995) and raises only the q-feature. The derivation of the embedded CP in (24) is then as in (28).^{7, 8}

- (28) [_{CP} who [_{TP} everyone [_{TP} who saw everyone]]]
 {τ, O, #q} {q} {#, Θ, arg} {τ, q, arg}

Let us now return to the rigidity effects. The relevant example (20) is repeated below in (29).

- (29) *Dareka -ga daremo -o aisite iru*
 someone-NOM everyone-ACC love
 'Someone loves everyone' (∃ > ∀)

I will assume tentatively that scope rigidity results from the following minimality constraint on the application of QR:

- (30) QR does not raise a q-feature across another q-feature.

This allows the two derivations in (31) for (29).

- (31) a. [_{TP} *Dareka-ga* [_{TP} *daremo-o* [_{TP} *dareka-ga* [_{VP} *daremo-o aisite iru*]]]]]]
 {q} {q} {τ, φ, arg} {τ, φ, arg}
 b. [_{TP} *Dareka-ga* [_{TP} *dareka-ga* [_{VP} *daremo-o* [_{VP} *daremo-o aisite iru*]]]]]]
 {q} {τ, φ, arg} {q} {τ, φ, arg}

(31a) is allowed if “tucking-in” in the sense of Richards (2001) is possible. The q-feature of *dareka* ‘someone’ can be raised first with the deletion of the feature in the subject position. Then, QR can raise the q-feature of *daremo* ‘everyone’ beneath that of *dareka*. (31b) is more straightforward. QR adjoins the q-features of *dareka* and *daremo* to TP and vP respectively. Neither application of QR is in violation of (30). What (30) excludes is the derivation in (32), which yields the wide scope interpretation of *daremo*.

- (32) [_{TP} *Daremo-o* [_{TP} *dareka-ga* [_{TP} *dareka-o* [_{VP} *daremo-o aisiteiru*]]]]]]
 {q} {q} {τ, φ, arg} {τ, φ, arg}

Thus, (30) successfully describes scope rigidity.

3.2. The effects of scrambling on quantifier scope

With the preliminary assumptions introduced in the preceding section, I will now examine the effects of scrambling on quantifier scope and their implications for the interpretation of scrambling chains. It was shown above that Japanese exhibits scope rigidity. However, as originally pointed out by Kuroda (1971), the application of scrambling yields counter-examples to this generalization.^{9,10} Thus, the distributive reading of *daremo* ‘everyone’ is readily available in both (33a) and (33b).

- (33) a. *Daremo -o_i dareka -ga t_i aisite iru*
 everyone-ACC someone-NOM love
 ‘Someone loves everyone’ (V > E, E > V)
 b. *Dareka -o_i daremo -ga t_i aisite iru*
 someone-ACC everyone-NOM love
 ‘Everyone loves someone’ (V > E, E > V)

This shows that scrambling can affect quantifier scope and its application yields scope ambiguity.

On the other hand, it has been pointed out by Oka (1990), Tada (1993), and Abe (1993), among others, that only clause-internal scrambling induces the scope ambiguity just described. (34), which is derived by long scrambling, is unambiguous and does not allow the wide scope construal of *daremo*, in distinction with (33a).¹¹

- (34) *Daremo -o_i dareka -ga* [_{CP} [_{TP} *Taroo-ga t_i aisiteiru*] *to*] *itita* (*koto*)
 everyone-ACC someone-NOM -NOM love that said fact
 ‘Someone said that Taroo loves everyone’ (E > V)

The semantic effect of scrambling in (33) as well as its absence in (34) call for an explanation.

Let us first consider the examples in (33). The ambiguity of these examples indicates that the q-feature of the scrambled phrase can be retained either at the landing site or at the initial position, as illustrated in (35).

- (35) a. [_{TP} *NP₁* [<sub>NP₂ ... [_{VP} ... *NP₁* ...]]]]
 {τ, q, #} {τ, q, arg} {#, φ, arg}
 b. [_{TP} *NP₁* [<sub>NP₂ ... [_{VP} ... *NP₁* ...]]]]
 {τ, φ, #} {τ, q, arg} {#, φ, arg}</sub></sub>

If the purpose of QR is to assign scope to a quantified phrase and to establish a quantifier-variable relation, this is already achieved with scrambling in the case of *NP₁* in (35a). The q-feature of this NP takes sentential scope and binds the arg-feature in the object position. Let us then say that QR applies only to *NP₂* in this example to yield (36).

- (36) [_{TP} *NP₁* [<sub>NP₂ [<sub>NP₂ ... [_{VP} ... *NP₁* ...]]]]
 {τ, q, #} {q} {τ, φ, arg} {#, φ, arg}</sub></sub>

This is the only form that can be derived from (35a) by QR because (30) prohibits QR from raising a q-feature across another q-feature. The interpretation obtained is the one in which *NP₁* takes wide scope over *NP₂*.

The fact that (33) allows the narrow scope construal of the scrambled object seems to indicate that the scrambling chain can be interpreted as in (35b) as well. However, (35b) is a little strange to say the least. If deletion of features applies to create a proper chain for interpretation, the q-feature must be retained at a position where it can take scope. This, in turn, implies that the q-feature of *NP₁* should be retained at the landing site and not at the

object position. But provided that covert movement need not follow overt movement, (35b) can be revised slightly to avoid this problem. That is, QR can apply to both NP₁ and NP₂ before NP₁ is scrambled to the sentence-initial position, as illustrated in (37).

- (37) a. [_{TP} NP₂ [_{TP} NP₂ ... [_{VP} NP₁ [_{VP} ... NP₁ ...]]]] (by QR)
 {q} {π, φ, arg} {q} {π, φ, arg}
- b. [_{TP} NP₁ [_{NP₂} [_{TP} NP₂ ... [_{VP} NP₁ [_{VP} ... NP₁ ...]]]]] (by scrambling)
 {π, #φ} {q} {π, arg} {q} {π, φ, arg} {#, arg} {#, φ}

In (37a), both NP₁ and NP₂ are raised by QR in a way consistent with the rigidity condition in (30).¹² Then, in (37b), NP₁ in the object position, which now lacks the q-feature, is scrambled to the sentence-initial position. This derivation yields the narrow scope reading of NP₁ and hence, the ambiguity in (33) is correctly predicted.

The account for (33) presented above would predict ambiguity in (34) as well. This is so because scrambling can carry the q-feature of the embedded object to the initial position of the matrix clause as in (38).

