

Long-Distance A-scrambling in Japanese

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Abstract: This paper examines an environment where long-distance scrambling makes A-binding possible in Japanese. Contrary to a widely held view, this paper shows that scrambling even out of a finite clause can feed A-binding if the subject of the embedded clause is null. The new observation lends a support for the hypothesis that Case-checking/-valuation determines phases (Ferreira 2000, Takahashi 2011, Miyagawa 2011).

1. Introduction

In the previous studies on scrambling, it has been observed that there is an asymmetry in binding effects between scrambling that takes place within a clause (i.e. "clause-internal" scrambling) and scrambling that takes place across a clause boundary (i.e. "long-distance" scrambling). Mahajan (1990), examining binding effects triggered by a scrambled element in Hindi, observes that a scrambled element can be an A-binder at the landing site if scrambling takes place within a clause, while this is impossible if scrambling takes place across a clause boundary. Just like in Hindi, scrambling in Japanese shows the same contrast, as we will look at in Section 2: While clause-internal scrambling can produce a new binding relation, long-distance scrambling can not as in (1), which is generalized in (2) (cf. Tada 1993; Saito 1992, Nemoto 1993, Abe 1993, a.o.).

(1) a. *Clause-internal scrambling (scrambling within a clause) in Japanese*
binding OK
[XP_j [Subj t_j V]]

b. *Long-distance scrambling (scrambling out of a clause) in Japanese*
binding *
XP_i [Subj (Obj) [clause Subj t_i V_{embedded}] V_{matrix}]

(2) *Generalization on Japanese scrambling (1st version)*

In Japanese, clause-internal scrambling can feed A-binding, while long-distance scrambling cannot.

Contrary to the widely assumed generalization in (2), this paper shows that long-distance scrambling can produce a new binding relation if the embedded subject is null (i.e., *pro*), which is discussed in Section 3. Given the observation, a new generalization (3) follows.

- (3) *Generalization on A-scrambling in Japanese*
 In Japanese, scrambling can feed A-binding only when scrambling takes place within a clause or out of a clause whose subject is null.

In Section 4, I discuss how the new generalization (3) can be derived under a current theory.

2. A-scrambling and Scrambling out of a Control Clause

The previous studies on Japanese scrambling show that there is an asymmetry between clause-internal scrambling and long-distance scrambling; the former can feed A-binding while the latter cannot (Tada 1993; Saito 1992, Nemoto 1993, Abe 1993, a.o.). The asymmetry is exemplified in (4) and (5).

- (4) a. * [Soitu₁-no hahaoya]-ga dare₁-ni (kooen-de) deatta no?
 the.person-Gen mother-Nom who-Acc park-at met Q
 Intended: 'His₁ mother met whom₁ (at the park)?'
- b. **Dare₁-ni_j** [soitu₁-no hahaoya]-ga t_j (kooen-de) deatta no?
 who-Acc the.person-Gen mother-Nom park-at met Q
 'Whom₁ did his₁ mother met (at the park)?'
- (5) a. * [soitu₁-no hahaoya]-ga [Hanako-ga dare₁-ni deatta to] omotta no?
 the.person-Gen mother-Nom Hanako-Nom who-Dat met C thought Q
 Intended: 'His₁ mother thought Hanako met whom₁?'
- b. * **Dare₁-ni_j** [soitu₁-no hahaoya]-ga [Hanako-ga t_j deatta to]
 who-Dat the.person-Gen mother-Nom Hanako-Nom met C
 omotta no?
 thought Q
 Intended: 'Whom₁ did his₁ mother thought that Hanako met?'

In (4) and (5), the a-sentences do not involve scrambling, while the b-sentences do. In (4), the object undergoes scrambling within a clause to move to the front of the sentence. In (5), the fronted object is base-generated inside the embedded clause and undergoes scrambling across a clause boundary. As shown by the acceptability of the sentence (4), a scrambled object can A-bind into the subject from the landing site when scrambling takes place within a clause. As shown by the unacceptability of the sentence (5), on the other hand, an element that undergoes long-distance scrambling cannot A-bind into a matrix element. Given the observation, the widely assumed generalization is as in (6).

