

What Can Save Adjuncts?*

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1 Introduction

Saito (1985) observes that arguments, but not ‘true adjuncts’ like *without any reason*, can undergo long-distance (LD) scrambling (i.e. scrambling out of clauses) in Japanese:

- (1) a. **Booru-o**₁ Ken-ga [Mary-ga **riyuu-mo naku** t₁ nageta
ball-ACC Ken-NOM Mary-NOM reason-even without threw
to] itta.
that said

‘The ball₁, Ken said [that Mary threw t₁ without any reason].’

- b. ***[Riyuu-mo naku]**₁ Ken-ga [Mary-ga t₁ **booru-o** nageta
reason-even without Ken-NOM Mary-NOM ball-ACC threw
to] itta.
that said

‘Without any reason₁, Ken said [that Mary threw the ball t₁].’

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It has also been observed that LD-scrambling of adjuncts dramatically improves when accompanied by another scrambling of arguments (see Sohn 1994; Koizumi 2000; Takano 2002), which I refer to as the additional scrambling effect, following Boeckx and Sugisaki (1999):

- (2) [Riyuu-mo naku]₁ booru-o₂ Ken-ga [Mary-ga t₁ t₂ nageta
 reason-even without ball-ACC Ken-NOM Mary-NOM threw
 to] itta.
 that said

lit. ‘Without any reason₁ the ball₂, Ken said [that Mary threw t₂ t₁].’

There have been a number of proposals as to why there is an amelioration in (2) (see Sohn 1994; Boeckx and Sugisaki 1999; Koizumi 2000; Takano 2002; Agbayani et al. 2015). Less attention, however, has been paid as to what structural relation has to hold between adjuncts and arguments when additional scrambling effects arise. To the best of my knowledge, only Boeckx and Sugisaki (1999) investigate this issue. They argue that adjuncts and arguments have to be clause-mate for additional scrambling effects to arise.

This paper, taking Boeckx and Sugisaki (1999) as a point of departure, investigates what kinds of movement can show the additional scrambling effect. It is shown that Boeckx and Sugisaki’s (1999) clause-mate condition is only partially correct. More specifically, it is shown that there is a counterexample to the clause-mate condition when nonfinite clauses are involved. I argue that the additional scrambling effect is best accounted for by the vP-fronting approach to multiple scrambling (Koizumi 2000; Arano 2017). It claims that the derivation of multiple scrambling involves scrambling of vP which contains what appears to be ‘scrambled’ phrases. Crucially, the verb has to be moved out of vP via head-movement. The derivation of multiple scrambling of indirect and direct objects proceeds as illustrated in (3):

- (3) a. [TP Subj [_{vP} [_{VP} IO DO V]v]T]
 b. [TP Subj [_{vP} [_{VP} IO DO t_V]t_v]V+v+T]
 c. [[_{vP} IO DO t_v] [_{TP} Subj t_{vP} V+v+T]]

Under this approach, examples like (2) are acceptable since what undergoes movement is vP which contains an argument and an adjunct, and its derivation does not involve LD-scrambling of the adjunct. I show that this approach to the additional scrambling effect correctly predicts when it arises.

The organization of this paper is as follows. In Section 2, we review Boeckx and Sugisaki’s (1999) argument for the clause-mate condition imposed on the additional scrambling effect. In Section 3, I provide new data,

showing that there are cases in which the clause-mate condition does not hold, and types of clauses make a difference. In Section 4, I argue that the patterns of the additional scrambling effect observed in Section 3 follow from the headless vP-fronting approach. In Section 5, we evaluate alternative approaches advanced by Sohn (1994), Takano (2002), and Boeckx and Sugisaki (1999) in light of the data reported here, showing that these analyses face empirical problems. Section 6 concludes.

