

Extending Movement Derivations from Control to Binding

Abstract

On the basis of a close examination of the effect of scrambling on pronominal variable binding in Japanese, Takano (2010) provides a new empirical argument for the hypothesis that (obligatory) control is derived by movement of the controller. At the same time, he also suggests that similar facts indicate that binding cannot be analyzed in the same way, namely, in terms of movement of the antecedent. This paper reexamines the latter point. It is shown that the fact that led Takano to this suggestion can be accounted for on grounds independent of the issue of the nature of binding and that with a suitable control, facts of the kind Takano examines do in fact reveal the effect of movement of the antecedent. The result thus supports the view that control and binding should be treated in the same way, in terms of movement of the controller and antecedent.

Keywords: binding, Japanese, movement of antecedents, scope of quantifiers, scrambling, variable binding

Takano (2010) proposes that certain facts about scrambling and pronominal variable binding in Japanese provide a new argument for the movement theory of (obligatory) control proposed and defended by Hornstein (1999, 2001) and others. The crucial fact leading to this conclusion is that the presence of a control relation between an element in the matrix clause and the subject of the complement clause makes it possible for otherwise unacceptable binding relations to be created by long-distance scrambling. Takano (2010:90-91) also notes that it is a control relation, and not a binding relation, that causes this effect. Thus, the same

effect cannot be seen if we replace the control complement by a finite complement whose subject has a pronoun bound by the matrix element. These observations, if correct, not only support the movement theory of control but also argue against the movement approach to binding advocated by Hornstein (2001) and Kayne (2002), illustrated in (1b) for the example in (1a).

(1) a. John_i thinks that he_i is smart.

b. John thinks that <John> he is smart (*<John>* = unpronounced copy of *John*)

According to the movement approach to binding, the binding relation in (1a) is analyzed as arising from movement of the antecedent from the position of the pronoun, as shown in (1b).¹

Takano's proposal thus implies (2).

(2) Binding, unlike control, cannot involve movement of the antecedent.

In this paper, I consider this point more carefully and show that the crucial fact that leads to (2) receives an account independent of the issue in question and that with a suitable control, the presence of a binding relation does cause exactly the same effect as the presence of a control relation. Therefore, I conclude, contrary to Takano (2010), that the relevant facts do indeed support the view that binding, like control, should be treated in terms of movement of the antecedent.

1 Evidence for Controller Movement: Takano 2010

Let us begin by reviewing the discussion in Takano 2010. Takano examines closely the effect of Japanese long-distance scrambling (i.e., scrambling out of a clause) establishing new binding relations and put forward a previously unnoticed empirical generalization. Takano then proposes an account of this generalization that relies crucially on the movement theory control.

In Japanese, there is a well-known asymmetry between clause-internal scrambling and long-distance scrambling with respect to whether they can establish new binding relations (see Saito 1992 and Tada 1990, 1993, among others, for relevant discussion; see also Mahajan

1990 for the same facts in Hindi). Thus, in (3a), where the subject contains a pronominal, *soko*, to be bound by a QP in the object, the intended bound variable interpretation for the pronominal given in (3c) is impossible.

- (3) a. **Soko_i-no sotugyoosei-ga mittu-izyoo-no daigaku_i-ni syutugansita.*
it-GEN graduate-NOM three-or.more-GEN university-DATapplied
'Their graduates applied to three or more universities.'
- b. *Mittu-izyoo-no daigaku_i-ni soko_i-no sotugyoosei-ga syutugansita.*
three-or.more-GEN university-DAT it-GEN graduate-NOM applied
- c. There are three or more *x*, *x* a university, such that someone who graduated from *x* applied to *x*.

However, the bound variable interpretation becomes possible if the object QP undergoes scrambling to the front of the sentence, as in (3b). For the sake of discussion, let us assume that a pronominal can receive a bound variable interpretation only if it is c-commanded by a QP. This condition is not met in (3a), but it is in (3b), due to scrambling. The improved status of (3b) indicates that Japanese clause-internal scrambling has the effect of making bound variable interpretations possible.