- (6) *Generalization on Japanese scrambling (1st version)*
 In Japanese, clause-internal scrambling makes A-binding possible, while long-distance scrambling does not.

Long-Distance A-Scrambling in Japanese

The generalization (6) suggests that clause-internal scrambling can be A-movement while long-distance scrambling must be A'-movement. In this paper, I call a scrambling that is an A-movement "A-scrambling", and one that is an A'-movement "A'-scrambling". Given the generalization (6), a crucial factor that determines a possibility of A-scrambling is whether a scrambling takes place across a clause boundary or not.

Note, however, that long-distance scrambling cannot always be A-movement, which shows that the generalization (6) is not correct. Nemoto (1993) observes that when an element undergoes scrambling out of an obligatory control clause, it can feed A-binding. The sentences in (7) are examples of obligatory subject control, and the ones in (8) are examples of obligatory object control.

- (7) a. * [Soko₁-no sotugyoosei]_k-ga [PRO_k [mittu-izyo-no daigaku]₁-ni
 it-Gen graduate-Nom three-or.more-Gen university-to
 syutugansi-yoo to] sita.
 apply-will C did
 Intend: '*Their₁ graduates tried to apply to [three or more universities]₁.*'
- b. [Mittu-izyo-no daigaku]₁-ni_j [soko₁-no sotugyoosei]_k-ga [PRO_k t_j
 three-or.more-Gen university-to it-Gen graduate-Nom
 syutugansi-yoo to sita.
 apply-will C did
 Lit. '*[Three or more universities]₁, their₁ graduates tried to apply to.*' (Takano 2010: 86)
- (8) a. * Ken-ga [soko₁-no sotugyoosei]_k-ni [PRO_k [Mittu-izyo-no daigaku]₁-ni]
 Ken.-Nom it-Gen graduate-Dat three-or.more-Gen university-to
 t_j syutugansuru yoo(ni)] susumeta.
 apply C recommended
 Intend: '*Ken recommended their₁ graduates to apply to [three or more universities]₁.*'
- b. (?) [Mittu-izyo-no daigaku]₁-ni_j Ken-ga [soko₁-no sotugyoosei]_k-ni [PRO_k
 three-or.more-Gen university-to Ken.-Nom it-Gen graduate-Dat
 t_j syutugansuru yoo(ni)] susumeta.
 apply C recommended
 Lit. '*[Three or more universities]₁, Ken recommended their₁ graduates to apply to.*'
 (Takano 2010: 87)

In the b-sentences of (7) and (8), scrambling takes place out of an obligatory control clause. As the acceptability of the sentences suggests, an element that undergoes scrambling out of a control clause can A-bind the matrix element.

Given the observation, Nemoto (1993) concludes that i) a control clause is different from a finite clause (i.e., a control clause is a non-finite clause), and ii) scrambling out of a non-finite clause behaves like clause internal scrambling. Hence, a modified generalization (9) holds given Nemoto's (1993) study.

- (9) *Generalization on Japanese scrambling (2nd version)*
 In Japanese, clause-internal scrambling or scrambling out of a non-finite clause can feed A-binding, while scrambling out of a finite clause cannot.

Given the generalization in (9), finiteness of the embedded clause plays an important role to distinguish A-scrambling from A'-scrambling. That is, a crucial factor that determines a possibility of A-scrambling is whether scrambling takes place out of a finite clause or not. In contrast to the previous studies that assume that there should be no long-distance A-scrambling, Nemoto's (1993) study demonstrates that long-distance A-scrambling exists under a certain condition. That is, long-distance A-scrambling is possible if it takes place out of a non-finite clause.

