Dissociating Japanese scrambling from controller movement[1]

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Abstract

This paper argues against Takano's (2010) analysis of weak crossover effects in Japanese object control constructions. In his paper, it is shown that only a pronoun contained in a controller can be bound by a scrambled quantifier. He claims that this binding relation is established within the control clause by clause-internal scrambling on the assumption that (i) long distance scrambling in general cannot create a new binding relation and (ii) obligatory control is derived by movement of a controller. In opposition to his claim, I demonstrate that the contrast at issue actually stems from general properties of Japanese scrambling. That is, (i) clause-internal scrambling of the direct object over the indirect object is A-movement while that over the subject is A'-movement, and (ii) long distance scrambling out of control clauses patterns with clause-internal scrambling. In consequence of these properties, it is predicted that the pronoun in question can be bound as long as it is contained in the indirect object, which in the case of object control constructions happens to be a controller.

Keywords: scrambling, control, weak crossover, binding, Japanese

1. Introduction

One of the most important assumptions in the framework of minimalism is that representational levels internal to narrow syntactic computations, i.e., S-structure and D-structure, are not present. In Government and Binding theory (Chomsky 1981), D-structure is considered a level at which lexical items are inserted in accordance with θ-roles of predicates. As far as control and raising constructions are concerned, this is the level at which their differences emerge. It is well known that a control verb such as *try* bears an Agent θ-role to assign to its subject that a raising verb such as *seem* does not:

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(1) (a) John tried to find a new housemate.
(b) John seemed to have found a new housemate.

If a lexical item is inserted according to a θ-role, it follows that the control construction in (1a) must have one more argument in D-structure than the subject *John*, because both the matrix control verb *try* and the embedded verb *find* require a thematic subject. From these considerations it is suggested that there is a null subject in the control clause, i.e., PRO, coreferential with the matrix subject. On the other hand, since the raising verb *seem* does not assign a θ-role to its subject, there is no subject in D-structure. Instead, the embedded subject *John* is moved to the surface subject position in S-structure. The structures of both constructions are shown in (2) respectively.

(2) (a) John_i tried $[_{CP}\, \text{PRO}_i$ to find a new housemate].
(b) John_i seemed $[_{TP}\, t_i$ to have found a new housemate].

Without D-structure, however, it is no longer necessary for θ-roles to mark the base positions of lexical items. Therefore, it is no surprise that some assume similar structures for control and raising constructions with θ-roles being assigned in the course of derivation. For instance, Hornstein (1999) argues that the controller originates within the control clause and moves to the matrix VP in order to check a θ-feature of the matrix verb, on the assumption that one argument can check more than two θ-features. In Hornstein's analysis, therefore, the structure of (2a) roughly looks like (3).

(3) John_i $[_{VP}\, t_i$ tried $[_{CP}\, t_i$ to find a new housemate]].

If the movement theory of control is right, the next avenue to take would be to investigate whether it is applicable to languages other than English.[2] Against this backdrop, Takano (2010) expands the scope of the movement theory of control to Japanese by drawing evidence from weak crossover effects in object control constructions. He argues that a pronoun can only be bound by a scrambled quantifier phrase (henceforth QP) only if it is contained in a controller, and that this can be accounted for if the relevant binding relation is established between the pronoun and the QP within the control clause by clause-internal scrambling.

The purpose of this paper is to argue against Takano (2010) by suggesting that the

[2] The movement theory of control has been proposed in somewhat different forms by O'Neil (1995), Hornstein (1999) and Bowers (1973, 2008). It is also argued for by many recent literature such as Boeckx (2000), Boeckx and Hornstein (2003, 2004, 2006), Fujii (2006), Hornstein (2001, 2003) and Boeckx, Hornstein and Nunes (2010).

data he uses does not entail movement of a controller. More specifically, it is argued that there are asymmetries of the A/A′ -positions regarding sentences with a three-place predicate, and that scrambling of the direct object over the indirect object is A-movement while that over the subject is A′-movement. So if a pronoun is contained in the indirect object, it can be bound by a quantifier scrambled to an A-position.

The structure of the paper is as follows. In section 2, I outline the data of Japanese scrambling which Takano uses in support of his analysis. In section 3, I show that there are asymmetries of landing positions with respect to clause-internal scrambling, and in section 4 it is shown that the same asymmetries are observed in long distance scrambling out of control clauses. Section 5 solves possible problems that may arise from my analysis. Section 6 concludes the paper.

2. Scrambling and control

In this section, I outline the data of Japanese scrambling in object control constructions which Takano (2010) adduces in favour of movement of a controller. But before plunging into the details of his analysis, it is necessary to give an introduction to the nature of Japanese scrambling.

It is widely known that clause-internal scrambling in Japanese shows the properties of A-movement (Saito 1992, Tada 1993). This is illustrated by weak crossover effects in (4).

(4) (a) * Ken-ga soko$_i$-no sotugyoosei-ni mittu-izyoo-no daigaku-o
Ken-NOM it-GEN graduate-DAT three-or.more-GEN university-ACC
susumeta.
recommended
'Ken recommended their$_i$ graduates three or more universities$_i$'

(b) Ken-ga mittu-izyoo-no daigaku$_i$-o soko$_i$-no
Ken-NOM three-or.more-GEN university-ACC it-GEN
sotugyoosei-ni t_i susumeta.
graduate-DAT recommended

(c) Mittu-izyoo-no daigaku$_i$-o Ken-ga soko$_i$-no
Three-or.more-GEN university-ACC Ken-NOM it-GEN
sotugyoosei-ni t_i susumeta.
graduate-DAT recommended

The pronoun *soko* 'it' in (4a) cannot be interpreted as a variable bound by the QP *mittu-izyoo-no daigaku* 'three or more universities'. Namely, it does not have an interpretation such that there are three or more *x*, *x* a university which Ken recommended to the graduates from *x*. This is because the pronoun does not meet the requirement of being c-commanded and bound by the QP. If the QP is scrambled to the post-subject position as in (4b) or to the pre-subject position as in (4b) whereby it can bind the pronoun, the intended variable binding reading becomes available. Note that (4b,c) are a weak crossover configuration in which the QP c-commands the pronoun but the pronoun does not c-command the trace of the QP. As illustrated by the English examples below, A-movement remedies a weak crossover violation as in (5a) while A′-movement does not as in (5b).

(5) (a) Some boy$_i$ seemed to his$_i$ mother t_i to be in trouble.
(b) * Who$_i$ did his$_i$ girlfriend criticise t_i?

Since (4b,c) ameliorate a weak crossover violation, it is plausible to think that clause-internal scrambling in Japanese is A-movement.

On the other hand, long distance scrambling out of finite clauses is known to involve A'-movement (Saito 1992, Tada 1993). In this connection, let us consider (6) in which the pronoun is contained in the matrix subject.

(6) (a) * Soko$_i$-no sotugyoosei-ga Aya-ni [Ken-ga mittu-izyoo-no
it-GEN graduate-NOM Aya-DAT Ken-NOM three-or.more-GEN
daigaku$_i$-ni syutugansita to] itta.
university-DAT applied C said
'Their$_i$ graduates told Aya that Ken had applied to three or more universities$_i$.'

(b) * Mittu-izyoo-no daigaku$_i$-ni soko$_i$-no sotugyoosei-ga Aya-ni
Three-or.more-GEN university-DAT it-GEN graduate-NOM Aya-DAT
[Ken-ga t_i syutugansita to] itta.
Ken-NOM applied C said

(6a) does not have an interpretation in which the pronoun is bound by the QP because the former is not c-commanded by the latter. The point to observe is that the intended interpretation does not obtain even if the QP is preposed to the pre-subject position as in

(6b). Since (6b) does not remedy a weak crossover violation, it follows that long distance scrambling out of finite clauses is A′-movement.

The same is true if the pronoun is contained in the matrix indirect object. This is shown in (7).