2 Boeckx and Sugisaki’s (1999) Clause-mate Condition

Boeckx and Sugisaki (1999) argue for the clause-mate condition imposed on the additional scrambling effect, based on (4):

- (4) [Riyuu-mo naku]_{i,*ii,iii} [sono setu-o]₁ John-ga t_i
 reason-even without that theory-ACC John-NOM
 [Mary-ga t_{ii} [Bill-ga t_{iii} t₁ shinzita to] omotta to]
 Mary-NOM Bill-NOM believed that thought that
 syutyousita.
 claimed
- lit. ‘[Without any reason]_{i,*ii,iii} [that theory]₁, John claimed t_i [Mary thought t_{ii} [Bill believed t₁ t_{iii}]].’ (Boeckx and Sugisaki 1999:46)

In (4), an accusative object *sono setu-o* has LD-scrambled from the most embedded clause. Logically speaking, there are three possibilities for the original site of an adjunct *riyuu mo naku*: the matrix, the intermediate, and the most embedded clauses. These possibilities correspond to readings in (i), (ii), and (iii), respectively. Importantly, (4) allows the readings in (i) and (iii), but not (ii). (i) is available since its derivation does not involve LD-scrambling of the adjunct. The contrast between (ii) and (iii) then indicates that additional scrambling effects arise if there is scrambling of arguments that originate in the same clause as adjuncts.

This pattern is expected if the clause-mate condition holds. However, (4) is not enough to establish the clause-mate condition, since we do not know yet what happens when arguments originate higher than adjuncts. Also, (4) involves finite clauses, but the nature of clauses may make a difference, given that there are claims that scrambling out of finite clauses and scrambling out of nonfinite clauses show different properties (see Nemoto 1993). In the next section, considering these points, we examine when the additional scrambling effect arises.

3 Additional Data

(5) shows additional scrambling effects are observed in nonfinite clauses too.

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- (5) a. ***Nankaimo**₁ John-ga Mary-ni [t₁ **doa-o** simeru
 many.times John-NOM Mary-DAT door-ACC close
 yoo-ni] tanonda.
 YOO-DAT asked
 ‘Many times₁, John asked Mary [to close the door t₁].’
- b. **Nankaimo**₁ **doa-o**₂ John-ga Mary-ni [t₁ t₂ simeru
 many.times door-ACC John-NOM Mary-DAT close
 yoo-ni] tanonda.
 YOO-DAT asked
 lit. ‘Many times₁ the door₂, John asked Mary [to close t₂ t₁].’

Given this, consider if additional scrambling effects arise when adjuncts originate in a lower clause than arguments. (6) and (7) show that scrambling of higher arguments cannot save LD-scrambling of adjuncts, whether it takes place out of finite, or out of nonfinite clauses:

- (6) ***Nankaimo**₁ **Bill-ni**₂ John-ga t₂ [Mary-ga t₁ doa-o simeta
 many.times Bill-DAT John-NOM Mary-NOM door-ACC closed
 to] itta.
 that said
 lit. ‘Many times₁ to Bill₂, John said t₂ [that Mary closed the door t₁].’
- (7) ***Nankaimo**₁ **Mary-ni**₂ John-ga t₂ [t₁ doa-o simeru yoo-ni]
 many.times Mary-DAT John-NOM door-ACC close YOO-DAT
 tanonda.
 asked
 lit. ‘Many times₁ Mary₂, John asked t₂ [to close the door t₁].’

Consider next a case where an embedded clause is nonfinite, and an argument originates in a lower clause than an adjunct. (8) is a counterpart of (4) with reading (ii), involving a nonfinite lowest clause:

- (8) **Nankaimo**₂ [**kono hon-o**]₁ Bill-ga [John-ga t₂ Mary-ni
 many.times this book-ACC Bill-NOM John-NOM Mary-DAT
 [t₁ yomu yoo-ni] tanonda to] itta.
 read YOO-DAT asked that said
 lit. ‘Many times₂ this book₁, Bill said that John t₂ asked Mary to read t₁.’