The same property is not shared by long-distance scrambling. The example in (4a) shows that a pronominal contained in the subject of the matrix clause cannot be bound by a QP in the object of the embedded clause. This fact is parallel to the one in (3a). However, scrambling the embedded object to the front of the matrix clause does not make the bound variable interpretation possible, as shown in (4b), even though it brings the QP to a position c-commanding the pronominal. This fact is in sharp contrast to the fact with clause-internal scrambling in (3b).

- (4) 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 that told
 ‘Their graduates told Aya that Ken applied to three or more universities.’
- 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 syutugansita to] itta.
 Ken-NOM applied that told

We see here an asymmetry between clause-internal and long-distance scrambling with respect to whether they license new binding relations.

Scrambling out of a control complement clause, which is a variety of long-distance scrambling, apparently behaves in relevant respects like clause-internal scrambling. Thus, the example in (5b) involves long-distance scrambling of the object QP of the control complement clause to the beginning of the sentence and this has the effect of making possible the bound variable interpretation for the pronominal contained in the matrix subject that is lacking in the example in (5a) without scrambling.

- (5) a. *Soko_i-no sotugyoosei-ga [PRO mittu-izyoo-no daigaku_i-ni
 it-GEN graduate-NOM three-or.more-GEN university-DAT
 syutugansi-yoo to] sita.
 apply-will that did
 ‘Their graduates tried to apply to three or more universities.’
- b. Mittu-izyoo-no daigaku_i-ni soko_i-no sotugyoosei-ga
 three-or.more-GEN university-DAT it-GEN graduate-NOM
 [PRO syutugansi-yoo to] sita.
 apply-will that did

The cases in (5) involve subject control. Cases involving object control exhibit the

same pattern. Observe the following contrast:

- (6) a. *Ken-ga soko_i-no sotugyoosei-ni [PRO mittu-izyoo-no daigaku_i-ni
 Ken-NOM it-GEN graduate-DAT three-or.more-GEN university-DAT
 syutugansuru yoo(ni)] susumeta.
 apply C recommended
 ‘Ken recommended to their graduates that they apply to three or more
 universities.’
- b. ?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 syutugansuru yoo(ni)] susumeta.
 apply C recommended

Here too, long-distance scrambling of the embedded object QP to the front of the matrix clause in (6b) has the effect of licensing a bound variable interpretation for the pronominal contained in the matrix object.

The control cases are interesting because they show that scrambling out of a control complement, even though it is a variety of long-distance scrambling, behaves like clause-internal scrambling in creating new binding relations. To capture this fact, one reasonable approach seems to be to attribute it to some properties of control structures that make them pattern like simple clauses (Nemoto 1993). However, Takano (2010) argues that this cannot be correct, given that not all control cases show the pattern in (5b)/(6b). Consider (7).

- (7) a. *Soko_i-no sotugyoosei-ga Ken-ni [PRO mittu-izyoo-no daigaku_i-ni
 it-GEN graduate-NOM Ken-DAT three-or.more-GEN university-DAT
 syutugansuru yoo(ni)] susumeta.
 apply C recommended
 ‘Their graduates recommended to Ken that he apply to three or more universities.’

- 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 syutugansuru yoo(ni)] susumeta.
 apply C recommended

The examples in (7) differ minimally from those in (6): in (6) the DP containing a pronominal is an object of the matrix clause, whereas in (7) it is a subject of the matrix clause. But long-distance scrambling of the embedded object QP in (7b) does not help the QP bind the pronominal contained in the matrix subject, in contrast to the situation in (6b).