(7) (a) * Aya-ga soko$_i$-no sotogyoosei-ni [Ken-ga mittu-izyoo-no
Aya-NOM it-GEN graduate-DAT Ken-NOM three-or.more-GEN
daigaku$_i$-ni syutugansita to] itta.
university-DAT applied C said
'Aya told their$_i$ graduates that Ken had applied to three or more universities$_i$.'

(b) * Aya-ga mittu-izyoo-no daigaku$_i$-ni soko$_i$-no sotugyoosei-ni
Aya-NOM three-or.more-GEN university-DAT it-GEN graduate-DAT
[Ken-ga t_i syutugansita to] itta.
Ken-NOM applied C said

(c) * Mittu-izyoo-no daigaku$_i$-ni Aya-ga soko$_i$-no sotugyoosei-ni
Three-or.more-GEN university-DAT Aya-NOM it-GEN graduate-DAT
[Ken-ga t_i syutugansita to] itta.
Ken-NOM applied C said

(Takano: 85-86)

(7a) is ruled out because the pronoun is not c-commanded by the QP. The weak crossover violation is not ameliorated if the QP is moved out of the finite clause to the post-subject position as in (7b) or to the pre-subject position as in (7c). This suggests that long distance scrambling out of finite clauses is consistently A′-movement.

Interestingly, although it is long distance movement, scrambling out of control clauses shows the same patterns with clause-internal scrambling (Nemoto 1993). Let us first examine subject control in (8).[3]

(8) (a) * Soko$_i$-no sotugyoosei-ga [PRO mittu-izyoo-no daigaku$_i$-ni
It-GEN graduate-NOM PRO three-or.more-GEN university-DAT
syutugansi-yoo to] sita.
apply-will C did
'Their$_i$ graduates tried to apply to three or more universities$_i$.'

[3] For the sake of simplicity, I omit indexes on PROs. But note that when I discuss subject control, PRO obligatorily refers to the matrix subject, and when I discuss object control, PRO obligatorily refers to the matrix indirect object.

(b) Mittu-izyoo-no daigaku$_i$-ni soko$_i$-no sotugyoosei-ga [PRO
Three-or.more-GEN university-DAT it-GEN graduate-NOM PRO
syutugansi-yoo to] sita.
apply-will C did

(Takano: 86)

(8b) shows that it is possible to interpret the pronoun as a variable bound by the scrambled QP. Since it is A-movement that remedies a weak crossover violation, we are led to consider that long distance scrambling out of control clauses is A-movement.

Takano (2010) argues, however, that things are not as simple as what Nemoto (1993) thinks insofar as object control is concerned. The same as long distance scrambling out of finite clauses, there can be two cases; one in which a pronoun is contained in the matrix subject and the other in which it is contained in the matrix indirect object (controller). Let us first observe the former case below.

(9) (a) * Soko$_i$-no sotugyoosei-ga Ken-ni [PRO mittu-izyoo-no daigaku$_i$-ni
It-GEN graduate-NOM Ken-DAT PRO three-or.more-GEN university-DAT
syutugansuru yoo(ni)] susumeta.
apply C recommended
'Their$_i$ graduates recommended that Ken should apply to three or more universities$_i$.'

(b)?* Mittu-izyoo-no daigaku$_i$-ni soko$_i$-no sotugyoosei-ga Ken-ni
Three-or.more-GEN university-DAT it-GEN graduate-NOM Ken-DAT
[PRO t_i syutugansuru yoo(ni)] susumeta.
PRO apply C recommended

(Takano: 88)

In (9b), the QP is moved out of the control clause to the pre-subject position. Although it c-commands the pronoun contained in the matrix subject, the pronoun cannot be interpreted as a variable bound by the QP. Thus this suggests that long distance scrambling out of control clauses is not always A-movement.

What is interesting is the latter case in which a pronoun is contained in the controller as in (10).

(10) (a) * Ken-ga soko$_i$-no sotugyoosei-ni [PRO mittu-izyoo-no
Ken-NOM it-GEN graduate-DAT PRO three-or.more-GEN

daigaku$_i$-ni syutugansuru yoo(ni)] susumeta.
university-DAT apply C recommended
'Ken recommended that their$_i$ graduates should apply to three or more universities$_i$.'

(b) ? Ken-ga mittu-izyoo-no daigaku$_i$-ni soko$_i$-no sotugyoosei-ni
Ken-NOM three-or.more-GEN university-DAT it-GEN graduate-DAT
[PRO t_i syutugansuru yoo(ni)] susumeta.
PRO apply C recommended

(c) ? Mittu-izyoo-no daigaku$_i$-ni Ken-ga soko$_i$-no sotugyoosei-ni
Three-or.more-GEN university-DAT Ken-NOM it-GEN graduate-DAT
[PRO t_i syutugansuru yoo(ni)] susumeta.
PRO apply C recommended

(Takano: 87)

Unlike the case in which the pronoun is contained in the matrix subject, it is possible for the pronoun to be interpreted as a variable bound by the scrambled QP. This is so, whether the QP is scrambled to the post-subject position as in (10b) or to the pre-subject position as in (10c).[4] This leads us to wonder why long distance scrambling out of control clauses remedies a weak crossover violation in some cases but not in the other. In this connection, Takano (2010: 91) proposes (11).

(11) Scrambling out of a control clause makes variable binding possible only if the pronominal is contained in the controller.

(11) accounts for the relevant data since the pronoun is contained in the controller both in (8b) and (10b, c), but not in (9b).

In order to account for (11), Takano (2010) suggests that a binding relation can only be established by clause-internal scrambling. One piece of evidence for him to assume so comes from the case in which a pronoun is contained in a matrix adjunct. In this light, let us first consider simple sentences such as those in (12).

[4] Although they are Takano's examples, an anonymous reviewer points out that the meaning in (10b,c) is pragmatically awkward and needs some clarification. Let us imagine a situation in which Ken is a Lecturer in Linguistics at Cambridge University, and he has three graduate students A, B and C. The student A did his/her undergraduate degree at Essex University, B at York University and C at Lancaster University. These three students were looking for academic positions, and happened to find that there were job openings at Essex, York and Lancaster. All of them were planning to apply for these three positions, but Ken recommended them that they should apply for more positions other than these three. In such a situation, the intended meaning in (10b,c) should be available.

(12) (a) * Ken-ga soko$_i$-no sotugyoosei-no mae-de mittu-izyoo-no
Ken-NOM it-GEN graduate-GEN front-at three-or.more-GEN
daigaku$_i$-ni denwasita.
university-DAT called
'Ken called three or more universities$_i$ in the presence of their$_i$ graduate.'

(b) Mittu-izyoo-no daigaku$_i$-ni Ken-ga soko$_i$-no sotugyoosei-no
Three-or.more-GEN university-DAT Ken-NOM it-GEN graduate-GEN
mae-de t_i denwasita.
front-at called

(Takano: 89)

In (12a), the pronoun *soko* 'it' is contained in the adjunct, and it cannot be interpreted as a variable bound by the QP *mittu-izyoo-no daigaku* 'three or more universities' because the former is not c-commanded by the latter. If the QP is preposed to the pre-subject position as in (12b), the intended binding relation becomes available. This shows that the QP is in an A-position and can c-command and bind the pronoun contained in the adjunct.

However, Takano argues that this binding relation cannot be established in object control sentences. The relevant example is (13).

(13) (a) * Ken-ga soko$_i$-no sotugyoosei-no mae-de Yumi-ni [PRO
Ken-NOM it-GEN graduate-GEN front-at Yumi-DAT PRO
mittu-izyoo-no daigaku$_i$-ni syutugansuru yoo(ni)] susumeta.
three-or.more-GEN university-DAT apply C recommended
'Ken recommended that Yumi should apply to three or more universities$_i$ in the presence of their$_i$ graduates.'

