Cyclic Linearization and Constraints on Movement and Ellipsis

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Abstract

This dissertation aims to contribute to the understanding of the nature of successive-cyclicity. It is shown that close examinations of several constraints on movement and ellipsis support a particular approach to successive-cyclicity, called *Cyclic Linearization*, which proposes that the computational system of natural language sends information about linear order of syntactic units to the interface between syntax and phonology in a cyclic and cumulative way, and that successive-cyclicity follows from this property of the computational system.

Chapter 2 and Chapter 3 examine a constraint on the application of Merge. Chapter 2 concerns the Proper Binding Condition effect found in Japanese scrambling, which is an instance of overt Merge. It is shown that under Cyclic Linearization, the effect can be explained as an instance of failure of linearization at PF. Chapter 3 discusses another empirical fact that has motivated the constraint on Merge. The relevant fact concerns ellipsis of arguments, which is taken as an instance of covert Merge. It is shown that the fact can be captured without appealing to the constraint in question. It is also shown that other types of ellipsis such as sluicing and VP-ellipsis involve deletion at PF.

In Chapter 4, certain constraints on VP-scrambling in Japanese are examined. Building on insights of previous studies on Japanese VP-scrambling, more fine-grained generalizations are provided. It is argued then that Cyclic Linearization explains the relevant generalizations, offering several novel empirical observations and cross-linguistic predictions on possible variations of movement of VP.

Chapter 5 consists of two parts. It is argued in the first half that Japanese does have sluicing, based on a close scrutiny of a novel set of data. Based on this result, a new generalization on sluicing survivors is proposed. The second half tries to derive the effect of the new generalization in terms of Cyclic Linearization. In particular, it is shown that the effect follows once the independently proposed account of the difference between sluicing and VP-ellipsis in their abilities of repair effects is implemented under Cyclic Linearization.

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Table of Contents

List of Abbreviations

1SG	1st person singular
2FSG	2nd person female singular
ACC	Accusative
ASP	Aspect
AUX	Auxiliary
C	Complementizer
CL	Classifier
COP	Copula
DAT	Dative
ERG	Ergative
FUT	Future tense
GEN	Genitive
IND	Indicative
INF	Infinitive
NEG	Negation
NOM	Nominative
PL	Plural
PASS	Passive
PAST	Past tense
PRES	Present tense
Q	Question-marker
TOP	Topic

Chapter 1
Introduction

1.1. Introduction

One of the characteristic properties of natural language is *displacement*, where an element is pronounced in a position different from one where it is interpreted. For instance, the *wh*-phrase *what* in (1a) is interpreted as the object of the verb *buy*, just like *something* in (1b) is. Despite this fact, *what* appears in a position different from *something*.

(1) *Displacement in natural language*
   a. I know [what John will buy]
   b. I know [John will buy something]

Within the framework put forth by Chomsky (1955/1975, 1957, *et seq*.), in which this dissertation is written, displacement is captured in terms of *movement*. That is, *what* in (1a) occupies the object position, on a par with *something* in (1b), at some point of derivation as in (2a), and then it is moved to the position where it is pronounced, as in (2b).

(2) *Displacement as movement*
   a. I know [$_{CP}$ John will buy what]
   b. I know [$_{CP}$ what$_i$ John will buy t_i]

Furthermore, it has been claimed that movement leaves a trace (see, among many others, Chomsky 1973, Fiengo 1977), notated as *t* (in more recent terms, a copy; see Chomsky 1993, *et seq*.).

In the case of (1a), movement takes place within a single clause. As shown in (3a-c), however, movement can create a long-distance dependency, crossing several clausal boundaries.

(3) *Long-distance dependencies*
   a. I know [$_{CP1}$ what$_i$ Bill thinks [$_{CP2}$ John will buy t_i]]

b. I know [$_{CP1}$ what$_i$ Mary says [$_{CP2}$ Bill thinks [$_{CP3}$ John will buy t_i]]]

c. I know [$_{CP1}$ what$_i$ Sam believes [$_{CP2}$ … [$_{CP3}$ … [$_{CPn-2}$ Mary says [$_{CPn-1}$ Bill thinks [$_{CPn}$ John will buy t_i]]] …] …]]

In fact, a dependency created by movement can be unbounded, as in (3c).

One question that arises from the existence of such a long-distance dependency is how movement proceeds in examples like (3a). There are at least two possibilities. One possibility is that movement takes place in a one-fell-swoop fashion, as in (4a). The other possibility is that a long-distance dependency results from *successive-cyclic* applications of relatively short steps of movement. For instance, in (4b), *what* first moves to the edge of CP_2, just like it does in (2b), and from there it reaches the final landing site, namely the edge of CP_1.

(4) *How does movement proceed?*

a. I know [$_{CP1}$ what$_i$ Bill thinks [$_{CP2}$ John will buy t_i]]

b. I know [$_{CP1}$ what$_i$ Bill thinks [$_{CP2}$ t'_i John will buy t_i]]

Since Chomsky 1973, it has been argued that movement proceeds in the manner depicted in (4b), and there has been provided cumulative evidence for successive-cyclic movement (see, among so many others, Kayne & Pollock 1978, McCloskey 1979, 2000, 2002, Chung 1982, Torrego 1984, Barss 1986, McDaniel 1989, Henry 1995; see also Boeckx 2008 for a recent overview).