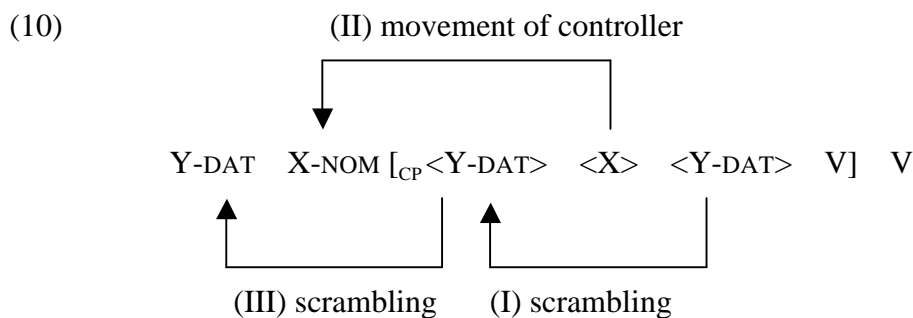
Note that the pronominal is contained in the controller in (5) and (6), but not in (7). Capitalizing on this fact, Takano (2010) puts forward the new empirical generalization in (8).

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

Takano then proposes to derive this generalization by making the claims in (9).

- (9) a. Scrambling out of a control complement clause, just like scrambling out of a finite complement clause, does not license variable binding.
 b. Pronominal variable binding in (5b)/(6b) is licensed inside the complement clause.
 c. Obligatory control is derived by movement of the controller (movement theory of control).

This proposal works as follows. Let us consider the derivation of (5b). Given (9c), the derivation proceeds as illustrated in (10), where X contains a pronominal and Y is a QP.



The first relevant step is scrambling of Y inside the embedded clause. This scrambling puts

derivation.

As is clear, the movement theory of control plays an essential role in this account of the contrast between (5b)/(6b) and (7b). If X in (5b)/(6b) controlled a PRO in the subject of the embedded clause and stayed in the matrix clause throughout the derivation, in accordance with the traditional nonmovement theory of control, there would be no difference between (5b)/(6b) and (7b), unless we introduced ad hoc stipulations. The fact that the analysis proposed in Takano 2010 provides a straightforward account of the facts in question thus argues for the movement theory of control.

2 From Control to Binding

Now that we have seen Takano's (2010) argument in favor of the movement theory of control, let us turn to the issue of the nature of binding. I will argue that, contrary to Takano's original claim, we can extend Takano's argument to binding, thus providing a new empirical argument for the movement approach to binding.

An initial indication toward this conclusion can be seen if we consider cases like (13)

- (13) a. Mittu-izyoo-no daigaku_i-ni soko_i-no sotugyoosei-ga
three-or.more-GEN university-DAT it-GEN graduate-NOM
[e syutugansuru koto]-o kessinsita.
apply C-ACC decided

'Their graduates decided to apply to three or more universities.'

- b. Mittu-izyoo-no daigaku_i-ni soko_i-no sotugyoosei_j-ga
three-or.more-GEN university-DAT it-GEN graduate-NOM
[zibun_j-ga syutugansuru koto]-o kessinsita.
self-NOM apply C-ACC decided

The example in (13a) has a phonetically null subject in the embedded clause and is parallel to the example in (5b). In (13a) the embedded object QP has scrambled to the front of the matrix clause and this has the effect of licensing a bound variable interpretation for the

pronominal contained in the matrix subject (the same bound variable interpretation is not possible without scrambling of the QP). What is important in this case is the fact that the embedded subject can be the overt (nonlocal) reflexive *zibun*, instead of an empty category, as shown in (13b). Moreover, the availability of the bound variable interpretation for the pronominal remains the same in (13b) (again, the variable interpretation is impossible in (13b) without scrambling of the embedded object QP).

This fact in (13b) is apparently surprising. Recall that scrambling out of a clause has no effects on binding (one of Takano's 2010 claims). If so, what makes variable binding possible in (13) must be scrambling of the embedded object inside the embedded clause. And scrambling inside the embedded clause helps only if the matrix subject, which contains the pronominal, originates in the embedded clause. This analysis is possible in (13a), where the subject of the embedded clause is phonetically null and hence the sentence is treated as an instance of subject control, receiving the analysis shown in (10). But the same analysis does not carry over to (13b), where the embedded subject is lexically filled.