- (38) a. [_{CP} *Daremo-o* [_{TP} ... *daremo-o* ...]]
 {π, q, #φ} {#, φ, arg}
- b. [_{TP} *Daremo-o* [*dareka-ga* [*dareka-ga* ... [_{CP} *daremo-o* [_{TP} ...]]]]]
 {π, q} {q} {π, φ, arg} {#, φ}

Daremo-o 'everyone-ACC' is first moved to the edge of the embedded CP phase as in (38a). The embedded TP is transferred to semantics at this point. In the matrix clause shown in (38b), the quantified NP moves on to the sentence-initial position by scrambling and the q-feature of the matrix subject is raised by QR to take scope. As the information of the shaded part is sent to semantics, *daremo-o* is assigned scope over *dareka-ga* 'someone-NOM'. This derivation must be blocked somehow because (34) does not allow the wide scope reading of the scrambled embedded object.

Here, a comparison between the scrambling of quantified NPs and wh-movement seems useful. With wh-movement, a wh-phrase can move out of a CP and take scope at the landing site.

- (39) [_{CP} *Who_i* does [_{TP} *John* think [_{CP} that [_{TP} *Mary* saw *t_i*]]]]]

What (34) shows is that scrambling does not allow a q-feature to take scope at the landing site in a similar situation. Another difference between the wh-movement in (39) and the scrambling in (34) is that the Operator-feature of the wh-phrase is selected and licensed by the C head at the landing site while the q-feature is not licensed by any specific head. Then, it is reasonable to assume that the q-feature must be licensed in some other way. Suppose then that a q-feature is licensed as a quantifier by virtue of binding a variable within its chain. The idea is that a phrase that is not licensed by a head either as an argument or as an operator will be construed as a modifier, e.g., as an adverbial phrase in this case, unless it binds a variable. And suppose further that when syntax transfers information to semantics, every element within the information unit must be properly licensed. The proposal is summarized in (40).

- (40) a. When the derivation of a phase HP is completed, syntax transfers the complement of H to semantics. The transfer applies cyclically and in a non-redundant way: the information that was already transferred to semantics in previous cycles is excluded from the present transfer operation.
- b. Every element in the structure that is transferred to semantics must be properly licensed within that structure. An arg-feature is licensed by a θ-role assigning (or agreement inducing) head, an Operator-feature is licensed by an operator-selecting C head, and a q-feature is licensed by virtue of binding a variable within its chain.

(40b) amounts to saying that Full Interpretation (FI) in the sense of Chomsky 1986 applies to each information unit that syntax sends to semantics.

The proposal above blocks the derivation in (38) as desired. When the derivation of the matrix clause is completed as in (38b), the shaded part is transferred to semantics. The q-feature of *dareka-ga* 'someone-NOM' is properly licensed as it binds the arg-feature in the subject position. However, that of *daremo-o* 'everyone-ACC' does not bind any arg-feature and hence, violates (40b). Note that (40) correctly allows the narrow scope reading of *daremo-o*. More specifically, the following derivation is possible:

- (41) a. [_{CP} *Daremo-o* [_{TP} *daremo-o* [_{TP} ... *daremo-o* ...]]]]
 {π, #φ} {q} {#, φ, arg}
- b. [_{TP} *Daremo-o* [*dareka-ga* [*dareka-ga* ... [_{CP} *daremo-o* [_{TP} ...]]]]]
 {π} {q} {π, φ, arg} {#}

In the embedded CP, the q-feature of *daremo-o* 'everyone-ACC' is raised by QR and its remaining features are scrambled to the edge of the phase. The embedded TP is sent to semantics with the q-feature properly binding an arg-feature.¹³ In the matrix CP, the q-feature of *dareka-ga* 'someone-NOM' is raised by QR and the phonetic features of *daremo-o* are scrambled to the sentence-initial position. All features are properly licensed in this phase as well. Thus, (34) is successfully derived with *daremo-o* taking embedded scope.

Before concluding this section, I will briefly discuss two implications of the analysis proposed above. First, QR, as conceived here, may tie some loose ends in the analysis of the examples with anaphors and bound pronouns discussed in Section 2. Let us consider again (5b) and (6), repeated below as (42a–b).

- (42) a. ?*[_{TP} *Otagai-no sensei-ga karera-o hihansita*] (*koto*)
 each other-GEN teacher-NOM they -ACC criticized fact
 'Lit. Each other's teachers criticized them'
 b. ? [_{TP} *Karera-o*] [_{CP} *[[otagai-no sensei]-ga _{t_i} hihansita]]* (*koto*)
 they -ACC each other-GEN teacher-NOM criticized fact

The derivations of (42a–b) are shown in (43a–b) respectively.

- (43) a. [_{TP} *Otagai-no sensei-ga karera-o hihansita*]
 {_{TP}, arg}
 b. [_{TP} *Karera-o*] [_{CP} *[[otagai-no sensei]-ga karera-o hihansita]]*
 {_{TP}, #E} {_#, arg}

The grammaticality of (42b) was attributed to the fact that the arg-feature of *karera* 'they' c-commands *otagai* 'each other' at one point of the derivation, as indicated in (43b).

But if the analysis ends here, then *otagai* is not bound in the structure transferred to semantics. This seems undesirable because reciprocal interpretation involves some sort of variable binding. The interpretation of (44a), for example, is as in (44b).

- (44) a. *John and Mary praised each other*
 b. [_{Vx}: *x* ∈ {*John*, *Mary*}] [_{Vy}: *y* ∈ {*John*, *Mary*} & *y* ≠ *x*] *x* praised *y*

This problem is inherent in any theory that hypothesizes that Condition (A) is an anywhere condition. But it is straightforwardly resolved if any NP is subject to QR as suggested in Reinhart (1991).¹⁴ Then, the derivations in (43a–b) are more precisely as in (45a–b).

- (45) a. [_{TP} *karera-o*] [_{CP} *[[otagai-no sensei]-ga karera-o hihansita]]*
 {q}
 b. [_{TP} *Karera-o*] [_{CP} *[[otagai-no sensei]-ga karera-o hihansita]]*
 {_{TP}, q, #E} {_#, q, arg}

In (45a), i.e. the derivation of (42a), the q-feature of *karera-o* 'they-ACC' is raised by QR. On the other hand, the q-feature is retained at the landing site of scrambling in the case of (45b). Thus, *otagai* 'each other' is bound in both cases. The difference, as proposed in Section 2, is that the reciprocal is licensed by the arg-feature of *karera-o* only in (45b).

According to this analysis, (7b), which shows that a phrase preposed by long scrambling cannot serve as an antecedent of *otagai*, is in violation of two conditions. The example is repeated in (46), together with its derivation in (47).

- (46) *[_{TP} *Karera-o*] [_{CP} *[[otagai-no sensei]-ga [_{CP} [_{TP} *Tanaka-ga* _{t_i} hihansita] *to*] itta]]* (*koto*)
 they -ACC each other-GEN teacher-NOM -NOM
 criticized that said fact
 'Lit. [Each other's teachers] said that Tanaka criticized them.'