Contrary to this conclusion, I will present a new observation in the next section, which suggests that the generalization (9) is not correct to capture a behavior of long-distance scrambling out of a finite clause with a null subject.

3. New Observation: Scrambling out of a Finite Clause

In this section, I present data that constitute an exception to the generalization in (9). I show that long-distance scrambling can feed A-binding even if it takes place out of a finite clause. The new observation is that A-scrambling out of a finite clause is possible only if the embedded subject is null. Given the new observation, the crucial factor that determines whether scrambling can be A-movement is whether the scrambled element is moved out of a clause with an overt subject or not.

First, look at the sentences in (10). In these sentences, the predicate *iu* 'say' or *tazuneru* 'ask' takes a complement clause whose subject is null.

- (10) a. Ken₁-ga Hanako₂-ni [pro_{1/3} (izure) [[Mittu-izyoo-no kaisya]-ni]
 Ken-Nom Hanako-Dat soon three-or-more-Gen company-Dat
 oobosuru-tumorida to] itta.
 apply-be.going.to.Present C said
 'Ken₁ said to Hanako₂ that he_{1/3}/she₃/they₍₁₊₎₃/I₃/we₃/you₃ will apply to three or more companies (soon).'
- b. Ken₁-ga Hanako₂-ni [pro_{2/3} (kyonen) [[Mittu-izyoo-no kaisya]-ni]
 Ken-Nom Hanako-Dat last year three-or-more-Gen company-Dat
 oobosi-ta ka] tazuneta.
 apply-Past Q asked
 'Ken₁ asked to Hanako₂ whether he₃/she_{2/3}/they₍₂₊₎₃/I₃/we₃/you₃ applied to three or more companies (last year).'

As exemplified in (10), the embedded null subject can be interpreted as coreferential with a matrix subject or a matrix object, or interpreted deictically. The interpretation of the subject varies depending on an interpretation of the embedded clause and a given context. This suggests that the predicates *iu* 'say' and *tazuneru* 'ask' are not obligatory-control predicates. Moreover, in the

Long-Distance A-Scrambling in Japanese

sentences (10), the tense in the embedded clause is present or past. This suggests that the complement clause of the predicate *iu* 'say' and *tazuneru* 'ask' is finite.

Now, let us examine a case where scrambling takes place out of such a complement clause. As illustrated in (11), a scrambled element can A-bind (into) an element in the matrix clause from the landing site when scrambling takes place out of a finite clause with a null subject, which is shown by the acceptable sentences in (12b) and (13b).



- (12) a. * Ken₁-ga [soko₂-no raibaru-gaisya-no syain]₃-ni [pro_{1/4} (izure) Ken-Nom it-Gen rival-company-Gen employee-Dat soon [[Mittu-izyoo-no kaisya]₂-ni] oobosurusuru-tumorida to/ka]itta/tazuneta. three-or-more-Gen company-Dat apply-be.going.to.Present C/Q said/asked
Intended: 'Ken₁ said to/asked [employees of their₂ rival companies]₃ that/whether he_{1/4/3}/she_{3/4}/they_{(1+)₄}/I₄/we₄/you₄ will apply to [three or more companies]₂.'

- b. (?) [[Mittu-izyoo-no kaisya]₂-ni]_i Ken₁-ga [soko₂-no raibaru-gaisya-no three-or-more-Gen company-Dat Ken-Nom it-Gen rival-company-Gen syain]₃-ni [pro_{1/4} (izure) **t_i** oobosuru-tumori-da to/ka]itta/tazuneta. employee-Dat soon apply-be.going.to.Present C/Q said/asked
'Ken₁ said to/asked [employees of their₂ rival companies] that/whether he_{1/4/3}/she_{3/4}/they_{(1+)₄}/I₄/we₄/you₄ will apply to [three or more companies]₂.'