Several theoretical devices have been proposed in literature in order to capture successive-cyclicity of movement. Among them are *bounding nodes* (Chomsky 1973, 1977, 1981), *barriers* (Chomsky 1986b), and *phases* (Chomsky 2000, 2001, *et seq.*). For illustration, let us consider how successive-cyclicity is captured under the approach employing phases. Under this approach, the Phase Impenetrability Condition (PIC) given in (5) plays a crucial role.[1]

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

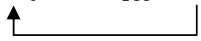
The PIC states that in a structure like (6a), where HP is a phase and H^0 is a phase-head,

a higher head W^0 can access to XP and H^0, but not to the domain of H^0, namely its complement YP. As a result, ZP in (6a), which is located within YP, cannot enter into a relation such as movement with W^0. In order for ZP to be accessible from W^0, it must move to the edge of HP, as in (6b).

(6) *PIC and successive-cyclicity*

a. $[_{WP}\ W^0 \ldots [_{HP}\ XP\ H^0\ [_{YP} \ldots ZP \ldots]]]$

b. $[_{WP}\ W^0 \ldots [_{HP}\ ZP_i\ XP\ H^0\ [_{YP} \ldots t_i \ldots]]]$

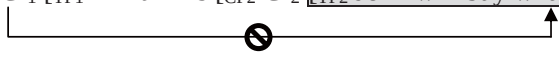


Taking (3a) as a concrete example, I illustrate how its derivation proceeds under the PIC-based approach. Let CP be a phase. Suppose that the embedded CP, namely CP_2 in (3a), is constructed with the *wh*-phrase *what* staying in-situ, as in (7a). When that the derivation proceeds to the step in (7b), the higher head C^0_1 fails to enter into an appropriate relation with *what*. This is because the *wh*-phrase is located in the complement domain of the lower phase-head C^0_2 (indicated by shading).

(7) *Derivation without successive-cyclic movement*

a. $[_{CP2}\ C^0_2\ [_{TP2}$ John will buy what]]

b. $[_{CP1}\ C^0_1\ [_{TP1}$ Bill thinks $[_{CP2}\ C^0_2\ [_{TP2}$ John will buy what]]]]

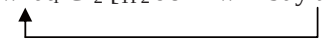


Thus, one-fell-swoop movement is not allowed under the PIC approach. Given that there are certain requirements that need to be satisfied by the movement of *what* to Spec, CP_1, the derivation illustrated in (7) fails to converge.

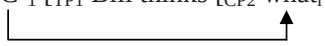
If *what* moves to the edge of CP_2 as in (8a), however, it becomes accessible from C^0_1 as in (8b). Consequently, *what* can move to the final landing site as in (8c), satisfying the requirements.

(8) *Derivation with successive-cyclic movement*

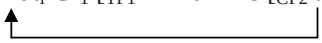
a. $[_{CP2}\ what_i\ C^0_2\ [_{TP2}$ John will buy t_i]]



b. $[_{CP1}\ C^0_1\ [_{TP1}$ Bill thinks $[_{CP2}\ what_i\ C^0_2\ [_{TP2}$ John will buy t_i]]]]



c. $[_{CP1}$ what$_i$ $C^0{}_1$ $[_{TP1}$ Bill thinks $[_{CP2}$ t'_i $C^0{}_2$ $[_{TP2}$ John will buy $t_i]]]]$

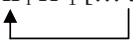


In this way, successive-cyclic movement is forced under the PIC-based approach.

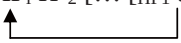
Given that there is no upper boundary for the number of phases in a single derivation, an element must move to the edge of every phase on the way to its final landing site, as schematically shown in (9).

(9) *Movement crossing phase-boundaries*

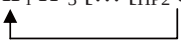
a. $[_{HP1}$ XP$_i$ $H^0{}_1$ $[\ldots$ t_i $\ldots]]$



b. $[_{HP2}$ XP$_i$ $H^0{}_2$ $[\ldots$ $[_{HP1}$ t'_i $H^0{}_1$ $[\ldots$ t_i $\ldots]]]]$



c. $[_{HP3}$ XP$_i$ $H^0{}_3$ $[\ldots$ $[_{HP2}$ t''_i $H^0{}_2$ $[\ldots$ $[_{HP1}$ t'_i $H^0{}_1$ $[\ldots$ t_i $\ldots]]]]]]]$



Hence, a long-distance dependency crossing phase-boundaries must consist of several short steps of movement. Under the PIC-based approach, the problem arises in narrow syntax. In the case of (7b) above, the problem is that $C^0{}_1$ cannot reach *what*, failing to satisfy the requirements.

Fox & Pesetsky (2003, 2005, henceforth F&P) put forth an alternative approach to successive-cyclicity, which ascribes the source of the problem to the mapping between syntax and PF.[2] To be more specific, one-fell-swoop movement creates a problem on linearization at PF, which can be circumvented by successive-cyclic movement. F&P assume as in the PIC-based approach that a derivation proceeds in a bottom-up fashion via iterated applications of *Merge*, which takes two syntactic objects and forms a new one from them.[3] F&P also assume that at a certain point of a derivation, which basically corresponds to a phase, an operation *Spell-out* applies to the structure constructed so far, and that Spell-out applies multiply in a single derivation (Uriagereka 1999, Chomsky 2000, 2001). Under the PIC-based approach, Spell-out is conceived to hand over the complement of a phase to the interfaces (namely, PF and LF).[4] Unlike the PIC-based approach, however, F&P propose that when Spell-out applies to a Domain D, syntactic units within D are linearized and fixed with respect to their relative linear orders. The established orders are added to an *Ordering Table*. If an Ordering Table contains two contradictory ordering statements, for instance one of which says α precedes β and the other says β precedes α, the derivation crashes at PF, because α cannot precede and

follow β at the same time. Since linearization via Spell-out takes place cyclically, their approach is called *Cyclic Linearization*.