What the examples in (13) show is that movement effects can be seen not only with a relation between controller and controllee but with a relation between binder and bindee as well. This recommends treating the two relations in the same way. This means that the matrix subject in (13b) has moved from the position of the reflexive. This is exactly what the movement approach to binding claims (see (1b)).

In fact, I claim that movement effects of this kind can be seen quite generally in cases involving binder and bindee. At first sight, this does not seem to be the case, as Takano (2010:90-91) observes. Let us consider (14), which is slightly modified from an example discussed in Takano 2010.

(14) ?*Mittu-izyoo-no daigaku_i-ni soko_i-no sotugyoosei_j-ga

three-or.more-GEN university-DAT it-GEN graduate-NOM

[pro_j syutugansita to] itta.

applied that said

‘Their graduates said that they applied to three or more universities.’

In this example, the embedded object QP has scrambled out of a finite clause whose subject is a pro bound by the matrix subject containing a pronominal to be bound by the scrambled QP. Note that the pattern of referential dependency between the matrix subject and the embedded subject in (14) is the same as that in the control examples we have seen in (5b) and (6b): in both cases, the embedded subject is bound/controlled by the matrix subject. We may thus well expect (14) to fall under the generalization in (8). However, the example in (14), unlike the control examples, does not permit a bound variable reading for the pronominal. Noting this fact, Takano suggests that the binder-bindee relation, unlike the controller-controllee relation, does not involve movement.

Given the fact in (14), this sounds reasonable. However, it turns out that there is an independent factor that makes it impossible for the pronominal in (14) to receive a bound variable interpretation. Let us consider the example in (15a).

(15) a. Mittu-izyoo-no daigaku-ni Ken-ga

three-or.more-GEN university-DAT Ken-NOM

[Mari-ga syutugansita to] itta.

Mari-NOM applied that said

‘Ken said that Mari applied to three or more universities.’

b. Ken said that there were three or more universities that Mari applied to.

(narrow scope of QP)

c. *There are three or more universities that Ken said that Mari applied to.

(wide scope of QP)

This example is parallel to the one in (14) except that it does not have a pronominal contained

in the subject of the matrix clause and does not have a *pro* in the subject of the embedded clause. Thus, (15a) has nothing to do with the issue of a bound variable interpretation. But it still has a QP as an object of the embedded clause. Since quantifiers take scope, there are in principle two interpretive possibilities for the QP in (15a). These two possibilities are given in (15b, c). The difference between (15b) and (15c) is that whereas in (15c) the existence of three or more universities is true to the speaker, in (15b) it is true only in the mind of the matrix subject. (15b) describes a narrow scope reading for the existential quantifier and (15c) a wide scope reading. Of these two possibilities (15a) permits only the narrow scope reading in (15b).

The same is true of the example in (14). (14) is acceptable on the reading on which the pronominal *soko* refers to a place specified in context (in which case *soko* is not bound by the QP). On this acceptable reading, the QP can take only narrow scope. If so, the lack of the bound variable interpretation in (14) does not imply anything about the issue of whether the binding relation between the matrix subject and the embedded subject involves movement of the matrix subject. The reason is that we know independently that variable interpretation is contingent on the scope of quantifiers. Suppose we have a logical form something like (16).

(16) x thinks that $\forall x$ | John likes Mary

In (16) the universal quantifier takes scope inside the embedded clause and so x is outside the scope of the quantifier. As a result, x cannot be interpreted as a variable bound by the quantifier. There is thus a general condition on variable interpretation to the effect that for an element to be interpreted as a variable bound by a quantifier, the element must fall under the scope of the quantifier. Restricting our attention to pronominal variables, we can assume a condition of the following sort:

(17) A pronominal can be interpreted as a variable bound by a QP only if the pronominal is in the scope of the QP.