- (47) a. [_{CP} *Karera-o*] [_{TP} *Tanaka-ga karera-o hihansita*] *to*] [_{CP} *[[otagai-no sensei]-ga [_{CP} [_{TP} *karera-o*] *to*] itta]]*
 {_{TP}, q, #E} {_#, q, arg} {_#, q}
 b. [_{TP} *Karera-o*] [_{CP} *[[otagai-no sensei]-ga [_{CP} [_{TP} *karera-o*] *to*] itta]]*
 {_{TP}, q} {_#, q}

The embedded CP phase is derived as in (47a), and the embedded TP is transferred to semantics at this point. Then, *karera-o* 'they-ACC' is scrambled to the sentence-initial position of the matrix clause as illustrated in (47b). Here, *otagai* 'each other' fails to be licensed by the arg-feature of *karera-o* as before. In addition, the q-feature of *karera-o* must be retained at the final landing site in order to bind *otagai*. But this results in a violation of (40b). The q-feature does not bind any arg-feature within its chain in (47b). This

violation of (40b) can be avoided if the q-feature is raised by QR within the embedded TP and retained there, as shown in (48).

- (48) [_{CP} *Karera-o* [_{TP} *karera-o* [_{TP} *Tanaka-ga karera-o hihansita*] *to*]
 {_{T, #q}} {_q} {_{T, q, arg}}

But then it will fail to bind *otagai* in the matrix clause.

The second implication that I would like to mention is that (40b) derives the clause-boundedness of QR in the majority of relevant cases. It is generally assumed that *everyone* can take scope over *someone* in (49a) but not in (49b).

- (49) a. *Someone loves everyone*
 b. *Someone thinks that John loves everyone*

It seems then that a quantified NP in an embedded clause cannot have scope over elements in the matrix.

The same phenomenon is observed in Japanese. As mentioned earlier in this section, the wide scope reading of *dareka* 'someone' is strongly preferred in (50a), due to scope rigidity.

- (50) a. *Dareka -ga daremo -o aisite iru*
 someone-NOM everyone-ACC love
 'Someone loves everyone'
 b. *Dareka -ga* [_{CP} *Taroo-ga daremo -o aissiteiru to*]
 someone-NOM -NOM everyone-ACC love that
omotte iru (koto)
 think fact
 'Someone thinks that Taroo loves everyone'

However, there is still a distinction between (50a) and (50b). The wide scope reading of *daremo* 'everyone' is simply impossible in (50b). This suggests that there is a condition, independent of rigidity, that prevents *daremo* from taking matrix scope. The point comes out more clearly in (51).

- (51) a. *Heitai-ga dono mon-no mae-ni-mo tatte ita*
 soldier-NOM which gate-GEN front-at-also standing was
 'A soldier was standing in front of every gate'

- b. *Heitai-ga* [_{CP} *Taroo-ga dono mon-no mae-ni-mo tatte*
 soldier-NOM -NOM which gate-GEN front-at-also standing
iru to] *itta (koto)*
 is that said fact
 'A soldier said that Taroo was standing in front of every gate'

As noted above, (51a), which has an indefinite subject, is ambiguous. But (51b), in clear contrast, does not have the ambiguity. It can only mean that a soldier said something absurd, and cannot mean that 'for every gate, there was a soldier who said that Taroo was standing in front of it'.

These facts follow from (40b) straightforwardly. If *everyone* is to have wide scope in (49b), the example would have to have the following derivation:

- (52) a. [_{CP} *everyone that* [_{TP} *John loves everyone*]]
 {_q} {_{T, q, arg}}
- b. [_{TP} *everyone* [_{TP} *someone* [_{TP} *someone thinks* [_{CP} *everyone that* [_{TP} ...]]]]]
 {_q} {_q} {_{T, q, arg}} {_q}

In (52a), the q-feature of *everyone* is moved to the edge of the embedded CP and the embedded TP is transferred to semantics. Then, in (52b), QR adjoins both *everyone* and *someone* to the matrix TP. This would yield the wide scope interpretation of *everyone*, but (52b) is in violation of (40b). The q-feature of *everyone* does not bind any arg-feature in the structure sent to semantics and hence, is not properly licensed. This feature must be raised to the embedded TP by QR as in (53) in order to satisfy (40b).

- (53) [_{CP} *that* [_{TP} *everyone* [_{TP} *John loves everyone*]]
 {_q} {_{T, q, arg}}

But then, it must take embedded scope.

In this section, I have proposed an analysis for the effects of scrambling on quantifier scope. The main fact to be accounted for was that clause-internal scrambling, but not long scrambling, allows a preposed quantified phrase to take scope at the landing site. In order to explain this fact, I suggested that a q-feature is licensed by virtue of binding a variable within its chain, and that every feature that participates in compositional semantics must be licensed internal to the structure syntax transfers to semantics. This assumes a large part of the initial hypothesis on chain interpretation presented

in (3). Operator-features and arg-features are retained at positions where they are selected, because these are positions where they are licensed and can satisfy Full Interpretation. Suppose, for example, that an Operator-feature is deleted at CP Spec as in (54).

- (54) [_{CP} *Who* did [_{TP} *John see who*]]
 { π , Θ , $\#\#\}$ { $\#\$, O , arg }

Then, when the TP is sent to semantics, the Operator-feature in the object position can neither be licensed nor be interpreted.

I have argued further that the proposals made in this section enable us to refine the analysis of the A/A' properties of scrambling and to explain the clause-boundedness of QR in the representative cases. I will apply the account for the clause-boundedness of QR to negative polarity items in Japanese in the following section, where it will be shown that they exhibit basically the same distribution as quantified NPs.

4. Negative polarity licensing

I will now turn to negative polarity items in Japanese and discuss their distribution as well as their radical reconstruction patterns. The analysis of those negative polarity items is quite controversial and the judgments of the relevant examples are often unclear, as will be seen in the following pages.¹⁵ But I will present a tentative analysis for them and explore its consequences because they provide important hints for the investigation of the precise nature of radical reconstruction and covert movement.

The particular negative polarity item that will be examined has the form *XP-sika*. Examples are provided in (55) and (56).¹⁶

- (55) a. *Taroo-sika soko-ni ik-ana-katta*
 -SIKA there-to go-not-past
 'Only Taroo went there'

- b. *Taroo-ga soko-ni-sika ik-ana-katta (koto)*
 -NOM there-to-SIKA go-not-past fact
 'Taroo only went there' (It is only there that Taroo went)

- (56) a. *Sono nimitu-sika Tookyo-kara todok-ana-katta*
 that luggage-SIKA -from arrive-not-past
 'Only that luggage arrived from Tokyo'

- b. *Nimitu-ga Tookyo-kara-sika todok-ana-katta*
 luggage-NOM -from-SIKA arrive-not-past
 'Luggage arrived only from Tokyo' (It is only from Tokyo that luggage arrived)

XP-sika, combined with sentential negation, yields the interpretation 'only *XP*', as illustrated in these examples. Thus, (55a), for example, means that only Taroo went there or that no one but Taroo went there.