Let us take (3a) as a concrete example again. Let CP be a domain that is subject to linearization via Spell-out. Suppose that *what* stays in-situ. When Spell-out applies to CP_2, the Ordering Table of the current derivation receives the ordering statement where *what* is specified to linearly follow *John*, *will*, and *buy* ('<' means 'precede'), as in (10a). Unlike the PIC-based approach, F&P argue that movement out of a previously Spelled-out domain is possible. Given this, *what* can undergo one-fell-swoop movement to Spec, CP_1 as in (10b). Then, Spell-out of CP_1 establishes a new ordering statement given in boldface, where *what* is specified to precede every other element.[5] At this point, the Ordering Table of this derivation contains a contradiction, however. That is, *what* is required to precede and follow *John*, *will*, and *buy* at the same time. This ordering contradiction eventually leads the derivation to a PF-crash.

(10) *Derivation without successive-cyclic movement*

a. $[_{CP2}\ C^0_2\ [_{TP2}$ John will buy what]]

Ordering Table: *John<will<buy<what*

b. *$[_{CP1}$ what$_i$ C^0_1 $[_{TP1}$ Bill thinks $[_{CP2}\ C^0_2\ [_{TP2}$ John will buy t_i]]]]

Ordering Table: *John<will<buy<what*
what<Bill<thinks<John<will<buy

On the other hand, if *what* moves to the edge of CP_2 before Spell-out, the ordering statement where it precedes *John*, *will*, and *buy* is established, as in (11a).

(11) *Derivation with successive-cyclic movement*

a. $[_{CP2}$ what$_i$ C^0_2 $[_{TP2}$ John will buy t_i]]

Ordering Table: *what<John<will<buy*

b. $[_{CP1}$ what$_i$ C^0_1 $[_{TP1}$ Bill thinks $[_{CP2}\ t'_i\ C^0_2\ [_{TP2}$ John will buy t_i]]]]

Ordering Table: *what<John<will<buy*
what<Bill<thinks<John<will<buy

Then, Spell-out of CP_1 in (11b) can establish the ordering statement (given in boldface) which is consistent with the one previously established. Hence, the derivation can

converge, yielding the surface linear order of the relevant part of (3a).

Note that under Cyclic Linearization, movement out of a previously Spelled-out domain is possible, as mentioned above. Hence, the movement of *what* to Spec, CP_1 in (10b) above is licit. Since *what* can be moved to Spec, CP_1, the requirements that demand the movement in question are indeed satisfied. Therefore, the structure in (10b) is legitimate with respect to narrow syntax. The problem arises at the mapping between syntax and PF, namely a contradiction between the ordering statements established through the derivation. Successive-cyclic movement is required to circumvent such an ordering contradiction.

This dissertation aims to argue for the theory of Cyclic Linearization, by examining several constraints on movement and ellipsis. In the rest of this chapter, I briefly overview the issues discussed in the subsequent chapters.

1.2. Outline of the Dissertation

In Chapter 2, I examine a constraint on the application of overt instances of Merge proposed by Saito (2003). The constraint, which I call the *derivational Proper Binding Condition* (PBC; cf. Fiengo 1977, Saito 1989, and Lasnik & Saito 1992), restricts Merge from taking a constituent that contains a subpart of a chain as its input. The principal empirical motivation for the derivational PBC has to do with Saito's (1989) finding that the PBC effect is observed for scrambling in Japanese, which is an instance of overt application of Merge. I argue that the theory of Cyclic Linearization allows us to capture the empirical basis of the derivational PBC, by combining it with some independently motivated assumptions, especially with Ko's (2005a, 2007) hypothesis that the whole *v*P is subject to linearization via Spell-out in languages like Japanese. Hence, the derivational PBC can be eliminated from the grammar. Meanwhile, I propose a parameter that specifies the size of the domain of linearization via Spell-out. I illustrate that the difference between languages like Japanese and those like English with respect to the range of possible remnant movement follows from this parameter, which is independently required under the system advocated in this dissertation in order to capture some facts about word order possibilities in those languages. Finally, I show that the proposed system can gain a wider empirical coverage, discussing constraints on possible landing sites of long-distance scrambling noted by Saito (1985) and on scrambling of ECM (see Kuno 1972) and of Small Clause complements (see Kikuchi & Takahashi 1991).

Chapter 3 examines a constraint on an ellipsis process called *argument ellipsis* (Oku 1998, Kim 1999), which has been taken by Shinohara (2006a, b) and Saito (2007) as

another piece of evidence for the derivational PBC. Argument ellipsis can target an argument of a predicate under identity with an appropriate antecedent. However, it is observed by Shinohara (2006a, b) and Saito (2007) that if subextraction such as long-distance scrambling takes place from a constituent, the constituent in question cannot be elided, even though it is otherwise legitimate to elide it. Following Oku's (1998) idea that argument ellipsis is a covert instance of Merge, Shinohara (2006a, b) argues that the relevant observation follows from the derivational PBC. Shinohara (2006a, b) further argues that the fact that argument ellipsis is constrained by the derivational PBC while other ellipsis constructions like sluicing and VP-ellipsis is not suggests that argument ellipsis involves LF-copying, (Williams 1977, Fiengo & May 1994, and Chung, Ladusaw & McCloskey 1995, among others) conceived as covert Merge, while sluicing and VP-ellipsis involve PF-deletion (Sag 1976, Merchant 2001, Fox & Lasnik 2003, among others). In Chapter 3, I first show that the observation on the interaction of subextraction and argument ellipsis can be explained by an independently required mechanism of arguments, without appealing to the derivational PBC. Then, I argue that the proposed analysis still maintains Shinohara's (2006a, b) point that argument ellipsis is an instance of LF-copying whereas sluicing and VP-ellipsis are PF-deletion.