This condition on variable interpretation is imposed on logical forms and so it has to be met at

LF (the interpretive interface), unlike the determination of the A-binder, which we assume to be carried out derivationally (recall the discussion of (10)).² If we look at (14) in this light, we see that the example does not permit a variable interpretation for the pronominal because the sentence does not allow the QP to take scope over the matrix clause. Note that the matrix subject receives a subject θ -role in the matrix clause. This means that it has to be interpreted in the matrix clause at LF. This in turn means that the pronominal contained in it cannot be in the scope of the QP at LF, failing to meet the condition in (17). Then the lack of a bound variable interpretation in (14) can be accounted for in terms of (17) and the example has no relevance for the issue of whether the matrix subject has moved from the position of the pro it binds.

This shows that Takano (2010) looked at the wrong example to decide on the issue under discussion. To settle the issue, we need to look at cases where a QP generated in the embedded clause can take scope over the matrix clause. Notice that obligatory control constructions do allow such QPs to take wide scope, as we can see in (18a) (subject control) and (18b) (object control).

(18) a. Mittu-izyoo-no daigaku-ni Ken-ga

three-or.more-GEN university-DAT Ken-NOM

[e syutugansi-yoo to] sita.

apply-will that did

‘Ken tried to apply to three or more universities.’

b. Mittu-izyoo-no daigaku-ni Ken-ga Mari-ni

three-or.more-GEN university-DAT Ken-NOM Mari-DAT

[e syutugansuru yoo(ni)] susumeta.

apply C recommended

‘Ken recommended to Mari that she apply to three or more universities.’

These examples are ambiguous with respect to the scope of the QP. (18a) can be interpreted as stating (i) that Ken tried to apply to three or more arbitrary universities (narrow scope) or

(ii) that there are three or more universities that Ken tried to apply to (wide scope). Similarly, (18b) can be interpreted as stating (i) that Ken recommended to Mari that she apply to three or more arbitrary universities (narrow scope) or (ii) that there are three or more universities that Ken recommended to Mari that she apply to (wide scope). Thus, control complements, unlike clearly finite complements as in (14) and (15a), allow QPs originating in them to take wide scope over the matrix clause.

It turns out that there are also noncontrol complement clauses that allow wide scope. Observe (19).

- (19) a. Mittu-izyoo-no daigaku-ni Ken-ga [Mari-ga syutugansuru
 three-or.more-GEN university-DAT Ken-NOM Mari-NOM apply
 koto]-o nozondeiru/negatteiru.
 C-ACC hope/wish
 ‘Ken hopes/wishes that Mari will apply to three or more universities.’
- b. Ken hopes/wishes that there are three or more universities that Mari will apply to. (narrow scope of QP)
- c. There are three or more universities that Ken hopes/wishes that Mari will apply to. (wide scope of QP)

The example in (19a) is not a control construction, so that the subject of the embedded clause can be filled freely by a DP that is not coreferential with the matrix subject. Thus, (19a) looks similar on the surface to (15a). However, unlike (15a), (19a) permits wide scope (as well as narrow scope) for the embedded object QP.

The claim that (15a) and (19a) differ in the scope of the scrambled QP can be backed up by looking at facts related to the relative scope of two quantifiers. Compare the two cases in (20).

(20) a. Mittu-izyoo-no daigaku-ni dareka-ga
 three-or.more-GEN university-DAT someone-NOM
 [Mari-ga syutugansita to] itta.
 Mari-NOM applied that said
 ‘Someone said that Mary applied to three or more universities.’

b. Mittu-izyoo-no daigaku-ni dareka-ga
 three-or.more-GEN university-DAT someone-NOM
 [Mari-ga syutugansuru koto]-o nozondeiru.
 Mari-NOM apply C-ACC hope
 ‘Someone hopes that Mari will apply to three or more universities.’