XP-sika is considered a negative polarity item because it can only appear in a negative sentence. (55a–b), for example, are totally ungrammatical without the negation morpheme, as shown in (57).¹⁷

- (57) a. **Taroo-sika soko-ni it-ta*
 -SIKA there-to go-past
 b. **Taroo-ga soko-ni-sika it-ta (koto)*
 -NOM there-to-SIKA go-past fact

In the following subsection, I will go over the basic distribution of *XP-sika* in sentences with and without scrambling, and suggest an analysis. Then, in Section 4.2, I will discuss the blocking effect that negative polarity items have on wh-construction, a phenomenon discussed in detail in Takahashi (1990), Kim (1991) and Beck and Kim (1997). It will be shown that the analysis predicts the presence/absence of the blocking effect correctly, confirming the approach to radical reconstruction proposed in this paper. Among the consequences of the analysis are that covert movement, as opposed to overt movement, is not subject to the extension condition, and that the requirement that wh-phrases must be licensed by a [+Q] comp is an anywhere condition exactly like the licensing conditions on anaphors and bound pronouns.

4.1. The distribution of *XP-sika*

Although *XP-sika* has been treated as a negative polarity item, it has been known that its distribution is different from the English negative polarity *any*. For example, *XP-sika* can appear in the subject position of a negative sentence as shown in (55a) and (56a), but this is impossible with *any*.

- (58) a. *John did not see anyone*
 b. **Anyone did not see John*

Further, *XP-sika* must be clause-mates with the licensing negation, as shown in (59) and (60).

- (59) a. *Hanako-ga* [_{CP} *Taroo-ga soko-ni-sika ik-ana-katta to*] *Ziroo-ni itta (koto)*
 -NOM -NOM there-to-SIKA go-not-past that
 -to said fact
 'Hanako said to Ziroo that it was only there that Taroo went'
- b. ?**Hanako-ga* [_{CP} *Taroo-ga soko-ni-sika it-ta to*] *Ziroo-ni iw-ana-katta (koto)*
 -NOM -NOM there-to-SIKA go-past that -to
 say-not-past fact
 'It is only there that Hanako said to Ziroo that Taroo went'

- (60) a. *Hanako-ga* [_{CP} *nimotu-ga Tookyoo-kara-sika todok-ana-katta* *luggage-NOM -from-SIKA arrive-not-past to*] *Ziroo-ni it-ta (koto)*
 that -to say-past fact
 'Hanako said to Ziroo that it was only from Tokyo that luggage arrived'
- b. ?**Hanako-ga* [_{CP} *nimotu-ga Tookyoo-kara-sika todoi-ta to*] *Ziroo-ni iw-ana-katta (koto)*
 -NOM luggage-NOM -from-SIKA arrive-past that
 -to say-not-past fact
 'It is only from Tokyo that Hanako said to Ziroo that luggage arrived'

In the ungrammatical (59b) and (60b), *XP-sika* is contained in the embedded CP while negation appears in the matrix. This clause-mate condition is not observed with *any*, as (61) shows.

- (61) *John did not say that Mary saw anyone*

(62a–b) show that the examples are even worse when negation is within the embedded CP and *XP-sika* is a matrix constituent.

- (62) a. ?**Hanako-sika* [_{CP} *Taroo-ga soko-ni ik-ana-katta to*] *Ziroo-ni it-ta (koto)*
 -SIKA -NOM there-to go-not-past that -to
 say-past fact

- b. ?**Hanako-sika* [_{CP} *nimotu-ga Tookyoo-kara todok-ana-katta* *luggage-NOM -from arrive-not-past to*] *Ziroo-ni it-ta (koto)*
 that -to say-past fact

Thus, what is imposed on the relation between *XP-sika* and negation is literally a clause-mate condition.

The examples presented above clearly indicate that *XP-sika* can be interpreted only with negation. Putting aside the investigation of the precise structural relation required of *XP-sika* and Neg, I will assume that the former must be raised by QR and satisfy the following condition in order to receive proper interpretation:

- (63) The NPI-feature of *XP-sika* must have a negative sentence as its scope. Then, (55b), repeated in (64), is derived as in (65).

- (64) *Taroo-ga soko-ni-sika ik-ana-katta (koto)*
 -NOM there-to-SIKA go-not-past fact
 'Taroo only went there' (It is only there that Taroo went)

- (65) [_{TP} *sono-ni-sika* [_{TP} *Taroo-ga soko-ni-sika ik-ana-katta*]]
 {NPI}

The ungrammaticality of (62a–b) follows straightforwardly because the NPI-feature must be lowered to the embedded TP in order to satisfy (63) in those examples.

The remaining cases to be accounted for are (59b) and (60b), where *XP-sika* is in the embedded clause and Neg is in the matrix. The derivation of (59b) is shown in (66).

- (66) a. [_{CP} *soko-ni-sika* [_{TP} *Taroo-ga soko-ni-sika it-ta to*]]
 {NPI} {π, NPI, arg}
- b. [_{TP} *soko-ni-sika* [_{TP} *Hanako-ga* [_{CP} *soko-ni-sika* [_{TP} ...] *to*] *Ziroo-ni it-ta (koto)*]]
 {NPI} {NPI}

The NPI-feature is first raised to the edge of the embedded CP as in (66a), and the embedded TP is transferred to semantics. Then, the feature is raised in the matrix clause so that it takes a negative sentence as its scope. Here, if an NPI-feature needs to bind a variable just like a q-feature, in addition to taking a negative sentence as its scope, then (66b) is excluded in exactly the same way as (52b). That is, when the shaded part of (66b) is transferred to semantics, the NPI-feature violates Full Interpretation since it is not fully licensed. Thus, the clause-mate condition on *XP-sika* is accounted for as an instance of the clause-boundedness of QR.

The unified treatment of *XP-sika* and quantified phrases receives support from the fact that the former exhibits radical reconstruction effects precisely as the latter. As discussed in detail in Tanaka (1997), examples like (67a–b), which apparently violate the clause-mate condition, are grammatical.

- (67) a. [_{TP} *Soko-ni-sika*_i [_{Hanako-ga} [_{CP} *Taroo-ga* *t_i ik-ana-katta to*]_j]
 there-to-SIKA -NOM -NOM go-not-past that
Ziroo-ni it -ta] (*koto*)
 -to say-past fact
 'Hanako said to Ziroo that it was only there that Taroo went'
- b. [_{TP} *Tookyoo-kara-sika*_i [_{Hanako-ga} [_{CP} *nimotu-ga* *t_i*
 -from-SIKA -NOM luggage-NOM
todok-ana-katta to] *Ziroo-ni it -ta*] (*koto*)
 arrive-not -past that -to say-past fact
 'Hanako said to Ziroo that it was only from Tokyo that luggage arrived'

These examples can be analyzed in the same way as those with long scrambling of quantified phrases. Let us take (67a) to illustrate the point. In the embedded CP, the NPI-feature of *soko-ni-sika* can be raised covertly to TP and its remaining features can be copied at CP Spec, as shown in (68a). Or alternatively, *soko-ni-sika* can first scramble to TP and then to CP Spec as in (68a').