In Chapter 4, I examine several constraints on *VP-scrambling* in Japanese. VP-scrambling is a construction where a maximal projection headed by a predicate undergoes movement together with its dependents such as objects (see Hoji, Miyagawa & Tada 1989, Hasegawa 1990, Ohkado 1991, Tateishi 1991, Kubo 1994, Hoshi 1994, Yatsushiro 1997, 1999, Saito & Hoshi 2000, and Saito 2006, among many others). I argue that although Japanese VP-scrambling appears to be a counterexample for the analysis of the PBC effect on scrambling based on the theory of Cyclic Linearization advocated in Chapter 2, it does provide support for it. Following the insights of the previous studies on Japanese VP-scrambling that the raising/control distinction is a crucial factor that distinguishes licit cases from illicit ones, I first provide more fine-grained generalizations on Japanese VP-scrambling. Then, I show that the generalizations follow nicely from the analysis advocated in Chapter 2, offering novel observations concerning the behavior of certain adjuncts in VP-scrambling. Finally, I discuss several implications and remaining issues. Among them is a novel prediction on possible cross-linguistic variations about movement of VP, which I believe stimulates further research in the relevant domain.

Chapter 5 principally concerns sluicing (see Ross 1969a and Merchant 2001, among many others). The first half of Chapter 5 is devoted to the question of whether sluicing,

namely deletion of TP and concomitant *wh*-movement, exists in Japanese. Although Takahashi (1994) provides a positive answer to this question, several subsequent works argue against it (see Shimoyama 1995, Nishiyama, Whitman & Yi. 1996, Kuwabara 1997, Kizu 1997, 2005, Fukaya & Hoji 1999, Sakai 2000, Hiraiwa & Ishihara 2002, Fukaya 2003, Saito 2004, and Nakao & Yoshida 2005, among many others). Based on a novel set of data, I show that Japanese indeed has sluicing. In particular, I show that by using non-finite verbs, we can obtain the structure where a *wh*-phrase and the Q-maker survive deletion, which unambiguously results from deletion of TP preceded by *wh*-movement. Then, I argue that when a finite verb is involved, it undergoes head-movement to C^0, so that deletion of TP results in a structure which I call *V-stranding sluicing*, a hitherto unnoticed type of sluicing. Based on these results, I point out that the pattern of sluicing found in Japanese constitutes a clear counterexample for Merchant's (2001) Sluicing-COMP generalization, which roughly prohibits non-*wh*-elements from surviving under sluicing. I propose an alternative generalization that accommodates the Japanese pattern.

The second half of Chapter 5 tries to derive the effect of this alternative generalization from the theory of Cyclic Linearization. To be more specific, I argue that this goal can be achieved once we implement under the theory of Cyclic Linearization Fox & Lasnik's (2003) approach to a difference between sluicing and VP-ellipsis with respect to *island-repair* (Ross 1969a, Chomsky 1972, Chung, Ladusaw, & McCloskey 1995, Lasnik 2001, 2006, 2008, Merchant 2001, 2004, 2008, and Fox & Lasnik 2003, to name a few). As reviewed in Chapter 5, Fox & Lasnik (2003) assume that both sluicing and VP-ellipsis involve PF-deletion. The analysis advocated in Chapter 5 thus allows us to maintain the conclusion reached in Chapter 3 that both sluicing and VP-ellipsis are PF-deletion, despite the difference between them. Furthermore, Fox & Lasnik (2003) crucially employ the idea that one-fell-swoop movement is possible. Recall one-fell-swoop movement is never possible under the PIC-based approach to successive-cyclicity, as illustrated in Section 1.1, while under the theory of Cyclic Linearization it creates no problem in narrow syntax but a problem arises at the mapping between narrow syntax and PF. F&P suggest that the problem can be circumvented not only by successive-cyclic movement but also by ellipsis. Hence, the analysis advocated in Chapter 5 can be taken as a concrete implementation of their suggestion, though I show that my implementation can be extended to the novel issue concerning the Sluicing-COMP generalization. Finally, I discuss some remaining issues, suggesting certain directions to pursue.

Notes to Chapter 1

[1] The choice of the version of the PIC given in Chomsky 2000 is only for expository purpose.

[2] See Section 2.3.1 of Chapter 2 for more detailed illustrations.

[3] A syntactic object is defined as follows (see Chomsky 1995:226-227, 243): α is a syntactic object $=_{df}$ (i) α is a lexical item, or (ii) α is an output of Merge.

[4] To be more precise, Chomsky (2004, 2007, 2008) calls the operation that sends information to the interfaces *Transfer*, and Spell-out is conceived as the mapping between syntax and PF, which is a part of Transfer.

[5] F&P argue that Spell-out under their conception targets the whole domain, including its edge. They assume that traces are not subject to the linearization procedure.

Chapter 2
Cyclic Linearization and the Proper Binding Condition Effect on Overt Merge

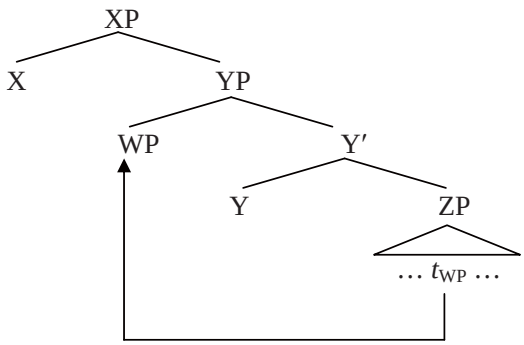
2.1. Introduction

This chapter examines Saito's (2003) derivational reformulation of the Proper Binding Condition (henceforth PBC).[1] The PBC, originally proposed by Fiengo (1977), states that traces must be bound. Saito's (2003) formulation of the PBC is shown in (1), which I call the *derivational* PBC as opposed to Fiengo's *classical* PBC.