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Importantly, this example is acceptable, which indicates that the clause-mate condition does not hold if a lower clause is nonfinite, and arguments originate lower than adjuncts.

(9)-(11) summarize the patterns we have observed:

- (9) [CP ... [XP ... Adj Arg ...]]
- ↑
- XP: finite CP ✓ (= (2), (4iii))
 XP: nonfinite CP ✓ (= (5b))
- (10) [CP ... Arg ... [XP ... Adj ...]]
- ↑
- XP: finite CP * (= (6))
 XP: nonfinite CP * (= (7))
- (11) [CP ... [CP ... Adj ... [XP ... Arg ...]]]
- ↑
- XP: finite CP * (= (4ii))
 XP: nonfinite CP ✓ (= (8))

LD-scrambling of adjuncts out of finite and nonfinite clauses can be saved by LD-scrambling of arguments in the same clause. When arguments originate in a higher clause than adjuncts, there are no additional scrambling effects, irrespective of the types of embedded clause. When adjuncts originate higher than arguments, additional scrambling effects are only observed if the lower clause is nonfinite.

Boeckx and Sugisaki's (1999) clause-mate condition thus holds true when the clause is finite, but only partially true when the nonfinite embedded clause is involved: They do not need to be clause-mate when arguments are lower than adjuncts. Note that the contrast between (7) and (8) shows that we cannot account for the acceptability of (8) by saying that the boundary of nonfinite clauses does not matter for the clause-mate condition: if it did not, (7) would be ruled in.

4 Proposal

I argue that the vP-fronting analysis of multiple scrambling accounts for these properties of additional scrambling effects. Koizumi (2000) claims that due to overt V-raising out of vP, a constituent that contains internal arguments and adjuncts, but not the verb, can be formed in Japanese, and it can then be input to syntactic operations like scrambling, as illustrated in (12).

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- (12) a. [TP Subj [_{vP} Adj [_{VP} DO V]v]T]
 b. [TP Subj [_{vP} Adj [_{VP} DO t_v]t_v]V+v+T]
 c. [[_{vP} Adj DO t_v t_v] [TP Subj t_{vP} V+v+T]]

Importantly, when a headless vP which contains an adjunct and an object moves, the adjunct itself does not undergo scrambling. The additional scrambling effect can then be analyzed as LD-scrambling of vP which contains an adjunct.¹

Under this analysis, being in the same vP is a precondition for undergoing multiple scrambling. This approach thus predicts that additional scrambling effects arise only when an argument and an adjunct can be within the same vP. When an adjunct and an argument occur in the same clause, this requirement can be satisfied. How about cases in which they are not clause-mate? Consider (13):

- (13) a. ??John-ga [sono hon-o]₁ minna-ni [Mary-ga t₁
 John-NOM that book-ACC everyone-DAT Mary-NOM
 motteriru to] itta.
 have that said
 lit. ‘John, that book₁, said to everyone that Mary has t₁.’
 (Saito 1985:267)
- b. Mary-ga [sono hon-o]₁ Bill-ni [t₁ yomu yoo-ni] itta.
 Mary-NOM that book-ACC Bill-DAT read YOO-DAT said
 lit. ‘Mary, that book₁, told Bill to read t₁.’ (Saito 1985:225)
- c. *John-ga nankaimo₁ minna-ni [Mary-ga t₁ doa-o
 John-NOM many.times everyone-DAT Mary-NOM door-ACC
 simeta to] itta.
 closed that said
 lit. ‘John, many times₁, said to everyone [that Mary closed the
 door t₁].’

¹ The headless vP-fronting derivation appears to allow ‘long-distance movement of true adjuncts’ if a headless vP where only the adjunct is present is moved. Since Japanese does not allow LD-scrambling of adjuncts, we need to block this derivation. As suggested by a reviewer in Takano (2002) (see fn.6 in his paper), the derivation can be blocked by relying on the notion of economy that prohibits unnecessary pied-piping (see Chomsky 1995) when a single constituent alone can be the target of movement (in principle). I will assume that this is the case here, which the reader should keep in mind.