- (13) a. * [Soko₂-no raibaru-gaisya-no syain]₁-ga [pro_{1/3} (izure) [[Mittu-izyoo-no it-Gen rival-company-Gen employee-Nom soon three-or-more-Gen kaisya]₂-ni] oobosurusuru-tumorida to] itta. company-Dat apply-be.going.to.Present C said
Intended: '[Employees of their₂ rival companies]₁ said that he_{1/3}/she₃/they_{(1+)₃}/I₃/we₃/you₃ will apply to [three or more companies]₂.'

- b. (?) [[Mittu-izyoo-no kaisya]₂-ni]_i [soko₂-no raibaru-gaisya-no syain]₃-ga three-or-more-Gen company-Dat it-Gen rival-company-Gen employee-Nom [pro_{1/3} (izure) **t_i** oobosuru-tumorida to]itta. soon apply-be.going.to.Present C said
'[Employees of their₂ rival companies]₁ said that that he_{1/3}/she₃/they_{(1+)₃}/I₃/we₃/you₃ will apply to [three or more companies]₂.'

The a-examples in (12) and (13) are sentences without scrambling, while the b-examples involve scrambling. In these sentences, the matrix predicate *iu* 'say' or *tazuneru* 'ask' takes a finite complement clause whose subject is null. The a-sentences in (12) and (13) are ungrammatical because a bound variable is not c-commanded by its antecedent. Contrasted to them, the b-

sentences are acceptable though they are somewhat degraded for some speakers.¹ The acceptability of the sentences shows that the element base-generated in the embedded clause that undergoes long-distance scrambling can A-bind (into) an element in the matrix clause. This suggests that long-distance scrambling can feed A-binding even if it takes place out of a finite clause that is not an obligatory control clause.

Note that, as observed in previous studies, scrambling out of a finite clause cannot feed A-binding if the embedded subject is overt, which is exemplified in (14).

- (14) * [[**Mittu-izyoo-no kaisya**]_{2-ni}]_i Ken₁-ga [**soko**]_{2-no} raibaru-gaisya-no
 three-or-more-Gen company-Dat Ken-Nom it-Gen rival-company-Gen
 syain]_{3-ni} [Hanako/kare]_{1/4-ga} (izure) **t_i** oobosuru-tumorida] to itta.
 employee-Dat Hanako/he-Nom soon apply-be.going.to.Present C said
Intended: 'Ken₁ said to [employees of their₂ rival companies]₃ that Hanako/he_{1/4} will apply to [three or more companies]₂.'

The example in (14) forms a minimal pair with the sentence in (12b). The only difference between them is whether the embedded subject appears overtly or not. As shown by the unacceptability of the sentences in the latter case, a scrambled element cannot A-bind (into) an element in the matrix clause from the landing site if it is scrambled out of a finite clause whose subject appears overtly.

Now, putting all of the data so far together, the environments where A-scrambling is possible and where A-scrambling is impossible are summarized in (15) and (16).

- (15) *Environment where A-scrambling is possible*²
- a. Clause-internal scrambling
 binding OK
 $\left[\text{QP}_j \left[\text{Subj} \quad t_j \quad \text{V} \right] \right]$
- b. Scrambling out of an obligatory control clause (Nemoto 1993)
 binding OK
 $\left[\text{QP}_i \left[\text{Subj} \quad (\text{Obj}) \left[\text{non-finite clause} \text{ PRO} \quad t_i \quad \text{V}_{\text{embedded}} \right] \text{V}_{\text{matrix}} \right] \right]$

¹ I assume that the degradedness should be attributed to a complex processing.

² As Takano (2010) points out, the fronted QP can A-bind into the matrix object, but cannot A-bind into the matrix subject in obligatory object control constructions.