(1) *Derivational PBC* (Saito 2003:507-508)
   a. α is subject to Merge only if α is a complete constituent.
   b. α is a *complete constituent* $=_{df}$ (i) α is a term, and (ii) if a position within α is a member of a chain γ, then every position of γ is contained within α.

The derivational PBC is a constraint on the application of Merge, and it prevents Merge from applying to a constituent that contains only a subpart of a chain. Let us consider the schematic structure in (2), where WP has been extracted out of ZP:

(2) *Structure where WP moves out of ZP*

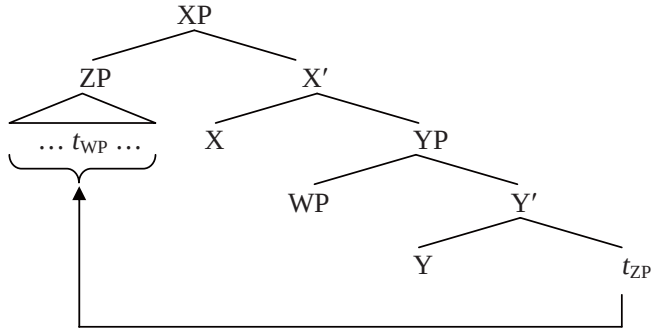


According to the derivational PBC, XP and YP in (2) can be Merged with another constituent because they contain both WP and its trace, while ZP cannot be, since it contains only the trace of WP. Given that Move involves Merge as its part, it follows that only XP and YP but not ZP can be moved further. That is, the derivational PBC rules out

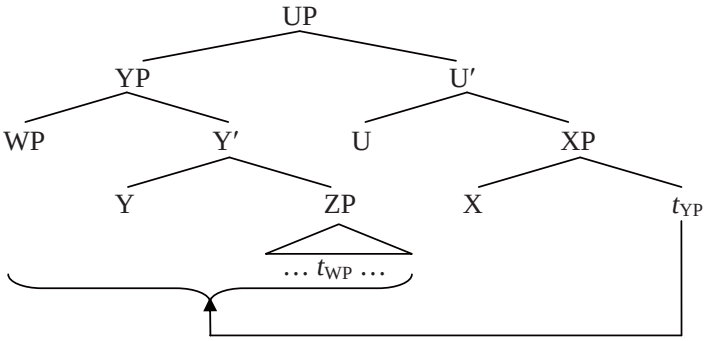
structures like (3a), which involves remnant movement, while it allows those like (3b), which involves no remnant movement.

(3) *Structures with and without remnant movement*

a.



b.



In (3a), the trace of WP is left unbound, while it is bound in (3b). Hence, the classical PBC also rules out only the former. In this sense, the effect of the classical PBC is subsumed under the derivational PBC.[2]

Saito (2003) proposes the derivational PBC to deal with the theoretical and empirical problems regarding the classical PBC effect on Japanese scrambling. The relevant paradigm, originally discussed in Saito 1989, is given in (4) below (based on Saito 2003:498-499).[3]

(4) *PBC effect on Japanese scrambling*

a. Taroo-ga [$_{CP}$ Hanako-ga [$_{PP}$ Sooru-ni] i-ru to] omottei-ru (koto)
Taroo-NOM Hanako-NOM Seoul-in be-PRES that think-PRES fact
'Taroo thinks [that Hanako lives [in Seoul]]'

b. [$_{PP}$ Sooru-ni]$_i$ Taroo-ga [$_{CP}$ Hanako-ga t_i i-ru to] omottei-ru (koto)
Seoul-in Taroo-NOM Hanako-NOM be-PRES that think-PRES fact
'(lit.) [In Seoul]$_i$, Taroo thinks [that Hanako lives t_i]'

c. [$_{CP}$ Hanako-ga [$_{PP}$ Sooru-ni] i-ru to]$_i$ Taroo-ga t_i omottei-ru (koto)
Hanako-NOM Seoul-in be-PRES that Taroo-NOM think-PRES fact
'(lit.) [That Hanako lives [in Seoul]]$_i$, Taroo thinks t_i'

d. *[$_{CP}$ Hanako-ga t_i i-ru to]$_j$ [$_{PP}$ Sooru-ni]$_i$ Taroo-ga t_j omottei-ru (koto)
Hanako-NOM be-PRES that Seoul-in Taroo-NOM think-PRES fact
'(lit.) [That Hanako lives t_i]$_j$, [in Seoul]$_i$, Taroo thinks t_j'

(4b) is derived from (4a) via scrambling of the PP *Sooru-ni* 'in Seoul', and (4c) involves scrambling of CP. The grammaticality of (4b-c) indicates that there is no problem with scrambling of the PP or of the CP. Then, the ungrammaticality of (4d) indicates that once the PP is scrambled, it is not possible to further scramble the remnant CP that contains the trace of the scrambled PP.

Note that multiple application of scrambling is possible, as shown by the fact that there is no contrast between (5a) and (5b) below.