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- d. *John-ga nankaimo₁ Mary-ni [t₁ doa-o simeru
 John-NOM many.times Mary-DAT door-ACC close
 yoo-ni] tanonda.
 YOO-DAT asked

lit. ‘John, many times₁, asked Mary [to close the door t₁].’

These data all involve scrambling out of an embedded clause which targets the position between matrix subjects and dative arguments, and show that only arguments originating in nonfinite clauses can land in that position as a result of scrambling. I would like to take these facts as evidence that only arguments from nonfinite clauses can land on the edge of vP. Then, (8), which shows the additional scrambling effect when the adjunct and the argument are not clause-mate, can be derived as in (14) (irrelevant points are omitted):

- (14) a. [_{vP} Adj [_{VP} Obj₂ [_{CP} ... Obj₁] V]v]
 b. [_{vP} Adj [_{VP} Obj₂ [_{CP} Obj₁ ... t_{Obj₁}] V]v]
 c. [_{vP} Adj Obj₁ [_{VP} Obj₂ [_{CP} t_{Obj₁} ...] t_V] V+v]
 d. [_{vP} [_{CP} t_{Obj₁} ...] [_{vP} Adj Obj₁ [_{VP} Obj₂ t_{CP} t_V] V+v]]
 e. [TP [_{vP} [_{CP} t_{Obj₁} ...] [_{vP} Adj Obj₁ [_{VP} Obj₂ t_{CP} t_V] V+v]]T]
 f. [TP Obj₂ [_{vP} [_{CP} t_{Obj₁} ...] [_{vP} Adj Obj₁ [_{VP} t_{Obj₂} t_{CP} t_V] t_V]] V+v+T]
 g. [[_{vP} Adj Obj₁ [_{VP} t_{Obj₂} t_{CP} t_V] t_V]] ... [TP Obj₂ [_{vP} [_{CP} t_{Obj₁} ...] t_{vP}] V+v+T]. ...]

(14a) illustrates the structure of vP which takes a dative Obj₂ and a nonfinite clause complement. Obj₁ is an object introduced within the nonfinite clause. In (8), V is *tanonda* ‘asked,’ Obj₂ is *Mary-ni*, Obj₁ is *kono hon-o* ‘this book,’ and Adj is *nankaimo* ‘many times.’ First, Obj₁ moves to the edge of the nonfinite clause ((14b)). It then moves to the vP-edge so that it can be ‘scrambled’ with the adjunct ((14c)) (Recall that arguments from nonfinite clauses can land in this position, as (13b) shows). In (14d), the nonfinite clause moves above the adjunct. In (14e), T is introduced into the derivation, and Obj₂ and V move outside of vP (= (14f)). As a result of these movements, we get the boxed vP which contains Obj₁ and the adjunct. By moving this boxed vP, we can derive (8).² Note that for this derivation to be possible, the step in (14c) is crucial. If a phrase from a lower clause cannot land in the vP-edge, we

² This derivation involves a violation of the Proper Binding Condition, which requires that a trace left by movement be bound by an antecedent (Fiengo 1977; Saito 1985). The question then arises why (14) is not excluded by a violation of the Proper Binding Condition. Arano (2017) shows

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cannot get the vP which contains the adjunct and that phrase. Since we have seen that only arguments from nonfinite clauses can land in the vP-edge, the vP-fronting analysis correctly predicts that only they can cause the additional scrambling effect.