- (68) a. [_{CP} *Soko-ni-sika* [_{TP} *soko-ni-sika* [_{TP} *Taroo-ga sono-ni-sika ik-ana-katta*] *to*]
 {_{TP}, _#} {_{NPI}} {_#, _{NPI}, _{arg}}
- a'. [_{CP} *Soko-ni-sika* [_{TP} *soko-ni-sika* [<sub>Taroo-ga sono-ni-sika ik-ana-katta] *to*]
 {_{TP}, _{NPI}, _#} {_#, _{NPI}, _#} {_#, _{NPI}, _{arg}}</sub>

b. [_{TP} *Soko-ni-sika* [_{Hanako-ga} [_{CP} *soko-ni-sika* [_{TP} ...] *to*] *Ziroo-ni it-ta*]
 {_{TP}} {_#}

Either way, chain interpretation yields the same distribution of the features: the phonetic features are in CP Spec, the NPI-feature takes the negative TP as its scope, and the arg-feature remains in the object position. At this point, the embedded TP is ready to be transferred to semantics. In particular, the NPI-feature is in a position that satisfies (63) as well as Full Interpretation. Then, the phonetic features of the scrambled phrase move on to the matrix TP as in (68b) and the derivation is completed.

I argued above that *XP-sika* is to be analyzed in exactly the same way as quantified phrases and that the only difference between the two is that the former must satisfy (63) in addition so that it can be interpreted properly. Before I conclude this subsection, I would like to briefly discuss one pattern that is potentially problematic for the analysis just presented and suggest that the problem is only apparent.

It has been claimed in some works, such as Tanaka (1977), that the clause-mate condition on *XP-sika* and negation can be satisfied as a result of long scrambling. Thus, (69a–b) are indeed far better than their counterparts without scrambling, i.e., (59b) and (60b).

- (69) a. ? [_{TP} *Soko-ni-sika*_i [_{Hanako-ga} [_{CP} *Taroo-ga* *t_i it-ta to*]
 there-to-SIKA -NOM -NOM go-past that
Ziroo-ni iw-ana-katta] (*koto*)
 -to say-not-past fact
 'It is only there that Hanako said to Ziroo that Taroo went'
- b. ?? [_{TP} *Tookyoo-kara-sika*_i [_{Hanako-ga} [_{CP} *nimotu-ga* *t_i*
 -from-SIKA -NOM luggage-NOM
todoi-ta to] *Ziroo-ni iw-ana-katta*] (*koto*)
 arrive-past that -to say-not-past fact
 'It is only from Tokyo that Hanako said to Ziroo that luggage arrived'

This is totally unexpected under the analysis just presented. The NPI-feature must take matrix scope in these examples, and consequently, the derivation of (69a), for example, must proceed as in (70).

- (70) a. [_{CP} *Soko-ni-sika* [_{TP} *Taroo-ga sono-ni-sika it-ta*] *to*] { π , NPI, # π }
 { π , NPI, # π }
 b. [_{TP} *Soko-ni-sika* [_{Hanako-ga} [_{CP} *soko-ni-sika* [_{TP} ...] *to*] *Ziroo-ni* *iw-ana-katta*]] { π , NPI}

Soko-ni-sika first moves to the embedded CP Spec as shown in (70a). The NPI-feature is retained at the landing site so that it can move further to take the matrix negative TP as its scope as in (70b). But then, the NPI-feature does not bind a variable within the information unit transferred to semantics. Thus, it violates Full Interpretation and the example is predicted to be as ungrammatical as (59b), repeated below as (71).

- (71) ?**Hanako-ga* [_{CP} *Taroo-ga* *soko-ni-sika* *it-ta* *to*] *Ziroo-ni*
 -NOM there-to-SIKA go-past that -to
iw-ana-katta (*koto*)
say-not-past fact
 'It is only there that Hanako said to Ziroo that Taroo went'

But there is evidence that the problem posed by examples like (69) may only be apparent. That is, examples such as (72) suggest that phrases of the form *XP-sika* can marginally be "base-generated" in a position adjoined to a negative sentence, at least in some cases.

- (72) ??*Yanukon-kara-sika*, *Taroo-ga* [_{NP} [_{TP} *e_i okur-arete* *ki* -*ta*]]
 UConn-from-SIKA -NOM send-passive come-past
hakaseronbun]-o *yom-ana-i* (*koto*)
 dissertation -ACC read-not-pres. fact
 'Taroo reads only those dissertations that were sent from UConn'

In this example, the sentence-initial *XP-sika* is associated with a position within a relative clause. It is then tempting to attribute the marginality of the example to Subjacency. However, as far as I can tell, the example is better than its counterpart without *-sika* shown in (73).

- (73) ?**Yanukon-kara*, *Taroo-ga* [_{NP} [_{TP} *t_i okur-arete* *ki* -*ta*]]
 UConn-from -NOM send-passive come-past
hakaseronbun]-o *yom-ana-i* (*koto*)
 dissertation -ACC read-not-pres. fact
 'Taroo does not read those dissertations that were sent from UConn'

(73) is a clear case of a Subjacency violation. Hence, if the contrast between (72) and (73) is real, it suggests that the former need not be derived by scrambling. It seems then that *XP-sika* can be merged directly with a negative sentence, although with some marginality. And if this is the case, the option should be available for (69a-b) as well.

Examples like (72) are abundant. Thus, (74) is also better than expected.

- (74) ??(*Ahurika-no kuni -de-wa*) *Ezิปuto-ni-sika*, *Taroo-wa* [_{NP} [_{TP} *e_i*
 Africa -GEN country-in-TOP -to-SIKA -TOP
it-ta koto-ga ar-u] *hiro*] -*ni at -ta koto-ga*
 go-past fact -NOM have-pres. person-to meet-past fact -NOM
na-i
 not-pres.
 'Lit. (Among the African countries,) Egypt is the only place that Taroo has met someone who has been to'

I will hence tentatively conclude that cases like (69), where long scrambling appears to save a clause-mate condition violation, involves direct merger of *XP-sika* with a negative TP.¹⁸

4.2. Blocking effects on wh-construal

In this subsection, I will discuss the blocking effect that *XP-sika* has on wh-construal.¹⁹ The purpose of the discussion is two-fold. First, the relevant phenomenon will provide a good testing ground for the account of *XP-sika* proposed above. Secondly, examples of this blocking effect have sometimes been cited as evidence against the radical reconstruction of scrambling. It is therefore desirable to examine whether they are consistent with the analysis of scrambling proposed in this paper.