(5) *Multiple application of scrambling*

a. Taroo-ga [$_{CP}$ Ziroo-ga Hanako-ni sono hon-o age-ta to]
Taroo-NOM Ziroo-NOM Hanako-to that book-ACC give-PAST that
omottei-ru (koto)
think-PRES fact
'Taroo thinks [that Ziroo gave that book to Hanako]'

b. Sono hon-o$_i$ Hanako-ni$_j$ Taroo-ga [$_{CP}$ Ziroo-ga t_j t_i age-ta to]
that book-ACC Hanako-to Taroo-NOM Ziroo-NOM give-PAST that
omottei-ru (koto)
think-PRES fact
'(lit.) That book$_i$, to Hanako$_j$, Taroo thinks [that Ziroo gave t_i t_j]'

(5a) is the baseline example. (5b) involves scrambling of *sono hon-o* 'that book' and *Hanako-ni* 'to Hanako', and the sentence is grammatical. Hence, the ungrammaticality of (4d) cannot be attributed to the multiple application of scrambling.

Saito (1989) argues that (4d) is straightforwardly ruled out by the classical PBC, since the trace of the PP contained within the scrambled CP is left unbound. Saito's (1989) account, however, is not free from problems (see, for instance, Lasnik & Saito 1992,

Collins 1994, Müller 1996, Kitahara 1997, and references cited therein for earlier discussions). One of the most important problems is that Saito's (1989) account, combined with his argument that scrambling has the so-called "radical reconstruction" property, which I review in the next section, requires the classical PBC to apply at S-structure (in addition to LF), which no longer exists under the Minimalist assumptions (Chomsky 1995).

As I review in the next section, various approaches have been made to solve this problem, mainly attributing the source of the effect to derivation itself. Among them is Saito (2003), who suggests that the derivational PBC provides a straightforward solution to this problem: Since it is a constraint on derivation, no notion of S-structure is involved.

Although the derivational PBC seems to provide a solution to the problem, there arises another problem: It is far from clear why the derivational PBC exists in the grammar. To put it another way, we are left with the question how such a constraint on the application of Merge follows from general principles. In this chapter, I argue that the empirical facts that have motivated the derivational PBC can be explained by some independently motivated mechanisms, so that the derivational PBC can be eliminated from the grammar.

To be more specific, I claim that the PBC effect on scrambling, exemplified by (4d), can be captured as a consequence of linearization at PF. In particular, I argue that the theory of Cyclic Linearization, proposed by Fox & Pesetsky (2003, 2005, henceforth F&P) plays a crucial role in explaining the PBC effect on scrambling. It is shown that the PBC effect on scrambling follows by combining F&P's theory of Cyclic Linearization with Ko's (2005a, 2007) hypothesis that the whole *v*P, including its edge, constitutes the relevant domain for linearization in languages like Korean and Japanese.

This chapter is organized as follows: In Section 2.2, I review the above mentioned problem of Saito's (1989) analysis and previous approaches to it. Then, Section 2.3 introduces F&P's theory, and proposes an explanation of the paradigm in (4). Specifically, I illustrate that given F&P's theory, which claims that linear orderings of syntactic units are cyclically fixed, derivations which give rise to surface linear orders like (4d) necessarily crash at PF. I also discuss certain licit cases of remnant movement found in languages like English and German. In Section 2.4, I argue that the analysis advocated in this chapter has wider empirical coverage than the derivational PBC. In particular, I illustrate that the analysis can solve a long-standing puzzle regarding the possible landing sites of long-distance scrambling, originally discussed by Saito (1985), and it explains certain restrictions on scrambling of the ECM and Small Clause complements in a uniform fashion. Section 2.5 concludes this chapter.

2.2. The Problem and the Previous Approaches

This section introduces the problem regarding Saito's (1989) analysis of the paradigm in (4), repeated as (6) below, and reviews the previous approaches to solve the problem.

(6) *PBC effect on Japanese scrambling*

a. Taroo-ga [$_{CP}$ Hanako-ga [$_{PP}$ Sooru-ni] i-ru to] omottei-ru (koto)
Taroo-NOM Hanako-NOM Seoul-in be-PRES that think-PRES fact
'Taroo thinks [that Hanako lives [in Seoul]]'

b. [$_{PP}$ Sooru-ni]$_i$ Taroo-ga [$_{CP}$ Hanako-ga t_i i-ru to] omottei-ru (koto)
Seoul-in Taroo-NOM Hanako-NOM be-PRES that think-PRES fact
'(lit.) [In Seoul]$_i$, Taroo thinks [that Hanako lives t_i]'

c. [$_{CP}$ Hanako-ga [$_{PP}$ Sooru-ni] i-ru to]$_i$ Taroo-ga t_i omottei-ru (koto)
Hanako-NOM Seoul-in be-PRES that Taroo-NOM think-PRES fact
'(lit.) [That Hanako lives [in Seoul]]$_i$, Taroo thinks t_i'

d. *[$_{CP}$ Hanako-ga t_i i-ru to]$_j$ [$_{PP}$ Sooru-ni]$_i$ Taroo-ga t_j omottei-ru (koto)
Hanako-NOM be-PRES that Seoul-in Taroo-NOM think-PRES fact
'(lit.) [That Hanako lives t_i]$_j$, [in Seoul]$_i$, Taroo thinks t_j'

As mentioned above, the problem regarding Saito's (1989) explanation of the paradigm in (6) with the classical PBC is that it requires the condition to apply at S-structure, given his argument that scrambling has the radical reconstruction property.