Of interest here is a reading on which the scrambled QP takes scope over the QP in the matrix subject. While this reading is very difficult to obtain in (20a) (thus, it cannot be interpreted as “there are three or more universities that someone said that Mari applied to”), it is much easier in (20b) (which can thus mean “there are three or more universities that someone hopes that Mari will apply to). The contrast follows if the scrambled QP can take wide scope over the matrix clause in (20b), but not in (20a).

Although detailed discussion of factors affecting the availability of wide scope is beyond the scope of this paper, it seems reasonable to link the availability/unavailability of wide scope for QPs originating in the embedded clause to the nature of the embedded clause. Thus, we might link the difference between the embedded clause in (15a) and (20a) and the embedded clause in (18), (19a), and (20b) to the difference between indicative/realis and subjunctive/irrealis, given that the content of the embedded clause is asserted in (15a)/(20a), but not in (18)/(19a)(20b), where the embedded clause describes an unrealized, hypothetical situation (see Palmer 2001 for discussion of the distinction between indicative/realis and subjunctive/irrealis in terms of the notion of assertion). On this view, subjunctive/irrealis complements allow embedded QPs to take wide scope, whereas indicative/realis complements do not.

Whatever the exact factor(s) that make(s) wide scope available, what is important for present purposes is that we can use examples like (19a), where the QP originating in the embedded clause can take wide scope and satisfy the condition in (17), to see whether binding involves movement. Let us consider (21) first.

(21) ?*Mittu-izyoo-no daigaku_i-ni soko_i-no sotugyoosei-ga
 three-or.more-GEN university-DAT it-GEN graduate-NOM
 [Mari-ga syutugansuru koto]-o nozondeiru.
 Mari-NOM apply C-ACC hope

‘Their graduates hope that Mari will apply to three or more universities.’

This example does not allow the intended bound variable interpretation for the pronominal, even though it does allow the QP to take scope over the matrix clause, which is evidenced by the fact that (20b) permits the scrambled QP to have scope over the matrix subject QP as well as by the fact that (21) is acceptable on the matrix-scope reading of the QP if *soko* has a discourse antecedent.³

Compare now (21) with (22).

(22) a. Mittu-izyoo-no daigaku_i-ni soko_i-no sotugyoosei_j-ga
 three-or.more-GEN university-DAT it-GEN graduate-NOM
 [pro_j syutugansuru koto]-o nozondeiru.
 apply C-ACC hope

‘Their graduates hope that they will apply to three or more universities.’

b. Mittu-izyoo-no daigaku_i-ni soko_i-no sotugyoosei_j-ga
 three-or.more-GEN university-DAT it-GEN graduate-NOM
 [zibun_j-ga syutugansuru koto]-o nozondeiru.
 self-NOM apply C-ACC hope

In (22a) the embedded subject is a *pro* bound by the matrix subject and in (22b) it is an overt reflexive bound by the matrix subject. Interestingly, both examples improve on the example in (21) on the bound variable interpretation.

Moreover, the same effect can be seen if the pro/reflexive is placed in an object position. The examples in (23b, c) contrast with the one in (23a).