Typical examples of the blocking effect are shown in (75) and (76).

- (75) a. *Nani-ga* *Tookyo-kara-sika* *todok-ana-katta no*
 what-NOM -from-SIKA arrive-not-past Q
 'What arrived only from Tokyo'
 b. ?**Hon-sika doko -kara* *todok-ana-katta no*
 book-SIKA where-from arrive-not-past Q
 'Where did only books arrive from'

- (76) a. *Dare-ga Taroo-ni-sika purezento-o okur-ana-katta no*
 who -NOM -to-SIKA gift -ACC send-not -past Q
 'Who sent gifts only to Taroo'
 b. *?*Taroo-sika dare-ni purezento-o okur-ana-katta no*
 -SIKA who-to gift -ACC send-not -past Q
 'Who did only Taroo send gifts to'

As can be seen in these examples, when *XP-sika* and a wh-phrase cooccur, the former cannot precede the latter, as schematized in (77).

- (77) * $[_{CP} [_{TP} \dots XP-sika \dots [\dots wh \dots] \dots NEG \dots] Q]$

I will assume here that in these cases the intervening NPI-feature of *XP-sika* blocks the association between the Q-morpheme in the [+wh] C and the wh-phrase.²⁰

The general consensus in the literature is that whether the blocking effect obtains or not depends on the surface positions of the relevant items. Thus, (75b) and (76b) become grammatical when the wh-phrase is scrambled to a position preceding *XP-sika*, as shown in (78).

- (78) a. *Doko-kara; hon -sika t_i todok-ana-katta no*
 where-from book-SIKA arrive-not -past Q
 b. *Dare-ni; Taroo-sika t_i purezento-o okur-ana-katta no*
 who -to -SIKA gift -ACC send-not -past Q

Similarly, (75a) and (76a) become degraded when *XP-sika* is scrambled to the sentence-initial position.²¹

- (79) a. *?*Tookyo-kara-sika; nani-ga t_i todok-ana-katta no*
 -from-SIKA what-NOM arrive-not -past Q
 b. *?*Taroo-ni-sika; dare-ga t_i purezento-o okur-ana-katta no*
 -to-SIKA who-NOM gift -ACC send-not -past Q

As pointed out by Beck and Kim (1997) and others, examples like (79) pose a problem for the hypothesis that scrambling can be "undone" in LF. If scrambled phrases can be placed back in their initial positions at LF, these examples are indistinguishable from the perfectly grammatical (75a) and (76a) at that level. On the other hand, the analysis of scrambling and

radical reconstruction presented in this paper correctly predicts the blocking effect in these examples. The derivation of (79a) is shown in (80).

- (80) $[_{CP} [_{TP} Tookyo-kara-sika [nani-ga Tookyo-kara-sika todok-ana-katta] no]$
 { π , NPI, $\#\#$ } { $\#\pi$, NPI, arg}

Tookyo-kara-sika is scrambled to the initial position as the TP is constructed. The NPI-feature is retained at the landing site because it is the position that allows the feature to take a negative sentence as its scope. After C merges with the TP, the Q-morpheme in C is associated with the wh-phrase *nani-ga* 'what-NOM'. But the association is blocked by the intervening NPI-feature. Hence, scrambling causes the blocking effect in this case.

Given the analysis of *XP-sika* presented in this paper, the grammatical examples in (75a), (76a) and (78) have more interesting consequences. The derivation of (75a) is illustrated in (81).

- (81) $[_{CP} [_{TP} Tookyo-kara-sika [TP nani-ga Tookyo-kara-sika todok-ana-katta] no]$
 {NPI} { π , NPI, arg}

In this case, the NPI-feature of *Tookyo-kara-sika* is raised covertly to TP by QR so that it takes a negative sentence as its scope. The resulting configuration is similar to (80) with an NPI-feature intervening between the Q-morpheme and the wh-phrase. At the same time, there is one important difference between (80) and (81). That is, the NPI-feature is raised to TP overtly in (80) but covertly in (81). Let us consider (80) first. Since overt movement is subject to the extension condition, the NPI-feature already intervenes between the Q-morpheme and the wh-phrase when C and TP are merged. On the other hand, this is not necessarily the case in (81). If covert movement is not subject to the extension requirement, as seems reasonable, the NPI-feature can be raised by QR after the TP-C merger takes place. Then, there can be a point in the derivation when the Q-wh association is possible without an intervener. Hence, the grammaticality of (75a) suggests (82a) as well as (82b).

- (82) a. Q-wh association can take place in the course of the derivation.
 b. Covert movement, in distinction with overt movement, is not subject to the extension requirement.

(82a), in turn, suggests that the relation of a wh-phrase to the associated Q-morpheme is similar to that of an anaphor/bound pronoun to its antecedent. It was argued in Section 2 that Condition (A), for example, is an any-where condition. (82a) makes sense if wh-phrases, like anaphors, are “antecedent seeking” elements and are licensed by binding (Q-wh binding). Licensing of this kind is to be distinguished from that of quantified phrases and *XP-sika* discussed above. The latter two are “binders” and their failure to bind a variable results in vacuous quantification. In addition, they must bind a variable within the information unit transferred to semantics in order to satisfy Full Interpretation. On the other hand, although anaphors, bound pronouns and wh-phrases are to be interpreted as bound variables, the required binding can take place across phase boundaries, as shown in (83).²²

- (83) a. [_{TP} *Karera-ga* [_{CP} [_{TP} *otagai -ga itiban yunusyu-da*] *to*]
 they -NOM each other-NOM best smart -is that
omote i -ru] (*koto*)
 thinking be-pres. fact
 ‘Lit. They think that each other are the smartest’
- b. [_{TP} *Dono kaisyā -mo*] [_{CP} [_{TP} *soko-ga_i itiban-da*] *to*] *itte*
 which company-also there-NOM best -is that saying
i -ru] (*koto*)
 be-pres. fact
 ‘Every company is saying that it is the best’
- c. *Taroo-wa* [_{CP} [_{TP} *Hanako-ga nani-o katta*] *to*] *it* -*ta no*
 -TOP -NOM what-ACC bought that say-past Q
 ‘What did Taroo say that Hanako bought?’

This shows that they can satisfy Full Interpretation by virtue of being licensed as arguments and can be transferred to semantics as interpretable objects without being bound. Hence, their licensing requirements must be independent of Full Interpretation.

The hypothesis that variables need not be bound to satisfy Full Interpretation is necessary even for a simple case of wh-movement like (84).

- (84) *What did John say Mary bought*

When the embedded CP is completed, the embedded TP is transferred to semantics as shown in (85).