To see why it is the case, let us consider the following examples first:

(7) *Structural condition on* wh*-phrases and the Q-morpheme*

a. Taroo-ga [$_{CP}$ dare-ga sono hon-o kat-ta ka] sittei-ru (koto)
Taroo-NOM who-NOM that book-ACC buy-PAST Q know-PRES fact
'Taroo knows [who bought that book]'

b. *Dare-ga [$_{CP}$ Taroo-ga sono hon-o kat-ta ka] sittei-ru (koto)
who-NOM Taroo-NOM that book-ACC buy-PAST Q know-PRES fact
'(lit.) Who knows [Taroo bought that book]'

In (7a-b), only the embedded clause is a question CP. In (7a), the *wh*-phrase *dare-ga* 'who' is contained within the question CP, headed by the Q-morpheme *ka*, while it is not in (7b). Saito (1989), following Harada (1972), argues that the contrast in (7a-b) can be

accounted for if we assume that a *wh*-phrase must be contained within the CP where it takes scope.

Then, Saito (1989) observes that a *wh*-phrase can undergo long-distance scrambling out of a question CP, as in shown (8).

(8) *Long-distance scrambling of a* wh*-phrase out of an interrogative clause*

a. Taroo-ga [$_{CP}$ Hanako-ga dono hon-o kat-ta ka] sittei-ru (koto)
Taroo-NOM Hanako-NOM which book-ACC buy-PAST Q know-PRES fact
'Taroo knows [which book Hanako bought]'

b. Dono hon-o$_i$ Taroo-ga [$_{CP}$Hanako-ga t_i kat-ta ka] sittei-ru (koto)
which book-ACC Taroo-NOM Hanako-NOM buy-PAST Q know-PRES fact
'(lit.) Which book$_i$, Taroo knows [Hanako bought t_i]'

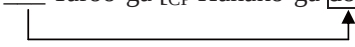
In (8b), the *wh*-phrase *dono hon-o* 'which book' undergoes long-distance scrambling. As a result, it is not contained within the embedded CP, where it takes scope, unlike (8a). Therefore, (8b) should be ungrammatical, on a par with (7b), contrary to fact.

To accommodate this observation, Saito (1989) proposes that scrambled phrases are placed back into their original position at LF, as in (9), assuming that the requirement on *wh*-phrases applies at LF.

(9) *Radical reconstruction of scrambling*

a. *S-structure*: dono hon-o$_i$ Taroo-ga [$_{CP}$ Hanako-ga t_i kat-ta ka] sittei-ru (koto)

b. *LF*: ___ Taroo-ga [$_{CP}$ Hanako-ga dono hon-o kat-ta ka] sittei-ru (koto)



This is called the radical reconstruction property of scrambling. As a result, the sentence in (8b) has an LF-representation identical to that of (8a). Thus, this hypothesis explains why both (8a-b) are grammatical: The requirement on *wh*-phrases is satisfied at LF in both examples.

Returning to the paradigm in (6), let us reconsider the examples (6a) and (6d), repeated as (10a) and (10b), respectively:

(10) *PBC effect on Japanese scrambling*

a. Taroo-ga [$_{CP}$ Hanako-ga [$_{PP}$ Sooru-ni] i-ru to] omottei-ru (koto)
Taroo-NOM Hanako-NOM Seoul-in be-PRES that think-PRES fact
'Taroo thinks [that Hanako lives [in Seoul]]'

b. *[$_{CP}$ Hanako-ga t_i i-ru to]$_j$ [$_{PP}$ Sooru-ni]$_i$ Taroo-ga t_j omottei-ru (koto)
Hanako-NOM be-PRES that Seoul-in Taroo-NOM think-PRES fact
'(lit.) [That Hanako lives t_i]$_j$, [in Seoul]$_i$, Taroo thinks t_j'

Since both the PP and the CP in (10b) have undergone scrambling, both of them should be able to be reconstructed into their original positions at LF. Hence, the LF representation of (10b) can be obtained in the manner depicted in (11) below.

(11) *LF representation of (10b)*

a. *S-structure*: [$_{CP}$ Hanako-ga t_i i-ru to]$_j$ [$_{PP}$ Sooru-ni]$_i$ Taroo-ga t_j omottei-ru (koto)

b. *LF*: ___ [$_{PP}$ Sooru-ni]$_i$ Taroo-ga [$_{CP}$ Hanako-ga t_i i-ru to] omottei-ru (koto)

c. *LF*: ___ ___ Taroo-ga [$_{CP}$ Hanako-ga [$_{PP}$ Sooru-ni] i-ru to] omottei-ru (koto)

Therefore, the LF representation of (10b) is indistinguishable from that of (10a), which has no unbound trace. Thus, if the classical PBC applies solely at LF, it fails to capture the contrast between them. Saito (1989) then claims that the classical PBC applies at S-structure. This proposal, however, faces another problem, since it is impossible to formulate an S-structure condition under the Minimalist assumptions. In the rest of this section, I review some previous attempts to solve this problem, which we call the S-structure application problem of the classical PBC.

2.2.1. The Minimal Link Condition Analysis

One of the intriguing suggestions to the S-structure application problem of the classical PBC is made by Kitahara (1997). He tries to explain Müller's (1996) generalization in terms of the Minimal Link Condition (henceforth MLC), which requires a head to attract the structurally closest element to it (see, for instance, Chomsky 1995). Let us start with Müller's (1996) generalization, stated in (12).

(12) *Müller's generalization* (Müller 1996:375)
Remnant XPs cannot undergo a certain type of movement if the antecedent of the unbound trace has undergone the same type of movement.

Müller (1996) observes that sentences with unbound traces are in fact grammatical in certain cases, and argues that the generalization in (12) can correctly distinguish the licit

cases from illicit ones.