The proposed analysis also accounts for an interesting observation made by Yamashita (2013). He points out that even though LD-scrambling of subjects is illicit in Japanese (Saito 1985), it can cause additional scrambling effects:

- (15) a. ***Yukkuri-to**₁ Ken-ga [**Mari-ga** t₁ booru-o nageta to]
 slowly Ken-NOM Mari-NOM ball-ACC threw that
 itta-yo.
 said-SFP
 ‘Slowly₁, Ken said [that Mari threw the ball t₁].’
- b. ***Mari-ga**₁ Ken-ga [t₁ **yukkuri-to** booru-o nageta to]
 Mari-NOM Ken-NOM slowly ball-ACC threw that
 itta-yo.
 said-SFP
 lit. ‘Mari₁, Ken said [that t₁ threw the ball slowly].’
- c. **Yukkuri-to**₂ **Mari-ga**₁ Ken-ga [t₁ t₂ booru-o nageta to]
 slowly Mari-NOM Ken-NOM ball-ACC threw that
 itta-yo.
 said-SFP
 lit. ‘Slowly₂ Mari₁, Ken said that t₁ threw the ball t₂.’
 (Yamashita 2013:19-20)

Assume that subjects in Japanese can remain in-situ (Fukui 1986; Kuroda 1988; Takahashi 1994). A headless vP which contains a subject and an adjunct can then be formed via V-movement to T and scrambling of an object, as in (16):

- (16) a. [_{vP} Adj Subj [_{vP} Obj V]v]
 b. [_{TP} [_{vP} Adj Subj [_{vP} Obj V]v]T]

that this insensitivity to the Proper Binding Condition under headless vP-fronting, in fact, follows from Takita’s (2010) approach, which reduces Proper Binding Condition effects in Japanese to linear-order preservation effects. Simplifying, the gist of the account is that Japanese has a condition that internal arguments should precede the verb in the final output. Since at the end of the derivation in (14), Obj₁ and Obj₂ precede the verbs which select them, this derivation is allowed.

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- c. [TP Obj [[vP Adj Subj [vP t_{Obj} t_v]] V+v+T]
 d. [[vP Adj Subj [vP t_{Obj} t_v]] ... [TP Obj t_{vP} V+v+T] ...]

The boxed part in (16) is a headless vP which contains the subject and the adjunct. Movement of this phrase derives (15c) without LD-scrambling of the subject or LD-scrambling of the adjunct.

It is also worth noting that Boeckx and Sugisaki (1999) observe that an argument and an adjunct have to be adjacent when the additional scrambling effect arises. This is shown in (17):

- (17) Isoide nankai-mo doa-o₁ John-ga [Mary-ga t₁ tataita
 quickly many.times door-ACC John-NOM Mary-NOM knocked
 to] itta.
 that said
 ‘John said quickly many times that Mary knocked the door.’
 ‘John said [that Mary knocked the door quickly many times].’
 ‘John said quickly [that Mary knocked the door many times].’
 *‘John said many times [that Mary knocked the door quickly].’
 (Boeckx and Sugisaki 1999:52)

Since there are two adjuncts in (17), there are four logical possibilities for its interpretations. Crucially, it is impossible to associate *isoide* ‘quickly’ with the embedded clause, and *nankai-mo* ‘many times’ with the matrix clause. This state of affairs is straightforward under the proposed analysis. Consider each interpretation with (18):

- (18) a. [CP quickly many.times [the door] ... [CP ... t ...]]
 b. [CP [vP quickly many.times the door] ... [CP ... t ...]]
 c. [CP quickly [vP many.times the door] ... [CP ... t ...]]
 d. * [CP [vP quickly [many.times] the door] t ... [CP ... t ...]]