- (85) [_{CP} *what* [_{TP} *Mary bought what*]]
 { π , Q, # π } { $\#$, Q, arg}

The arg-feature of *what* in the object position is interpreted as a variable but is not bound within the TP. I will come back briefly to this issue in the following section.

Returning to the blocking effect, it was shown above that the analysis of scrambling and NPI-licensing proposed in this paper predicts that the radical reconstruction does not evade the effect in examples like (79). However, this is not the prediction for all cases. The analysis in fact predicts that there are cases where the blocking effect is evaded. Let us consider the concrete examples in (86).

- (86) a. [_{TP} *Soko-ni-sika_i [dare-ga [_{CP} *Taroo-ga t_i ik-ana-katta*] *to*]
 there-to-SIKA who-NOM -NOM go-not-past that
Zirōo-ni it -ta] *no*
 -to say-past Q
 ‘Who said to Zirōo that it was only there that Taroo went?’*
- b. [_{TP} *Tookyoo-kara-sika_i [dare-ga [_{CP} *nimotu-ga t_i*
 -from-SIKA who-NOM luggage-NOM
todok-ana-katta] *to*] *Zirōo-ni it -ta*] *no*
 arrive-not-past that -to say-past Q
 ‘Who said to Zirōo that it was only from Tokyo that luggage arrived?’*

In these examples, *XP-sika* is scrambled out of an embedded negative TP across a wh-phrase in the matrix clause. On the surface, *XP-sika* intervenes between the matrix Q-morpheme and the wh-phase and hence, the configuration for the blocking effect obtains. Yet, the examples are far better than (87a–b), where negation is placed in the matrix TP.

- (87) a. ?* [_{TP} *Soko-ni-sika_i [dare-ga [_{CP} *Taroo-ga e_i it -ta*] *to*]
 there-to-SIKA who-NOM -NOM go-past that
Zirōo-ni iw -ana-katta] *no*
 -to say-not-past Q*
- b. ?* [_{TP} *Tookyoo-kara-sika_i [dare-ga [_{CP} *nimotu-ga e_i todoi -ta*
 -from-SIKA who-NOM luggage-NOM arrive-past
to] *Zirōo-ni iw -ana-katta*] *no*
 that -to say-not-past Q*

This is exactly what is predicted by the analysis proposed in this paper. The derivation of (86a) is shown in (88).

- (88) a. [_{CP} *Soko-ni-sika* [_{TP} *soko-ni-sika* [_{TP} *Taroo-ga soko-ni-sika ik-ana-katta*]] *io*]
 {π, #} {NPI}
 a'. [_{CP} *Soko-ni-sika* [_{TP} *soko-ni-sika* [_{TP} *Taroo-ga soko-ni-sika ik-ana-katta*]] *io*]
 {π, NPI, #} {#, NPI, #} {#, NPI, arg}
 b. [_{CP} [_{TP} *Soko-ni-sika* [*dare-ga* [_{CP} *soko-ni-sika* [_{TP} ...]]] *io*] *Zirou-ni hi-ta*]] *no*]
 {π} {#}

In the embedded CP phase, the NPI-feature of *XP-sika* can be raised to TP by QR and the rest of the features can scramble to CP Spec, as in (88a). Or alternatively, *XP-sika* can first scramble to TP and then to CP Spec, as in (88a'). Either way, the NPI-feature is retained at the position where it takes the negative TP as its scope and only the phonetic features appear in CP Spec. These phonetic features are further scrambled in the matrix clause across the wh-phrase *dare-ga* 'who-NOM', as shown in (88b). Since there is no NPI-feature that intervenes between the matrix Q and the wh-phrase in (88b), the example in (86a) should not exhibit the blocking effect despite the fact that it has the surface configuration in (77).²³

(87a–b), on the other hand, should show the blocking effect, since the NPI-feature must be at the matrix TP in those examples. According to the analysis suggested above, *XP-sika* is directly merged with the matrix negative TP, as in (89).

- (89) [_{CP} [_{TP} *XP-sika* [...] wh ... Neg]] Q]

Hence, the NPI clearly intervenes between the Q-morpheme and the wh-phrase, and the examples constitute straightforward instances of the blocking effect, like (75b) and (76b).

In this section, I first assumed that Japanese NPIs must take a negative TP as its scope in order to be properly interpreted. This can be achieved by QR or by scrambling. Then, I argued that the distribution of the NPIs follows if they are subject to the same licensing condition as quantified phrases. That is, they must satisfy Full Interpretation within the information unit transferred to semantics by virtue of binding a variable in its chain. In particular, the clause-mate condition on an NPI and negation is explained in exactly the same way as the clause-boundedness of QR. I argued further that the proposed chain interpretation mechanism predicts correctly when a

scrambled NPI exhibits the blocking effect on the association of a Q-morpheme and a wh-phrase. This analysis also explains away those examples that are problematic for the simple-minded "undoing" conception of radical reconstruction.

5. Conclusion

The hypothesis entertained in this paper, (40), is repeated below as (90), with a slight modification to include the NPI-feature.

- (90) a. When the derivation of a phase HP is completed, syntax transfers the complement of H to semantics. The transfer applies cyclically and in a non-redundant way: the information that was already transferred to semantics in previous cycles is excluded from the present transfer operation.
 b. Every element in a structure transferred to semantics must be properly licensed within that structure. An arg-feature is licensed by a θ-role assigning (or agreement inducing) head, an Operator-feature is licensed by an operator-selecting C head, and a q-feature and an NPI-feature are licensed by virtue of binding a variable within its chain.

The most important proposal is the part of (90b) that states that q-features and NPI-features are licensed by virtue of binding a variable within its chain. It should be emphasized here that this is not an interpretive mechanism but a licensing condition. The basic idea is that the precise compositional role of each element must be explicitly specified when a syntactic structure is transferred to semantics. Thus, arguments and operators must be licensed by the selecting heads, and quantifiers must be identified as such by virtue of variable binding. In this sense, the proposal is intended to be a cyclic version of Full Interpretation, which requires every element to be interpretable at the interface.

The conditions that concern the actual references of NPs, for example, those that dictate the anaphoric relations of NPs, are not part of (90). Thus, the embedded object of (91) is transferred to semantics as part of the embedded TP, being licensed as an argument.

- (91) [_{CP} *What do* [_{TP} *you think* [_{CP} *what* [_{TP} *John bought what*]]]]
 {π, O} {arg}

Since it is interpreted as a variable, it must be bound and be provided with a range. But the required binding takes place across a phase boundary and the whole structure must be taken into consideration in order to check whether the required binding obtains. Similarly, the anaphor *himself* in (92) is transferred to semantics as part of the embedded TP, being licensed as an argument.

- (92) [_{TP} John thought [_{CP} that [_{TP} pictures of himself would be on sale]]]

But its reference is fixed in a larger structure that contains it and its antecedent *John*.