(b) ?*Ken-ga mittu-izyoo-no daigaku$_i$-ni soko$_i$-no sotugyoosei-no
Ken-NOM three-or.more-GEN university-DAT it-GEN graduate-GEN
mae-de Yumi-ni [PRO t_i syutugansuru yoo(ni)] susumeta.
front-at Yumi-DAT PRO apply C recommended

(c)?* Mittu-izyoo-no daigaku-ni Ken-ga soko$_i$-no sotugyoosei-no
Three-or.more-GEN university-DAT Ken-NOM it-GEN graduate-GEN
mae-de Yumi-ni [PRO t_i syutugansuru yoo(ni)] susumeta.
front-at Yumi-DAT PRO apply C recommended

(Takano: 90)

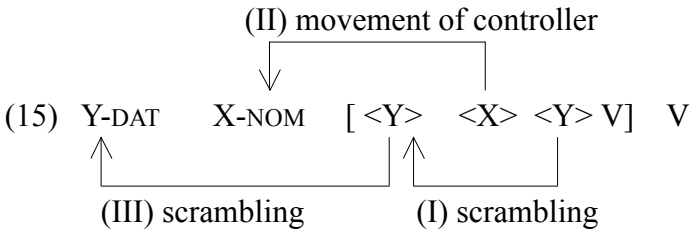
In object control sentences, the pronoun contained in the matrix adjunct cannot be interpreted as a variable bound by the QP even if the QP is scrambled to the post-subject position as in (13b) or to the pre-subject position as in (13c). This is unexpected if long distance scrambling out of control clauses is A-movement as Nemoto (1993) suggests. Given these considerations, Takano suggests (14a).[5]

(14) (a) Long distance scrambling in general cannot create a new binding relation.

Following the movement theory of control, he also assumes (14b).

(14) (b) Obligatory control is derived by movement of the controller.

In consequence of these two assumptions, he contends that the binding relation in (8b) and (10b, c) is established by clause-internal scrambling. More specifically, the derivation of subject control in (8b) can be schematied as follows (X stands for the controller and Y the QP and the angled brackets of them for movement copies).

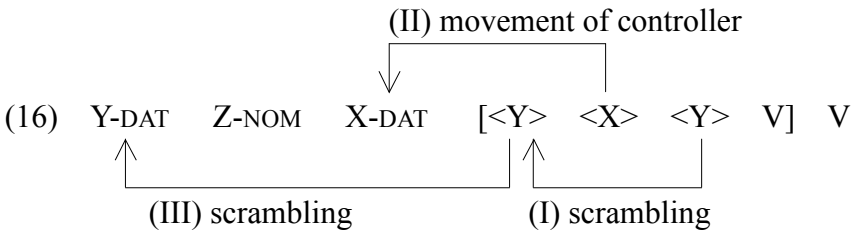


(Takano: 91)

As shown in (15), long distance scrambling out of a control clause consists of shorter scrambling to the edge of the control clause. On the assumption that the controller X originates within the control clause, it is the QP <Y> at the edge of the control clause and the controller <X> that establish binding relation by clause-internal scrambling.

Likewise, he argues that the derivation of object control in (10c) proceeds as follows.

[5] To be more precise, Takano (2010) does not say by (14) that long distance movement in general is A′-movement. For the movement theory of control, movement of the controller to a matrix θ-position must be A-movement. So he somehow assumes that movement of the controller out of the control clause can be A-movement, while in the case of long distance scrambling it cannot create a new binding relation without making reference to its A/A′-status.



(Takano: 92)

In the same way as subject control, it is the QP <Y> moved to the edge of the control clause and the controller <X> that establish the binding relation by clause-internal scrambling. It is predicted by his approach that if the pronoun is not contained in the controller, it does not originate within the control clause; and therefore it cannot be bound by the QP moved by clause-internal scrambling. This is why (9b) is ruled out.

Against his analysis, I aim to argue that the contrast of weak crossover effects in object control constructions actually stems from peculiar properties of scrambling regarding sentences with a three place predicate. These properties are summarised as follows.

(17) (a) Clause-internal scrambling of the direct object over the indirect object can be A-movement while that over the subject is A′-movement.
(b) Long distance scrambling out of control clauses patterns with clause-internal scrambling.
(c) Scrambling cyclically targets phase edges.

(17a) is a proposal by Tada (1993), and (17b) by Nemoto (1993). (17c) is suggested by Hiraiwa (2010). These three properties predict that if a pronoun is contained in the indirect object, it can be bound by a QP (or its copy) scrambled to the post-subject position because the post-subject position is an A-position. On the other hand, if a pronoun is contained in the subject, it cannot be bound by a QP scrambled to the pre-subject position because the pre-subject position is an A′-position. Thus what is relevant is whether a pronoun is contained in the indirect object or not, rather than in a controller. In the remainder of the paper, I will discuss these three properties of scrambling one by one.

3. Clause-internal scrambling and asymmetries of landing positions

In this section, I demonstrate that in simple sentences with a three-place predicate, clause-internal scrambling of the direct object over the indirect object is A-movement while that over the subject is A′-movement. In order to show this, I use three diagnostics: weak crossover, strong crossover and Condition C of binding theory.

As for weak crossover, I argued in the previous section that it is A-movement that remedies a weak crossover violation. If a pronoun is contained in the subject and the direct object QP is scrambled to the pre-subject position, the weak crossover effect is not ameliorated. This is illustrated in (18).[6]

(18) (a) * Soko$_i$-no sotugyoosei-ga Ken-ni mittu-izyoo-no daigaku$_i$-o
It-GEN graduate-NOM Ken-DAT three-or.more-GEN university-ACC
susumeta.
recommended
'Their$_i$ graduates recommended Ken three or more universities.'

(b)?? Mittu-izyoo-no daigaku$_i$-o soko$_i$-no sotugyoosei-ga
Three-or.more-GEN university-ACC it-GEN graduate-NOM
Ken-ni t_i susumeta.
Ken-DAT recommend

This suggests that the pre-subject position is an A′-position.

In contrast, as noted in (4), if a pronoun is contained in the indirect object and the direct object QP is scrambled over it, a weak crossover violation is remedied. This is so, whether the direct object QP lands in the post-subject position as in (19b), or in the pre-subject position as in (19c).

(19) (a) * Ken-ga soko$_i$-no sotugyoosei-ni mittu-izyoo-no daigaku$_i$-o
Ken-NOM it-GEN graduate-DAT three-or.more-GEN university-ACC
susumeta.
recommended
'Ken recommended their$_i$ graduates three or more universities$_i$.'

(b) Ken-ga mittu-izyoo-no daigaku$_i$-o soko$_i$-no sotugyoosei-ni
Ken-NOM three-or.more-GEN university-ACC it-GEN graduate-DAT
t_i susumeta.

6 Following Yatsushiro (2003), I assume here that the base order is Subject – Indirect Object – Direct Object (cf. Miyagawa 1997).

recommended

(c) Mittu-izyoo-no daigaku$_i$-o Ken-ga soko$_i$-no sotugyoosei-ni
Three-or.more-GEN university-ACC Ken-NOM it-GEN graduate-DAT
t_i susumeta.
recommended

Since we just saw in (18) that the pre-subject position is an A′-position, one may wonder why the QP in the pre-subject position can bind the pronoun in (19c). This problem can be solved by assuming (20).

(20) Scrambling of the direct object to the pre-subject position consists of shorter scrambling to the post-subject position.

In other words, (20) means that (19c) has (19b) at one point in its derivation (for reasons that will become clear in section 5), and so a copy of the QP is left in the post-subject position. It is this copy of the QP in the post-subject position that makes the intended variable binding available. These considerations lead us to think that the post-subject position is an A-position.

This point is further strengthened by examining strong crossover effects. Strong crossover is a configuration in which a quantifier crosses a pronoun that c-commands the trace of it. As exemplified by the English examples below, it is A-movement that eschews a strong crossover violation.

(21) (a) [Whose$_i$ teacher]$_j$ t_j seems to her$_i$ t_j to be in trouble?
(b) * [Whose$_i$ teacher]$_j$ did she$_i$ criticise t_j?