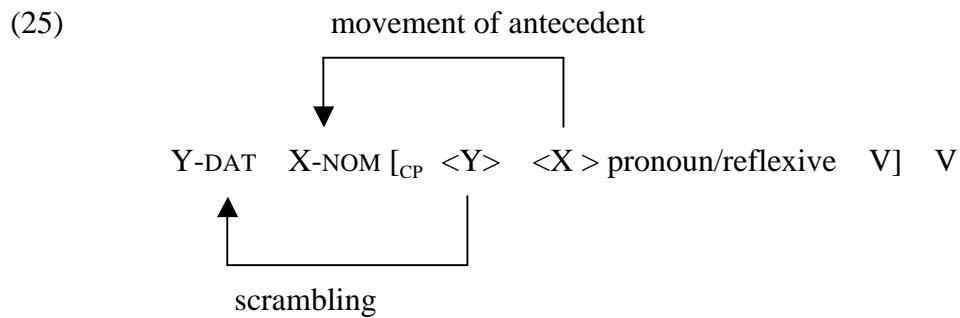
- (23) a. ?*Mittu-izyoo-no daigaku_i-ni soko_i-no sotugyoosei-ga
 three-or.more-GEN university-DAT it-GEN graduate-NOM
 [Ken-ga Mari-o suisensuru koto]-o nozondeiru.
 Ken-NOM Mari-ACC recommend C-ACC hope
 ‘Their graduates hope that Ken will recommend Mari to three or more universities.’
- b. ?Mittu-izyoo-no daigaku_i-ni soko_i-no sotugyoosei_j-ga
 three-or.more-GEN university-DAT it-GEN graduate-NOM
 [Ken-ga pro_j suisensuru koto]-o nozondeiru.
 Ken-NOM recommende C-ACC hope
 ‘Their graduates hope that Ken will recommend them to three or more universities.’
- c. ?Mittu-izyoo-no daigaku_i-ni soko_i-no sotugyoosei_j-ga
 three-or.more-GEN university-DAT it-GEN graduate-NOM
 [Ken-ga zibun_j-o suisensuru koto]-o nozondeiru.
 Ken-NOM self-ACC recommend C-ACC hope

Thus, the relevant effect can be seen quite generally in cases involving binder and bindee.⁴

Summarizing the results so far, we have seen that the examples in (14) and (21) do not permit a bound variable interpretation for the pronominal contained in the matrix subject, whereas those in (13b), (22), and (23b, c) do. This contrast leads us to the following generalization:

- (24) Scrambling out of a noncontrol complement clause makes pronominal variable binding possible only if (i) the scrambled QP takes scope over the matrix clause and (ii) the pronominal is contained in a DP that binds a pronoun/reflexive in the complement clause.

This generalization follows if binding, like control, involves movement, that is, if the antecedent moves from the position of the pronoun/reflexive it binds. To see this, let us consider the relevant part of the derivations of (13b), (22), and (23b, c) shown in (25), where X contains a pronominal to be interpreted as a variable bound by Y (=QP) and X binds the pronoun/reflexive in the complement clause.



Recalling the analysis in Takano 2010, we see that scrambling of Y out of the complement clause has no effects on variable binding, so Y's binding of the pronominal contained in X must be licensed inside the complement clause. This is possible only if X originates in the complement clause.⁵ The examples in (13b), (22), and (23b, c) share the property of having a pronoun or reflexive bound by the matrix subject in the complement clause. Thus, variable binding by Y of the pronominal contained in X can be licensed inside the complement clause under the movement approach to binding, according to which the antecedent X moves from the position of the pronoun/reflexive it binds.

In contrast to the complement clauses in (13b), (22) and (23b, c), the complement clauses in (21) and (23a) do not contain a pronoun/reflexive bound by the matrix subject. As a result, there is no chance for the pronominal contained in the matrix subject to be bound by the QP inside the complement clause.

This discussion makes it clear that movement of the antecedent is indispensable in achieving these results. The contrast between (13b)/(22)/(23b, c) on the one hand and (21)/(23a) on the other cannot receive the same straightforward analysis under the traditional nonmovement approach to binding, where the matrix subject stays in the matrix clause throughout the derivation. Thus, these considerations constitute evidence for the movement

approach to binding.⁶

3 Conclusion

The fact that led Takano (2010) to suggest that binding, unlike control, does not involve movement of the antecedent can be explained on independent grounds and therefore does not justify his suggestion. If we look at appropriate cases that avoid this problem, we see that they in fact show the effect of antecedent movement. We thus conclude that facts about scrambling and pronominal variable binding of the kind Takano explores lend support to the view that control and binding should be treated in the same way, namely, in terms of movement of the controller and antecedent.