To get the first interpretation, the argument has to undergo LD-scrambling, ending up with following the adjuncts in the matrix clause. The second reading is obtained when LD-scrambling targets the headless vP which includes the two adjuncts and the argument. The third interpretation arises when the vP which contains *nankai-mo* ‘many times’ and the argument undergoes LD-scrambling, targeting the position after the adjunct in the matrix clause. These

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derivations are all licit. The derivation which leads to the fourth interpretation, however, is illicit. Since the additional scrambling effect arises for the argument and *isoide* ‘quickly,’ they have to be in the same vP. Furthermore, *nankai-mo* ‘many times’ has to occur between them, which requires that it move to the position within the fronted vP. Such movement, however, is prohibited since its landing site does not c-command its launching site. The adjacency condition thus follows from the proposed analysis.³

To summarize, it has been shown that the vP-fronting approach to multiple scrambling gives an adequate characterization of the additional scrambling effect. It accounts for when and why the clause-mate condition holds for the additional scrambling effect. Also, the adjacency condition straightforwardly follows.

5 Alternative Analyses

This section reviews alternative analyses of the additional scrambling effect in light of the data presented in this paper. We examine the adjunction-to-argument approach proposed by Sohn (1994) and Takano (2002) and the minimal compliance-based analysis by Boeckx and Sugisaki (1999).

Sohn (1994) and Takano (2002) propose that Japanese allows adjuncts to adjoin to arguments. By moving an argument with an adjoined adjunct, we get the effect of LD-scrambling of the adjunct without moving it. This approach has a difficulty in explaining the contrast in (11). Specifically, it is not clear why adjuncts can be adjoined to arguments from nonfinite clauses, but not to arguments from finite clauses. Also, it is not clear why LD-scrambling of subjects can cause the additional scrambling effect since LD-scrambling of subjects itself leads to deviance in Japanese.

Boeckx and Sugisaki (1999) follow Bošković and Takahashi (1998) in assuming that ‘LD-scrambled’ phrases base-generate in their surface position, and undergo lowering in LF, which is motivated by theta-feature checking. LD-scrambling (i.e. lowering) of adjuncts is then illicit since it is not motivated by theta-feature checking, violating Last Resort. Boeckx and Sugisaki (1999) argue, under this feature-checking analysis, additional scrambling effects can be regarded as an effect of the principle of minimal compliance (Richards 1998), which states that when there is a licit movement, another movement to the same target is licensed that would be illicit in isolation. Importantly, the principle requires the relevant movements to target the same

³ As Boeckx and Sugisaki (1999: 52) note, the adjacency effect is not specific to LD-scrambling of arguments and adjuncts. Instead, the generalization is that any LD-scrambled elements have to be adjacent. This is expected under the vP-fronting analysis of multiple scrambling since multiple scrambling of arguments and adjuncts (i.e. scrambling with the additional scrambling effect) is a subcase of multiple scrambling derived via vP-fronting. The same explanation given for (18d) applies.

element, i.e., the verb modified by an adjunct and the verb selecting an argument must be the same. Boeckx and Sugisaki (1999) argue that this derives the clause-mate effect. However, the derived clause-mate condition is too strong since we have seen in (8) that the clause-mate condition does not hold when adjuncts originate higher than arguments and arguments originate in nonfinite clauses. Moreover, as pointed out by Yamashita (2013), the minimal compliance-based approach cannot be extended to the additional scrambling effect caused by LD-scrambling of subjects since LD-scrambling of subjects is illicit on its own.

6 Conclusion

This paper has investigated when the additional scrambling effect arises. It has been shown that Boeckx and Sugisaki’s (1999) clause-mate condition is correct with respect to finite clause, but there is a counterexample when nonfinite clauses are involved. It has been shown that the headless vP-fronting analysis of multiple scrambling gives a proper characterization of the additional scrambling effect, by requiring that scrambled phrases have to be in the same vP.

An important consequence of the present paper is that the additional scrambling effect gives evidence for headless vP-fronting in Japanese, hence evidence for syntactic head movement in Japanese. Whether Japanese allows syntactic head movement has been a controversial issue due to its strict head-finality (see Otani and Whitman 1991; Hoji 1998; Koizumi 2000; Fukui and Sakai 2003; Funakoshi 2016). The present paper provides a novel piece of evidence for its existence.

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