As shown in (22), If a pronoun is the subject and a *wh*-phase is moved over it, a strong crossover violation is not ameliorated.

(22) (a) * Soitu$_i$-ga John-ni [dare$_i$-no sensei]-o syookaisita no?
He-NOM John-DAT who-GEN teacher-ACC introduced Q
'He$_i$ introduced whose$_i$ teacher to John?'
(b) * [Dare$_i$-no sensei]$_j$-o soitu$_i$-ga John-ni t_j syookaisita no?
Who-GEN teacher-ACC he-NOM John-DAT introduced Q

(Tada 1993)

If it is A-movement that remedies a strong crossover violation, this suggests that the pre-subject position is an A′-position.

On the other hand, if a pronoun is the indirect object, scrambling of a *wh*-phrase over it remedies a strong crossover violation. In this connection, let us consider (23).

(23) (a) * John-ga soitu$_i$-ni [dare$_i$-no sensei]-o syookaisita no?
John-NOM he-DAT who-GEN teacher-ACC introduced Q
'John introduced whose$_i$ teacher to him$_i$?'
(b) John-ga [dare$_i$-no sensei]$_j$-o soitu$_i$-ni t_j syookaisita no?
John-NOM who-GEN teacher-ACC he-DAT introduced Q
(c) [Dare$_i$-no sensei]$_j$-o John-ga soitu$_i$-ni t_j syookaisita no?
Who-GEN teacher-ACC John-NOM he-DAT introduced Q

In (23b), the *wh*-phrase is scrambled to the post-subject position and in (23c) to the pre-subject position. Given (20), this would mean that the post-subject position is an A-position.

A final piece of evidence comes from Condition C of binding theory (Chomsky 1981). Condition C prohibits an R-expression from being bound, and it is a pronoun in a c-commanding A-position that can bind an R-expression. This is illustrated by the English examples below in which the pronoun is in an A-position in (24a) and in a topicalised A′-position in (24b).

(24) (a) * He$_i$ seemed to John$_i$ t_i to be in trouble.
(b) Himself$_i$, John$_i$ criticised t_i.

By applying Condition C, therefore, it will become clear whether a landing site of scrambling is A or A′-positions.

If an R-expression is contained in the subject, a pronoun scrambled to the pre-subject position does not violate Condition C. This is shown in (25).

(25) (a) Ken$_i$-no tomodati-ga Naomi-ni kare$_i$-o syookaisita.
Ken-GEN friend-NOM Naomi-DAT he-ACC introduced
'Ken$_i$'s friend introduced him$_i$ to Naomi.'
(b) ? Kare$_i$-o Ken$_i$-no tomodati-ga Naomi-ni t_i syookaisita.
He-ACC Ken-GEN friend-NOM Naomi-DAT introduced

This suggests that the pre-subject position is an A′-position.

In contrast, if an R-expression is contained in the indirect object, a pronoun scrambled over it violates Condition C. This is so whether the pronoun lands in the post-subject position as in (26b) or in the pre-subject position as in (26c).

(26) (a) Naomi-ga Ken$_i$-no tomodati-ni kare$_i$-o syookaisita.
Naomi-NOM Ken-GEN friend-DAT he-ACC introduced
'Naomi introduced him$_i$ to Ken$_i$'s friend.'

(b) * Naomi-ga kare$_i$-o Ken$_i$-no tomodati-ni t_i syookaisita.
Naomi-NOM he-ACC Ken-GEN friend-DAT introduced

(c) * Kare$_i$-o Naomi-ga Ken$_i$-no tomodati-ni t_i syookaisita.
He-ACC Naomi-NOM Ken-GEN friend-DAT introduced

Given (20), it follows that the post-subject position is an A-position.

From these considerations, it is plausible to conclude that in simple sentences with a three-place predicate, the post-subject position is an A-position while the pre-subject position is an A′-position. Hence, as long as a pronoun is contained in the indirect object, it can be bound by a QP or its copy located in the post-subject position. Now that we have made this clear, the next step is to show that the same is true of object control constructions.

4. Scrambling out of control clauses and asymmetries of landing positions

This section aims to demonstrate that there are also asymmetries of landing positions regarding long distance scrambling out of control clauses. But before moving any further, it is necessary to argue against Takano's (2010) assumption in (14a) that long distance scrambling in general cannot create a new binding relation.

4.1 Binding a pronoun contained in a matrix adjunct

As discussed in section 2, one big motivation for Takano to assume (14a) is that long distance scrambling out of control clauses cannot bind a pronoun contained in a matrix adjunct, which clause-internal scrambling can. The relevant examples are reproduced here as (27).

(27) (a) * Ken-ga soko$_i$-no sotugyoosei-no mae-de Yumi-ni [PRO
Ken-NOM it-GEN graduate-GEN front-at Yumi-DAT PRO
mittu-izyoo-no daigaku$_i$-ni syutugansuru yoo(ni)] susumeta.
three-or.more-GEN university-DAT apply C recommended
'Ken recommended that Yumi should apply to three or more universities$_i$ in the presence of their$_i$ graduates.'

(b) ?*Ken-ga mittu-izyoo-no daigaku$_i$-ni soko$_i$-no sotugyoosei-no
Ken-NOM three-or.more-GEN university-DAT it-GEN graduate-GEN
mae-de Yumi-ni [PRO t_i syutugansuru yoo(ni)] susumeta.
front-at Yumi-DAT PRO apply C recommended

(c)?* Mittu-izyoo-no daigaku$_i$-ni Ken-ga soko$_i$-no sotugyoosei-no
Three-or.more-GEN university-DAT Ken-NOM it-GEN graduate-GEN
mae-de Yumi-ni [PRO t_i syutugansuru yoo(ni)] susumeta.
front-at Yumi-DAT PRO apply C recommended

Here, I intend to show that this cannot be decisive evidence because the complexity of the sentences makes the bound variable reading difficult to obtain. For instance, if the indirect object *Yumi-ni* is preposed to the sentence initial position, the ungrammaticality of (27b, c) improves.[7] This is shown in (28).

(28) (a) ? Yumi$_j$-ni Ken-ga mittu-izyoo-no daigaku$_i$-ni soko$_i$-no
Yumi-DAT Ken-NOM three-or.more-GEN university-DAT it-GEN
sotugyoosei-no mae-de t_j [PRO t_i syutugansuru yoo(ni)] susumeta.
graduate-GEN front-at PRO apply C recommended

(b) ? Yumi$_j$-ni mittu-izyoo-no daigaku$_i$-ni Ken-ga soko$_i$-no
Yumi-DAT three-or.more-GEN university-DAT Ken-NOM it-GEN
sotugyoosei-no mae-de t_j [PRO t_i syutugansuru yoo(ni)] susumeta.
graduate-GEN front-at PRO apply C recommended

In a similar vein, if the indirect object *Yumi-ni* is moved rightward to the position prior to the verb, the ungrammaticality of (27b, c) improves:

7 Thanks to Norio Nasu for bringing the relevance of this example to my attention.

(29) (a) ? Ken-ga mittu-izyoo-no daigaku$_i$-ni soko$_i$-no sotugyoosei-no
Ken-NOM three-or.more-GEN university-DAT it-GEN graduate-GEN
mae-de t_j [PRO t_i syutugansuru yoo(ni)] Yumi$_j$-ni susumeta.
front-at PRO apply C Yumi-DAT recommended

(b) ? Mittu-izyoo-no daigaku$_i$-ni Ken-ga soko$_i$-no sotugyoosei-no
Three-or.more-GEN university-DAT Ken-NOM it-GEN graduate-GEN
mae-de t_j [PRO t_i syutugansuru yoo(ni)] Yumi$_j$-ni susumeta.
front-at PRO apply C Yumi-DAT recommended

Accordingly, (27) alone cannot be taken as strong evidence to prove (14a).

In fact, in subject control constructions – which is less complex than object control constructions – it is perfectly acceptable for long distance scrambling of a QP to bind a pronoun contained in a matrix adjunct. This is illustrated in (30).