Although anaphors and bound pronouns need not be bound within the information unit determined by phase, they must still be licensed by their antecedents. And this licensing requirement can be satisfied in the course of the derivation. Thus, (6), repeated below as (93), can be derived as in (94).

- (93) ? [_{TP} *Karera-o_i* [_l *otagai -no sensei*]-*ga* *t_i hihansita*] (*koto*)
 they -ACC each other-GEN teacher-NOM criticized fact
 'Lit. Each other's teachers criticized them'
 (94) [_{TP} *Karera-o* [_l *otagai-no sensei*]-*ga* *karera-o hihansita*]]
 {*t_i*, *q_i*, *##*g**} {*#, q_i*, *arg*}

As argued in Section 2, the example is grammatical because *otagai* 'each other' is bound by the arg-feature of *karera* 'they' at one point of the derivation.

It was also argued in Section 2 that Condition (C), which is another condition on the referential relations among NPs, applies to the "output" of the derivation. The crucial example (18) is repeated in (95), together with its derivation in (96).

- (95) [_{TP} *Zibunzisin-o_i* [_{TP} *Taroo-ga* *t_i semeta*]] (*koto*)
 self -ACC -NOM blamed fact
 'Taroo blamed himself'
 (96) [_{TP} *Zibunzisin-o* [_{TP} *Taroo-ga zibunzisin-o semeta*]]
 {*t_i*, *##*g**} {*#, arg*}

Condition (C) would exclude this example if it were an everywhere condition applying throughout the derivation.

The overall picture that emerges from this discussion, then, is as follows:

- (97) a. Upon the completion of each phase, information on its complement is transferred to semantics. The information concerns the compositional semantic role of each element contained within the unit. Thus, each element must be licensed and identified within the information unit as an argument, a predicate, a modifier, an operator, or a quantifier.
 b. Information on the antecedent/binder of an anaphoric element is sent to semantics at any point of the derivation. Anaphoric elements include anaphors, bound pronouns, variables, and wh-phrases in situ.
 c. Information on disjoint reference is sent to semantics upon the termination of the derivation.

(97a), as repeatedly noted, is a cyclic restatement of Full Interpretation, and (97b–c) concern anaphoric relations among NPs. The model is consistent with the proposal in Epstein, et al. (1998) and Chomsky (1998) that syntax transfers information to semantics throughout the derivation and that there is no LF representation. It simply states that different kinds of information are sent to semantics in different ways. The empirical claim of this paper is that this model enables us to provide a more refined analysis of the A/A' properties of scrambling, the effects of scrambling on quantifier scope, and the distribution of NPIs in Japanese.

Acknowledgements

The research reported here was supported in part by the Nanzan University Pache Research Grant I-A as well as the JSPS Grant-in-Aid for Scientific Research (C) #17520333. I would like to thank Masumi Aono, Hiroshi Aoyagi, Mayumi Dejima, Chisato Fuji, Keiko Murasugi, Michie Shinohara, and especially Joachim Sabel for helpful comments on the initial version of the paper.

- (i) [_{CP} Daremo-o [_{TP} daremo-o [... daremo-o ...]]]
 {π, φ, arg} {π, φ, arg} {π, φ, arg}

Since nothing seems to prevent it, I assume that this derivation is also possible. Reinhart, accordingly, renames QR 'constituent raising'.

15. See, for example, Oyakawa (1975), Muraki (1978), Takahashi (1990), Karo (1994), Aoyagi and Ishii (1994), Tanaka (1997), and Watanabe (2004) for discussions on negative polarity items in Japanese. Lee (1994) and Sohn (1994) contain illuminating discussions on their Korean counterparts.
16. The predicates in the examples will be glossed morpheme by morpheme in this section because the precise position of negation is important for the discussion.
17. Watanabe (2004) argues that what has been called 'negative polarity phenomenon' in Japanese should be analyzed as negative concord instead. As far as I can see, the choice does not affect the discussion in this paper.
18. Recall from Footnote 11 that phrases of the form 'NP-particle' can be "base-generated" at the sentence-initial position rather freely. The peculiarity of *XP-sika* is that this is marginally allowed even with PPs. I do not have an account at this point for this exceptional property of *XP-sika*. Aoyagi and Ishii (1994) point out that *XP-sika* behaves as an adverb rather than an argument. Thus, it can co-occur with an argument as shown in (i) and (ii).

- (i) *Taroo-wa ringo-sika kadamono-o tabe-na katta*
 -TOP apple-SIKA fruit -ACC eat -not-past
 'Taroo ate no fruits other than apples'

- (ii) *Taroo-wa Eziputo-ni-sika Ahurika-no kuni -ni ti-ta koto-ga*
 -TOP Egypt -to-SIKA Africa -GEN country-to go-past fact -NOM
na-i
 not-pres.
 'Taroo has not been to any African country other than Egypt'

This adverbial nature of *XP-sika* may be related to its peculiarity in distribution. This blocking effect is induced by quantified phrases and other negative polarity items as well, although it seems to come out most clearly with *XP-sika*. There are diverse accounts suggested for the effect in the literature. The representative ones can be found in Hoji (1985), Takahashi (1990), Tanaka (1997), Beck and Kim (1997), Ko (2003), and Tomioka (2004).

20. Discussing quantifiers and negative polarity items in Korean, Beck and Kim (1997) hypothesize that they block LF wh-movement. This paper basically follows their formulation of the relevant constraint. On the other hand, Tanaka (1997) argues that (77) is excluded by a linear crossing constraint imposed on the association lines of wh-Q and NPI-Neg as in (i).

- (i) * [_{CP} [_{TP} ... XP-sika ... [... wh ...] ... Neg ...] Q]

I will briefly comment on this analysis in Footnote 23.

21. Aoyagi and Ishii (1994) note that examples of this kind are not as bad as typical cases of blocking. I agree with their judgment but will abstract away from this difference.
22. Japanese and Korean lack NIC effects. See Yang (1983) and Nakamura (1996) for discussion.
23. Tanaka (1997) discusses the following example, which has the same configuration as (86a-b) in relevant respects, and marks it ungrammatical.

- (i) *LGB-sika_i dare-ga [_{CP} Hanako-ga t_i yom-ana-i to] it-ta no*
 -SIKA who -NOM -NOM read-not-pres. that say-past Q
 'Who said that Hanako reads only LGB'

Based on this judgment, he goes on to argue that the example constitutes evidence for the account of the blocking effect in terms of the surface linear crossing constraint, mentioned in Footnote 20. Examples like (i) and (86a-b) are indeed complex, but to my ear (i) sounds far better than (ii), where negation appears in the matrix TP.

- (ii) ?**LGB-sika_i dare-ga [_{CP} Hanako-ga t_i yom-u to] iw-ana-katta no*
 -SIKA who-NOM -NOM read-pres. that say-not-past Q

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