References

- Hornstein, Norbert. 1999. Movement and control. *Linguistic Inquiry* 30: 69-96.
- Hornstein, Norbert. 2001. *Move! A minimalit theory of construal*. Oxford: Blackwell.
- Kayne, Richard. 2002. Pronouns and their antecedents. In *Derivation and explanation in the minimalist program*, ed. by Samuel David Epstein and T. Daniel Seely, 133-166. Malden: Blackwell.
- Mahajan, Anoop. 1990. The A/A-bar distinction and movement theory. Doctoral dissertation, MIT, Cambridge, Mass.
- Nemoto, Naoko. 1993. Chains and Case positions: A study from scrambling in Japanese. Doctoral dissertation, University of Connecticut, Storrs.
- Palmer, F. R. 2001. *Mood and modality*. Cambridge: Cambridge University Press.
- Saito, Mamoru. 1992. Long-distance scrambling in Japanese. *Journal of East Asian Linguistics* 1:69-118.
- Tada, Hiroaki. 1990. Scrambling(s). Ms., MIT, Cambridge, Mass.
- Tada, Hiroaki. 1993. A/A-bar partition in derivation. Doctoral dissertation, MIT, Cambridge, Mass.
- Takano, Yuji. 2010. Scrambling and control. *Linguistic Inquiry* 41: 83-110.

Notes

¹ There are two major proposals about what exactly happens in the subject of the embedded clause in (1b). Hornstein (2001) assimilates it to obligatory control, claiming that *John* is merged directly into the subject θ -position of the embedded clause and moves from there, with its copy spelled out as the pronoun *he*. Kayne (2002) proposes an alternative in which *he* and *John* get merged first to form a constituent and this constituent is merged into the embedded subject position, and then *John* moves out of this constituent. The choice between the two alternatives is irrelevant to the present discussion and I will remain neutral on this issue.

² That there is an A-binding condition on variable interpretation independent of (17) can be seen by looking at cases like (i).

- (i)a. *His_i mother called every boy_i.
b. *Who_i did his_i mother call?

In these cases, the QP takes scope over the entire clause, hence over the pronoun, but nevertheless the pronoun cannot be interpreted as a variable bound by the QP. A standard approach to this problem is to appeal to a condition to the effect that pronominal variable binding requires pronouns to be A-bound by QPs. This A-binding condition, unlike the scope condition in (17), can be satisfied derivationally (see Takano 2010: sec. 3.3 for more detailed discussion of the two conditions on variable binding).

³ As we have seen, the scrambled QP in (20b) can take scope over the matrix subject QP. On the other hand, the fact in (21) shows that in the same structural context, the scrambled QP cannot bind a pronoun contained in the matrix subject. This contrast indicates an interesting asymmetry between scope taking and binding. Specifically, it indicates that variable binding

requires more than scope taking, namely, A-binding. See note 2 and Takano 2010: sec. 3.3.

⁴ The intended bound variable interpretation may be a little worse in (23b, c) than in (22a, b).

What matters here is the improvement of (23b, c) over (23a).

⁵ If Y is base-generated lower than X, Y first scrambles to a position higher than X inside the complement clause, as in (10)/(11). This step is omitted in (25).

⁶ In this paper, I have dealt only with the binding relation between the matrix subject and the pronoun/reflexive in the embedded clause. Questions remain about how to treat another binding relation present in the relevant cases, namely, variable binding by the scrambled QP of the pronominal contained in the matrix subject. How this binding arises is an important question under the movement approach to binding. Under the movement approach to binding, the issue will ultimately receive the same explanation as (i), where the raised DP *everyone* serves as a new binder for the pronoun *his*.

(i) Everyone_i seems to his_i mother to be smart.

This is a general issue for the movement approach and I leave it open here for future research.