(30) (a) * Gakusei-ga soko$_i$-no syatyoo-no mae-de [PRO
Student-NOM it-GEN president-GEN front-at PRO
mittu-izyoo-no kaisya$_i$-ni denwasi-yoo to] sita.
three-or.more-GEN company-DAT call-will C did
'The student tried to call three or more companies$_i$ in the presence of their$_i$ presidents.'

(b) Mittu-izyoo-no kaisya$_i$-ni gakusei-ga soko$_i$-no syatyoo-no
Three-or.more-GEN company-DAT student-NOM it-GEN president-GEN
mae-de [PRO t_i denwasi-yoo to] sita.
front-at PRO call-will C did

Accordingly, contrary to Takano's suggestion, it is reasonable to consider that long distance scrambling out of control clauses can create a new binding relation.

4.2 A/A′-positions

Now that we have established that long distance scrambling out of control clauses can establish a new binding relation, we are now ready to argue that there are also asymmetries of landing positions in object control constructions. In the same way as the discussion in section 3, I use three diagnostics: weak crossover, strong crossover and

Condition C of binding theory.

As for weak crossover effects, we have already witnessed the asymmetry. If a pronoun is contained in the matrix subject, an embedded object QP scrambled over it does not remedy a weak crossover violation. The relevant example is repeated here as (31) (= 9).

(31) (a) * Soko$_i$-no sotugyoosei-ga Ken-ni [PRO mittu-izyoo-no daigaku$_i$-ni
It-GEN graduate-NOM Ken-DAT PRO three-or.more-GEN university-DAT
syutugansuru yoo(ni)] susumeta.
apply C recommended
'Their$_i$ graduates recommended that Ken should apply to three or more universities$_i$.'

(b)?* Mittu-izyoo-no daigaku$_i$-ni soko$_i$-no sotugyoosei-ga Ken-ni
Three-or.more-GEN university-DAT it-GEN graduate-NOM Ken-DAT
[PRO t_i syutugansuru yoo(ni)] susumeta.
PRO apply C recommended

If long distance scrambling out of control clauses can create a new binding relation, it is worthwhile to seek for an account of (31b) without recourse to (14a, b). More specifically, we should explain the ungrammaticality of (31b) in a different way than saying that the pronoun cannot be bound by clause-internal scrambling of the QP as it is not contained in the controller. The same as clause-internal scrambling, I suggest that what is relevant here is the asymmetry of landing positions. That is, the pre-subject position is an A′-position, and therefore the QP there cannot bind the pronoun.

On the other hand, if a pronoun is contained in the indirect object, an embedded object QP scrambled over it can establish a binding relation with it. This is so, whether the embedded object QP lands in the post-subject position as in (32b) (= 10b) or in the pre-subject position as in (32c) (= 10c).

(32) (a) * Ken-ga soko$_i$-no sotugyoosei-ni [PRO mittu-izyoo-no
Ken-NOM it-GEN graduate-DAT PRO three-or.more-GEN
daigaku$_i$-ni syutugansuru yoo(ni)] susumeta.
university-DAT apply C recommended
'Ken recommended that their$_i$ graduates should apply to three or more universities$_i$.'

(b) ? Ken-ga mittu-izyoo-no daigaku$_i$-ni soko$_i$-no sotugyoosei-ni

Ken-NOM three-or.more-GEN university-DAT it-GEN graduate-DAT
[PRO t_i syutugansuru yoo(ni)] susumeta.
PRO apply C recommended

(c) ? Mittu-izyoo-no daigaku$_i$-ni Ken-ga soko$_i$-no sotugyoosei-ni
Three-or.more-GEN university-DAT Ken-NOM it-GEN graduate-DAT
[PRO t_i syutugansuru yoo(ni)] susumeta.
PRO apply C recommended

Following (20), I assume here that long distance scrambling out of control clauses to the pre-subject position consists of shorter long distance scrambling to the post-subject position. If so, (32c) has (32b) at one point in its derivation, and it is this point that the binding relation between the QP and the pronoun is established. Thus one plausible way of analysing this would be to assume that the post-subject position is an A-position.

Data from strong crossover points toward the same asymmetry. If a pronoun is the matrix subject, it cannot be bound by an embedded *wh*-phrase scrambled over it. This is shown in (33).

(33) (a) * Soitu$_i$-ga Ken-ni [PRO [dare$_i$-no titioya]-o tyoosasuru yoo(ni)]
He-NOM Ken-DAT PRO who-GEN father-ACC investigate C
tanonda no?
asked Q
'He$_i$ asked Ken to investigate whose$_i$ father?'

(b) * [Dare$_i$-no titioya]$_j$-o soitu$_i$-ga Ken-ni [PRO t_i tyoosasuru
Who-GEN father-ACC he-NOM Ken-DAT PRO investigate
yoo(ni)] tanonda no?
C asked Q

If it is A-movement that ameliorates a strong crossover violation, this suggests that the pre-subject position is an A′-position.

In contrast, if a pronoun is the indirect object, a strong crossover violation is remedied by scrambling of an embedded *wh*-phrase over it. This is so irrespective of the landing sites of the *wh*-phrase as shown in (34).

(34) (a) * Ken-ga soitu$_i$-ni [PRO [dare$_i$-no titioya]-o tyoosasuru yoo(ni)]
Ken-NOM he-DAT PRO who-GEN father-ACC investigate C

tanonda no?
asked Q
'Ken asked him$_i$ to investigate whose$_i$ father?'

(b) ? Ken-ga [dare$_i$-no titioya]$_j$-o soitu$_i$-ni [PRO t_i tyoosasuru yoo(ni)] tanonda no?
Ken-NOM who-GEN father-ACC he-DAT PRO investigate C asked Q

(c) ? [Dare$_i$-no titioya]$_j$-o Ken-ga soitu$_i$-ni [PRO t_i tyoosasuru yoo(ni)] tanonda no?
Who-GEN father-ACC Ken-NOM he-DAT PRO investigate C asked Q

Given (20), this can be analysed as stating that the post-subject position is an A-position, and the *wh*-phrase or its copy circumvents the strong crossover violation from there.

Lastly, Condition C of binding theory also suggests the same asymmetries. If an R-expression is contained in the matrix subject, scrambling of a pronoun to the pre-subject position does not induce a Condition C violation as shown in (35).

(35) (a) Ken$_i$-no hahaoya-ga sensei-ni [PRO kare$_i$-o homeru yoo(ni)] tanonda.
Ken-GEN mother-NOM teacher-DAT PRO he-ACC praise C asked
'Ken$_i$'s mother asked the teacher to praise him$_i$.'

(b) ? Kare$_i$-o Ken$_i$-no hahaoya-ga sensei-ni [PRO t_i homeru yoo(ni)] tanonda.
He-ACC Ken-GEN mother-NOM teacher-DAT PRO praise C asked

Since it is a pronoun in an A-position that induces a Condition C violation, this suggests that the pre-subject position is an A′-position.

On the other hand, if an R-expression is contained in the indirect object, scrambling of an embedded pronoun object over it violates Condition C. This is so, whether the pronoun lands in the post-subject position as in (36b) or in the pre-subject position as in (36c).

(36) (a) Sensei-ga Ken$_i$-no hahaoya-ni [PRO kare$_i$-o homeru yoo(ni)]

Teacher-NOM Ken-GEN mother-DAT PRO he-ACC praise C tanonda.
asked
'The teacher asked Ken_i's mother to praise him_i.'

(b)?* Sensei-ga $kare_i$-o Ken_i-no hahaoya-ni [PRO t_i homeru yoo(ni)] tanonda.
Teacher-NOM he-ACC Ken-GEN mother-DAT PRO praise C asked

(c)?* $Kare_i$-o sensei-ga Ken_i-no hahaoya-ni [PRO t_i homeru yoo(ni)] tanonda.
He-ACC teacher-NOM Ken-GEN mother-DAT PRO praise C asked

This tells us that the post-subject position is an A-position, and that the pronoun or its copy binds the R-expression from there.