- (i) $\left[\text{QP}_i \left[\text{Subj} \quad \backslash \text{Obj}_1 \quad \left[\text{PRO}_1 \quad t_i \quad \text{V}_{\text{embedded}} \right] \text{V}_{\text{matrix}} \right] \right]$
 binding*
 binding OK

As well as in the case of scrambling out of a control clause, the fronted QP cannot A-bind into the matrix subject if the matrix object exists when scrambling takes place out of a (finite) clause with a null subject. For a possible analysis of this subject-object asymmetry, see Goto (2013, to appear).

Long-Distance A-Scrambling in Japanese

- c. Scrambling out of a clause whose subject is null

$$\begin{array}{c} \text{binding OK} \\ \swarrow \quad \searrow \\ \text{QP}_i \text{ [Subj (Obj) [finite clause } pro \quad t_i \quad V_{\text{embedded}}] V_{\text{matrix}}]} \end{array}$$

- (16) *Environment where A-scrambling is impossible*

$$\begin{array}{c} \text{binding *} \\ \swarrow \quad \searrow \\ \text{QP}_i \text{ [Subj (Obj) [finite clause Subj } t_i \quad V_{\text{embedded}}] V_{\text{matrix}}]} \end{array}$$

Note that (15b) and (15c) share the same property, i.e. scrambling takes place out of a clause whose subject is null. Thus, it is possible to unify the two cases under the condition of covertness of the embedded subject to state a new generalization as in (17).

- (17) *Generalization on Japanese scrambling (final)*
 In Japanese, clause-internal scrambling or scrambling out of a clause with a null subject can produce a new binding relation, while scrambling out of a clause with an overt subject cannot.

In addition, a new generalization on long-distance scrambling can be formulated as in (18), which suggests that the crucial factor that determines a possibility of long-distance A-scrambling is whether the subject in the embedded clause out of which scrambling takes place is overt or covert.

- (18) *Generalization on Long-distance scrambling in Japanese*
 In Japanese, long-distance scrambling can be A-movement only if the embedded subject is null.

In summary, Nemoto's (1993) study amounts to saying that long-distance scrambling (scrambling across a clause boundary) can be A-movement only if it takes place out of a non-finite clause. However, in this section I have presented data that suggest that long-distance scrambling even out of a finite clause can feed A-binding if the embedded subject is null. Given the observation, it is not the finite/non-finite distinction, but the overt/covert realization of the embedded subject that crucially affects the possibility of long-distance A-scrambling.

In the next section, I will discuss how the generalization can be derived under a current framework of the Minimalist Program.

4. Deriving the New Generalization

In this section, we look at how the generalization (18) can be derived. Let us, first, consider why long-distance scrambling cannot be an A-movement (unless the embedded subject is null). Assuming that A-scrambling targets an IP-Spec (Miyagawa 2001 a.o.) or an IP-adjoined position (Tada 1993, Saito 1992, a.o.), long-distance A-scrambling is counted as a movement from the embedded IP-Spec/adjoined position to an A-position in the matrix clause.

Note, however, that given the Phase-Impenetrability Condition (PIC) as proposed by Chomsky (2000), a movement operation from the embedded (finite) IP-Spec/adjoined position directly into the matrix clause is disallowed.

- (19) *The Phase-Impenetrability Condition (PIC)* (Chomsky 2000)
 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.

Chomsky (2000) argues that once a phase, which is headed by C or v^* , is completed, its complement domain is sent to PF/LF interfaces and an operation involving an element within its complement domain is impossible. Given the proposal, once the embedded CP is completed, extraction out of its complement IP is disallowed by the PIC.³

- (20) * $[\alpha_P XP_i [\alpha' \dots \boxed{[CP C [IP t'_i [\dots t_i \dots]]}]]]$ (Order irrelevant)
-

Thus, A-scrambling out of the embedded IP directly into the matrix clause is disallowed.

Note that if an XP within the embedded IP first moves to the embedded CP-Spec, and then to an A-position in the matrix clause, it can avoid a violation of the PIC.

- (21) $[\alpha_P XP_i [\alpha' \dots [CP t'_i C [IP t_i [\dots]]]]]]$
-

However, such a series of movements is disallowed due to the ban on Improper Movement. That is, given that a movement to a CP-Spec is A'-movement, an element that moved to a CP-Spec cannot undergo a further A-movement, because it results in Improper Movement.

- (22) * $[\alpha_P XP_i [\alpha' \dots [CP t'_i C [IP t_i [\dots]]]]]]$
-

Thus, the impossibility of long-distance A-scrambling can be accounted for by the PIC and the ban on Improper Movement under the current framework.⁴

In the previous section, I have demonstrated that long-distance A-scrambling is possible if the embedded subject is null. As a result, the question arises as why scrambling even out of a finite clause can be A-movement if the subject of the embedded clause is null. This question can be accounted for given the following two hypotheses.

³ Under the framework of *Barriers* (Chomsky 1986), the impossibility of an A-movement from the domain of the embedded IP to the domain of the matrix IP can be accounted for by the ECP, as Saito (1992) argues.

⁴ As for the ban on Improper Movement, various analyses have been suggested to derive it under the current framework (Fukui 1993, Richard 1998, Ura 2001, Abels 2007 and Obata and Epstein 2008). Also Goto (2013, to appear), assuming that Japanese scrambling targets an adjoined position, argues that a movement from an IP-adjoined position to a Spec of the immediately above CP is disallowed by the anti locality condition proposed by Koizumi (2000) and Bošković (2005), as a result of which a series of movements as in (21) is disallowed.

- (23) a. A null element needs no Case.⁵
 b. Case-checking/-valuation determines phases. (Ferreira 2000, Takahashi 2011, Miyagawa 2011)

Following the hypothesis (23b), CPs are (strong) phases when the head of their complement IP assigns a Case, as illustrated in (24a). If, on the other hand, the head of their complement IP does not assign a Case at all, CPs are not (strong) phases, as illustrated in (24b).

- (24) a. $[_{CP} C \ [_{IP} \text{Subj-Case} \ I \ \dots] \ \dots] \ \text{---> CP is a (strong) phase}$
 ↑
 b. $[_{CP} C \ [_{IP} \text{Subj} \ I \ \dots] \ \dots] \ \text{---> CP is not a (strong) phase}$

Now, given the two hypotheses in (23), it is possible to explain why scrambling even out of a finite clause can be A-movement if the embedded subject is null. When the embedded subject is null, the subject does not have to get a Case given the hypothesis (23a). In this case, if we do not assume the Inverse Case Filter (Fukui and Speas 1986, Bošković 2002) (universally or in Japanese), the embedded IP-Head does not have to assign a Case. Following the hypothesis (23b), then, the embedded CP is not a (strong) phase. Therefore an XP can move out of the embedded IP without stopping by the embedded CP-edge position, as illustrated in (25).

- (25) *Scrambling out of an embedded clause with a null subject*
 $[_{\alpha P} XP_i \ \dots \ [_{CP} C \ [_{IP} t'_i \ [\text{PRO/pro} \ I \ [\dots t_j \ \dots]]]]] \ \text{(Order irrelevant)}$
 ↑
 OK

Thus, given the two hypotheses in (23), it is possible to account for the reason why long-distance A-scrambling out of a finite clause is possible when the embedded subject is null.

5. Conclusion

In this paper, I demonstrate that scrambling out of a finite clause can feed A-binding if an embedded subject is null, which is contrary to a widely held view that scrambling out of a finite clause should not be able to feed A-binding at all. This observation can be explained given the hypotheses that i) a null element needs no Case and ii) Case-checking/-valuation determines phases (Ferreira 2000, Takahashi 2011, Miyagawa 2011), under the assumption that long-distance A-scrambling is disallowed when the embedded subject is overt due to the PIC and the ban on Improper Movement.

⁵ For a further discussion on the hypothesis (23a), see Goto (2013).

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