Summarising the discussion so far, we have seen that long distance scrambling out of control clauses can create a new binding relation and that there are asymmetries of landing positions in the same way as clause-internal scrambling. If this is on the right track, we are led to consider that a pronoun can be bound as long as it is contained in the matrix indirect object, because being in an A-position, a QP in the post-subject position can c-command and bind it. On the other hand, if a pronoun is contained in the matrix subject, it cannot be bound by a quantifier in the pre-subject position because the pre-subject position is an A′-position.

4.3 Subject control with *promise*

Although we are aware that the contrast of weak crossover effects in object control constructions stems from the asymmetry of landing positions, we are not yet sure whether movement of the controller is necessary. This subsection is devoted to arguing that controller movement is in fact not relevant.

It is well known that in control constructions with a verb like *promise*, it is the matrix subject, not the matrix indirect object, that is interpreted as the controller of PRO. If controller movement is a decisive factor in producing the contrast of binding, therefore, it is predicted that a pronoun contained in the matrix subject can be bound by a scrambled QP. However, as Takano himself argues, this prediction is not borne out. In this connection, let us consider (37).

(37) (a) * Soko$_i$-no sotugyoosei-ga Ken-ni [PRO mittu-izyoo-no
It-GEN graduate-NOM Ken-DAT PRO three-or.more-GEN
daigaku$_i$-ni syutugansuru to] yakusokusita.
university-DAT apply C promised
'Their$_i$ graduates promised Ken that they would apply to three or more universities$_i$.'

(b)?* Mittu-izyoo-no daigaku$_i$-ni soko$_i$-no sotugyoosei-ga Ken-ni
Three-or.more-GEN university-DAT it-GEN graduate-NOM Ken-DAT
[PRO t_i syutugansuru to] yakusokusita.
PRO apply C promised

(Takano: 105)

In (37), the pronoun *soko* 'it' is contained in the matrix subject. Yet it cannot be interpreted as a variable bound by the QP scrambled to the pre-subject position. Concerning this, Takano assumes that (37) is not the case of obligatory control, and therefore the lack of controller movement gives rise to the absence of binding within the control clause. However, his argument falls short of decisive proof as to whether or not the example in (37) involves obligatory control.

It is independently known from the research by Fujii (2006) that there is a genuine subject control in Japanese that shows the properties of obligatory control; that is, the verb *yakusokusu-ru* 'promise' with the commitative *to*-phase. In obligatory control, a PRO subject in the control clause requires a c-commanding controller. This is illustrated in the English examples in (38).

(38) [John$_i$'s sister]$_j$ tried [PRO$_{*i/j}$ to behave *himself$_i$/herself$_j$].

Fujii argues that in genuine subject control with the *to*-phrase, a PRO subject needs to be c-commanded by its controller as shown in (39).

(39) *Hirosi$_i$-no sensei-wa Yoko-to [PRO$_i$ daigaku-ni gookakusuru
Hirosi-GEN teacher-TOP Yoko-with PRO university-DAT pass
koto]-o yakusokusita.
C-ACC promised
'Hirosi's teacher promised Yoko that he would pass the University entrance exam.'

(Fujii 2006: 72)

Furthermore, the possibility of a long distance controller supports this point as well. In obligatory control, it is not possible for a PRO subject to have a long distance controller as shown in the English example below.

(40)* Mary$_i$ said that John$_j$ hoped [PRO$_{*i/j}$ to win the race].

Fujii argues that in subject control with the *to*-phrase, it is not possible for PRO to have a long distance controller. This is shown in (41).

(41)* Hirosi$_i$-wa [sensei-ga Yoko-to [PRO$_i$ daigaku-ni gookakusuru
Hirosi-TOP teacher-NOM Yoko-with PRO university-DAT pass
koto]-o yakusokusita to] hahaoya-ni tutaeta.
C-ACC promised C mother-DAT told
'Hirosi told his mother that his teacher promised Yoko that he would pass the University entrance exam.'

(Fujii 2006: 73)

By using this specific subject control construction, therefore, we are able to examine whether or not controller movement is relevant to the observed variable binding. Surprisingly, if a pronoun is contained in the subject (hence controller), it cannot be interpreted as a variable bound by a QP scrambled to the pre-subject position. In this light, let us look at (42).

(42) (a) * Soko$_i$-no sotugyoosei-ga Ken-to [PRO mittu-izyoo-no
It-GEN graduate-NOM Ken-with PRO three-or.more-GEN
daigaku$_i$-ni syutugansuru koto]-o yakusokusita.
university-DAT apply C-ACC promised
'Their$_i$ graduates promised Ken that they would apply to three or more universities$_i$.'

(b)?* Mittu-izyoo-no daigaku$_i$-ni soko$_i$-no sotugyoosei-ga Ken-to
Three-or.more-GEN university-DAT it-GEN graduate-NOM Ken-with
[PRO t_i syutugansuru koto]-o yakusokusita.
PRO apply C-ACC promised

This suggests that controller movement is not relevant to the binding relation at issue, because if Takano's argument is correct, the pronoun in (42) is generated in the control clause and it should be able to be bound by the QP scrambled by clause-internal scrambling.

In contrast, if a pronoun is contained in the *to*-phrase, it can be bound by the QP scrambled to the post-subject position as in (43b) or to the pre-subject position as in (43c).

(43) (a) * Ken-ga soko$_i$-no sotugyoosei-to [PRO mittu-izyoo-no
Ken-NOM it-GEN graduate-with PRO three-or.more-GEN
daigaku-ni syutugansuru koto]-o yakusokusita.
university-DAT apply C-ACC promised
'Ken promised their$_i$ graduates that he would apply to three or more universities$_i$.'

(b) ? Ken-ga mittu-izyoo-no daigaku$_i$-ni soko$_i$-no sotugyoosei-to
Ken-NOM three-or.more-GEN university-DAT it-GEN graduate-with
[PRO t_i syutugansuru koto]-o yakusokusita.
PRO apply C-ACC promised

(c) ? Mittu-izyoo-no daigaku$_i$-ni Ken-ga soko$_i$-no sotugyoosei-to
Three-or.more-GEN university-DAT Ken-NOM it-GEN graduate-with
[PRO t_i syutugansuru koto]-o yakusokusita.
PRO apply C-ACC promised

Here, I assume that the *to*-phrase is situated in a position that can be c-commanded and bound by the QP or its copy in the post-subject position. This is because a similar binding relation is observed in a simple sentence as well:

(44) (a) * Gaka-ga soko$_i$-no syusaisya-to mittu-izyoo-no
Painter-NOM it-GEN organizer-with three-or.more-GEN
tenrankai$_i$-o yakusokusita.
exhibition-ACC promised
'The painter promised their$_i$ organizers three or more exhibitions$_i$.'

(b) Gaka-ga mittu-izyoo-no tenrankai$_i$-o soko$_i$-no syusaisya-to
Painter-NOM three-or.more-GEN exhibition-ACC it-GEN organizer-with
t_i yakusokusita.
Promised

(c) Mittu-izyoo-no tenrankai$_i$-o gaka-ga soko$_i$-no syusaisya-to
Three-or.more-GEN exhibition-ACC painter-NOM it-GEN organizer-with
t_i yakusokusita.
promised

In (44b, c), the pronoun *soko* 'it' in the *to*-phrase can be interpreted as a variable bound by the QP *mittu-izyoo-no tenrankai* 'three or more exhibitions'. In order for the pronoun to be bound by the QP, the former needs to be c-commanded by the latter in an A-position. Turning back to the subject control sentence in (43), this suggests that the pronoun *soko* can be bound by the QP as long as it is contained in the *to*-phrase as the QP or its copy in the post-subject position can c-command and bind it. Moreover, the *to*-phrase is not a controller. Accordingly, this makes it clear that controller movement is not relevant to the contrast of weak crossover effects in control constructions, and that it is asymmetries of landing positions that yield the contrast.

5. Cyclic nature of scrambling

In this section, I intend to tackle some potential problems that may arise from my analysis of Japanese scrambling. I have argued throughout the paper that scrambling of the direct object to the pre-subject position consists of shorter scrambling to the post-subject position (see 20). This cyclic nature of scrambling helps establish a binding relation between a pronoun in the indirect object and a QP scrambled to the pre-subject position because the QP leaves a copy in the post-subject position. Furthermore, in the previous section, I argued that scrambling out of control clauses pattern with clause-internal scrambling in that it can be A-movement. Regarding these analyses, two potential questions may arise:

(45) (a) Why should scrambling of the direct object to the pre-subject position transit through the post-subject position?
(b) Why can scrambling out of control clauses be A-movement while that out of finite clauses is A′-movement?

The key to answering these questions lies in derivation by phase (Chomsky 2000, 2001,

2004, 2007, 2008). Phases are domains in the narrow syntactic computation in terms of which derivation is cyclically passed on to the interfaces with the semantic and phonological components. According to Chomsky, phases are transitive *v*Ps and CPs (and arguably DPs). Once transitive *v*Ps and CPs are completed, elements contained in the domain of them are transferred to the interfaces, and therefore they cannot participate in the operation in the next higher phase. This important concomitant of multiple spellout is known as the Phase Impenetrability Condition (henceforth PIC):

(46) *Phase Impenetrability Condition* (Chomsky 2000: 108)
In phase α with head H, the domain of H is not accessible to operations outside α, only H and its edge are accessible to such operations.

In consequence of the PIC, it is expected that an element (e.g., maximal projection) contained in the domain of phase α must move to its edge (specifier) in order to participate in operations in the next higher phase. In this light, Hiraiwa (2010) proposes that scrambling in Japanese must also cyclically target each phase edge:

(47) Both scrambling and topicalization are movement operations to the edge of a phase, that is, the left periphery of CP/*v*P.

(Hiraiwa 2010: 143)

In addition to cyclic scrambling by phase, I make the following two claims concerning the status of each phase edge:

(48) (a) Spec CP is an A′-position.
(b) Spec *v*P is an A-position.

(48a) is a reasonable assumption considering that Spec CP is typically a position for operators.[8] Spec *v*P should be an A-position because, as we have seen thus far, a QP

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[8] It is well known that in sentences with a two-place predicate, a pronoun can be bound by a scrambled QP even though it is contained in the subject (see Miyagawa 2003, 2010 among others) as shown in (i).

(i) (a) * Soko$_i$-no sotugyoosei-ga mittu-izyoo-no daigaku$_i$-ni
It-GEN graduate-NOM three-or.more-GEN university-DAT
syutugansita.
applied
'Thier$_i$ graduates applied to three or more universities$_i$.'

(b) Mittu-izyoo-no daigaku$_i$-ni soko$_i$-no sotugyoosei-ga t_i
Three-or.more-GEN university-DAT it-GEN graduate-NOM
syutugansita.
applied (Takano 2010: 84)

An anonymous reviewer points out that this could be a potential problem for my analysis because in order to account for the binding

scrambled to the post-subject position can create a new binding relation, and I assume here that this position corresponds to Spec *v*P. With this in mind, let us turn to examine the derivation of clause-internal scrambling.

The scrambling in (49b, c) (= 19b,c) can be schematised as in (50).

(49) (a) * Ken-ga $soko_i$-no sotugyoosei-ni mittu-izyoo-no $daigaku_i$-o
Ken-NOM it-GEN graduate-DAT three-or.more-GEN university-ACC
susumeta.
recommended
'Ken recommended $their_i$ graduates three or more $universities_i$.'

(b) Ken-ga mittu-izyoo-no $daigaku_i$-o $soko_i$-no sotugyoosei-ni
Ken-NOM three-or.more-GEN university-ACC it-GEN graduate-DAT
t_i susumeta.
recommended

(c) Mittu-izyoo-no $daigaku_i$-o Ken-ga $soko_i$-no sotugyoosei-ni
Three-or.more-GEN university-ACC Ken-NOM it-GEN graduate-DAT
t_i susumeta.
recommended

(50) $[_{CP}\ QP_i\ [_{TP}\ S\ [_{vP}\ <QP_i>\ [_{VP}\ pronoun_i\ <QP_i>\ V\ ]]]]$

A′ A

Given (47), scrambling of the QP must target Spec *v*P first. Thus even if the QP continues to move to the pre-subject position in (49c), it must leave an intermediate copy in Spec *v*P. As Spec *v*P is an A-position according to (48b), the QP or its intermediate copy in Spec *v*P can c-command and bind a pronoun contained in the indirect object situated in Spec VP.

On the other hand, if a pronoun is contained in the subject, the derivation of clause-internal scrambling proceeds as follows.

(51) (a) * $Soko_i$-no sotugyoosei-ga Ken-ni mittu-izyoo-no $daigaku_i$-o
It-GEN graduate-NOM Ken-DAT three-or.more-GEN university-ACC
susumeta.

pattern in (ib) it may be necessary to assume that the pre-subject position is an A-position. Although more research is certainly needed, I assume here that the scrambling patterns in sentences with a three-place predicate and those with a two-place predicate are fundamentally different, and for the purpose of arguing against Takano's analysis, it may be enough to concentrate on scrambling in sentences with a three-place predicate as what is at issue here is object control sentences.

recommended

'Their$_i$ graduates recommended Ken three or more universities.'

(b)?? Mittu-izyoo-no daigaku$_i$-o soko$_i$-no sotugyoosei-ga
Three-or.more-GEN university-ACC it-GEN graduate-NOM
Ken-ni t_i susumeta.
Ken-DAT recommend

(52) [$_{CP}$ QP$_i$ [$_{TP}$ pronoun$_i$ [$_{vP}$ <QP$_i$> [$_{VP}$ IO <QP$_i$> V]]]]

A′ A

According to (48a), Spec CP is an A′-position. So the QP in Spec CP cannot bind the pronoun contained in the subject.

Then what about long distance scrambling out of control clauses? It has been argued by some that control clauses are not complete enough to qualify as a phase. For instance, Nemoto (1993) and Kawamura (2004) argue that they are TPs irrespective of the presence of a complementiser. Uchibori (2000) suggests that the defective tense of control clauses deprives their phasehood. Yoshimoto (2012) argues that the left peripheral structure of control clauses is deficient, and hence they do not function as a phase. If control clauses are not phasal, it would mean that long distance scrambling out of control clauses do not have to transit through the embedded Spec CP. With this in mind, let us consider the scrambling in (53b, c) (= 10b, c).[9]

(53) (a) * Ken-ga soko$_i$-no sotugyoosei-ni [PRO mittu-izyoo-no
Ken-NOM it-GEN graduate-DAT PRO three-or.more-GEN
daigaku$_i$-ni syutugansuru yoo(ni)] susumeta.
University-DAT apply C recommended
'Ken recommended that their$_i$ graduates should apply to three or more universities$_i$.'

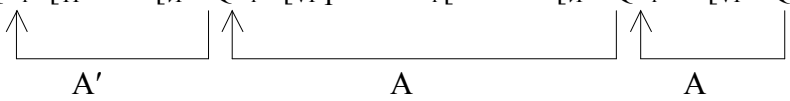
(b) ? Ken-ga mittu-izyoo-no daigaku$_i$-ni soko$_i$-no sotugyoosei-ni
Ken-NOM three-or.more-GEN university-DAT it-GEN graduate-DAT
[PRO t_i syutugansuru yoo(ni)] susumeta.
PRO apply C recommended

(c) ? Mittu-izyoo-no daigaku$_i$-ni Ken-ga soko$_i$-no sotugyoosei-ni

9 Scrambling of the QP to the embedded *v*P seems string vacuous. More research is needed as to whether string vacuous scrambling is feasible, but what is at issue here is that it does not prevent scrambling from moving to an A-position.

Three-or.more-GEN university-DAT Ken-NOM it-GEN graduate-DAT
[PRO t_i syutugansuru yoo(ni)] susumeta.
PRO apply C recommended

(54) [$_{CP}$ QP_i [$_{TP}$ S [$_{vP}$ <QP_i> [$_{VP}$ $pronoun_i$ [PRO [$_{vP}$ <QP_i> [$_{VP}$ <QP_i> V]]]]]]]



Here, long distance scrambling of the embedded QP can continue A-movement as far as the matrix Spec *v*P without transiting through the edge of the control clause, which is assumed here to be non-phasal. Since Spec *v*P is an A-position, the QP or its copy there can create a binding relation with the pronoun contained in the matrix indirect object.

In contrast, if a pronoun is contained in the matrix subject as in (55) (= 9), the scrambling in (55b) can be schematised as in (56).

(55) (a) * $Soko_i$-no sotugyoosei-ga Ken-ni [PRO mittu-izyoo-no daigaku$_i$-ni
It-GEN graduate-NOM Ken-DAT PRO three-or.more-GEN university-DAT
syutugansuru yoo(ni)] susumeta.
Apply C recommended
'Their$_i$ graduates recommended that Ken should apply to three or more universities$_i$.'

(b)?* Mittu-izyoo-no daigaku$_i$-ni $soko_i$-no sotugyoosei-ga Ken-ni
Three-or.more-GEN university-DAT it-GEN graduate-NOM Ken-DAT
[PRO t_i syutugansuru yoo(ni)] susumeta.
PRO apply C recommended

(56) [$_{CP}$ QP_i [$_{TP}$ $pronoun_i$ [$_{vP}$ <QP_i> [$_{VP}$ IO [PRO [$_{vP}$ <QP_i> [$_{VP}$ <QP_i> V]]]]]]]

Even if long distance scrambling out of control clauses can continue A-movement as far as the matrix Spec *v*P, the matrix Spec CP must be an A′-position, following (48a). So the QP in the Spec CP cannot bind the pronoun in the subject position.

Lastly, let us discuss long distance scrambling out of finite clauses. Of particular importance is that finite clauses constitute a phase. Thus long distance scrambling out of them must transit through the embedded Spec CP, which is an A′-position. Note that once an element is moved to an A′-position, it cannot be moved to an A-position any longer (Improper Movement of Chomsky 1973). For instance, the embedded subject

John in (57) cannot be moved to the matrix Spec TP after transiting through the embedded Spec CP.

(57) (a) *John seems (that) is intelligent.

(b) [$_{TP}$ John seems [$_{CP}$ <John> (that) [$_{TP}$ <John> is intelligent]]]

A A′

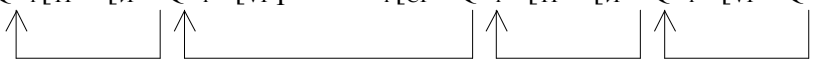
It is expected, therefore, that long distance scrambling out of phasal finite clauses is necessarily A′-movement. Given this, the scrambling in (58b, c) (= 7b, c) looks like (59).

(58) (a) * Aya-ga soko$_i$-no sotogyoosei-ni [Ken-ga mittu-izyoo-no
Aya-NOM it-GEN graduate-DAT Ken-NOM three-or.more-GEN
daigaku$_i$-ni syutugansita to] itta.
University-DAT applied C said
'Aya told their$_i$ graduates that Ken had applied to three or more universities$_i$.'

(b) * Aya-ga mittu-izyoo-no daigaku$_i$-ni soko$_i$-no sotugyoosei-ni
Aya-NOM three-or.more-GEN university-DAT it-GEN graduate-DAT
[Ken-ga t_i syutugansita to] itta.
Ken-NOM applied C said

(c) * Mittu-izyoo-no daigaku$_i$-ni Aya-ga soko$_i$-no sotugyoosei-ni
Three-or.more-GEN university-DAT Aya-NOM it-GEN graduate-DAT
[Ken-ga t_i syutugansita to] itta.
Ken-NOM applied C said

(59) [$_{CP}$ QP$_i$ [$_{TP}$ S [$_{vP}$ <QP$_i$> [$_{VP}$ pronoun$_i$ [$_{CP}$ <QP$_i$> [$_{TP}$ S [$_{vP}$ <QP$_i$> [$_{VP}$ <QP$_i$> V]]]]]]]]



A′ A A′ A

(59) shows that after the QP is moved to the embedded Spec CP which is an A′-position, it is moved to the matrix Spec *v*P. Since Spec *v*P is an A-position, this movement is ruled out as an instance of Improper Movement for the same reasons that (57a) is ruled out.

The situation does not change if a pronoun is contained in the matrix subject. This is shown below (= 6).

(60) (a) * Soko$_i$-no sotugyoosei-ga Aya-ni [Ken-ga mittu-izyoo-no
It-GEN graduate-NOM Aya-DAT Ken-NOM three-or.more-GEN
daigaku$_i$-ni syutugansita to] itta.
University-DAT applied C said
'Their$_i$ graduates told Aya that Ken had applied to three or more universities$_i$.'

(b) * Mittu-izyoo-no daigaku$_i$-ni soko$_i$-no sotugyoosei-ga Aya-ni
Three-or.more-GEN university-DAT it-GEN graduate-NOM Aya-DAT
[Ken-ga t_i syutugansita to] itta.
Ken-NOM applied C said

(61) $[_{CP}\ QP_i\ [_{TP}\ pronoun_i\ [_{vP}\ <QP_i>\ [_{VP}\ IO\ [_{CP}\ <QP_i>\ [_{TP}\ S\ [_{vP}\ <QP_i>\ [_{VP}\ <QP_i>\ V]]]]]]]]$

A′ A A′ A

Whether the pronoun is contained in the matrix indirect object or in the matrix subject, movement of the QP out of a phasal complement would be ruled out as an instance of Improper Movement, because it moves to an A-position (the matrix Spec *v*P) after transiting through an A′-position (the embedded Spec CP).

The answers to the questions (45a, b) have been drawn out. Scrambling to the pre-subject position must transit through the post-subject position because the PIC forces cyclic movement to the edge of Spec *v*P. And if control clauses do not constitute a phase, long distance scrambling does not have to transit through the embedded Spec CP, which is an A′-position. This makes it possible for scrambling to continue A-movement as far as the matrix Spec *v*P. On the other hand, if finite clauses constitute a phase, long distance scrambling out of them must transit through an A′-position. Therefore, long distance scrambling out of finite clauses would contravene the condition of Improper Movement because it would move to an A-position (the matrix Spec *v*P) after transiting through an A′-position (the embedded Spec CP).

6. Concluding remarks

Since the machinery involved in the movement theory of control is so powerful, it appears at first glance that it can explain almost any phenomena regarding control even when we are not completely sure why the controller has to move. In order to advance such powerful machinery, however, it may be wise to look for phenomena that only

movement of the controller can account for. The phenomenon presented in Takano's paper appears to provide such case, but under closer scrutiny, it has become clear that movement of the controller is unmotivated at best as far as Japanese scrambling is concerned.

Specifically, this paper has demonstrated that the contrast of weak crossover effects in Japanese object control constructions which Takano (2010) explains in terms of controller movement actually stems from general properties of scrambling. I argued that long distance scrambling out of control clauses patterns with clause-internal scrambling. This means that insofar as sentences with a three-place predicate is concerned, the post-subject position is an A-position while the pre-subject position is an A′-position. Therefore as long as a pronoun is contained in the indirect object – which happens to be a controller in the case of object control – it can be bound by a QP or its intermediate copy in the post-subject position. In contrast, if a pronoun is contained in the subject, it cannot be bound by a QP in the pre-subject position. I also suggested that this state of affairs can be captured in terms of phases if scrambling cyclically targets phase edges, and control clauses do not constitute a phase. Accordingly, the research presented in this paper makes it clear that controller movement is irrelevant for the analysis of Japanese scrambling.

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