For instance, let us consider the following German examples (based on Müller 1996:357-358):

(13) *Licit and illicit remnant movement in German*

a. [t_i Zu lesen]$_j$ hat keiner [das Buch]$_i$ t_j versucht
to read has no one the book tried
'No one has tried to read the book'

b. *daß [t_i zu lesen]$_j$ keiner [das Buch]$_i$ t_j versucht hat
that to read no one the book tried has
'that no one has tried to read the book'

In both (13a-b), the object *das Buch* 'the book' has been extracted from the infinitive clause *zu lessen* 'to read' by scrambling. In (13a), the infinitive clause undergoes topicalization, which is, according to Müller, distinct from scrambling, while the infinitive clause is moved by scrambling in (13b). Only in (13b), the unbound trace contained in the infinitive clause is created by the same type of movement which the infinitive clause itself undergoes. Hence, it results in ungrammaticality. The following examples from English also confirm the generalization in (12) (based on Müller 1996:392; see also Lasnik & Saito 1992, Kitahara 1997, and Saito 2003).

(14) *Licit remnant movement in English*

a. [Criticized t_i by his boss]$_j$, John$_i$ has never been t_j

b. [How likely t_i to win the game]$_j$ is Mary$_i$ t_j?

In (14a) the subject *John* undergoes A-movement to Spec, TP, and then VP-fronting takes place. In (14b), A-movement of *Mary* is followed by *wh*-movement of the AP. The grammaticality of the relevant examples indicates that remnant movement is indeed allowed in these cases.

Then, Kitahara (1997) provides an elegant explanation of Müller's generalization in terms of the MLC. Let us consider the schematic derivation in (11):

(15) *The MLC analysis of Müller's generalization*

a. [$_{XP}$ … $X^0_{[\beta]}$ […[$_{YP}$ … $Y^0_{[\alpha]}$ [… [$_{ZP}$ … WP …]]]]]

b. [$_{XP}$ … $X^0_{[\beta]}$ […[$_{YP}$ WP $Y^0_{[\alpha]}$ [… [$_{ZP}$ … t_{WP} …]]]]]

c. $[_{XP}\ \boxed{[_{ZP}\ \ldots\ t_{WP}\ \ldots]}\ X^0_{[\beta]}\ [\ldots\ [_{YP}\ WP\ Y^0_{[\alpha]}\ [\ \ldots\ t_{ZP}]]]]$

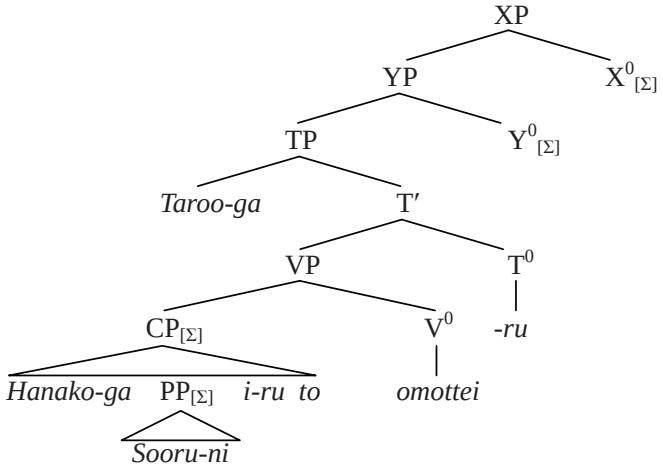
Suppose that as in (15a) Y^0 and X^0 have a feature α and β, respectively, and that they must be checked for convergence. Suppose further that in order to check these features, WP moves to Spec, YP, attracted by α as in (15b), and subsequently the remnant ZP moves to Spec, XP, attracted by β as in (15c). Since ZP can check β by assumption, if α and β are of the same type, ZP should be capable of checking α as well. Then, the MLC demands α to attract ZP, instead of WP, at the step in (15b), given that ZP is structurally closer to Y^0 than WP. In other words, a MLC violation arises if α attracts WP skipping ZP in a situation where both of them are possible candidates for feature checking. Therefore, the derivation in (15) can be legitimate only if α and β are not of the same type, which in turn means they induce different types of movement. Hence, Müller's generalization follows.

Kitahara (1997) then suggests that the ungrammaticality of (10b) also follows if scrambling in Japanese is feature-driven (see, among many others, Miyagawa 1997, 2001, 2003, Grewendorf & Sabel 1999, and Kawamura 2004 for this view). Under this analysis, (10b), repeated as (16a), is analyzed as having a structure like (16b) below as its underlying structure (irrelevant details are omitted). For the sake of concreteness, suppose that some heads X and Y located above the matrix TP bear the feature which triggers scrambling, called Σ-feature. Since the embedded CP and the PP are intended to undergo scrambling, they also possess the Σ-feature.[4]

(16) *The MLC analysis of the PBC effect on Japanese scrambling*

a. *$[_{CP}$ Hanako-ga t_i i-ru to$]_j$ $[_{PP}$ Sooru-ni$]_i$ Taroo-ga t_j omottei-ru (koto)
Hanako-NOM be-PRES that Seoul-in Taroo-NOM think-PRES fact
'(lit.) [That Hanako lives $t_i]_j$, [in Seoul]$_i$, Taroo thinks t_j'

b.



In order to derive the surface string of (16a), the PP must be attracted by Y^0. Since the embedded CP, whose head bears the Σ-feature, is the closest candidate for Y^0, the intended attract relation is blocked by the MLC. Hence, the surface string of (16a) fails to be derived. Since the MLC is a constraint on derivation, no notion of S-structure is involved. Therefore, the MLC analysis resolves the S-structure application problem of the classical PBC.

2.2.2. The Derivational PBC Analysis

Although Kitahara's (1997) analysis is highly principled, Saito (2003) points out some empirical problems. He first suggests that scrambling is not feature-driven, so that the MLC is simply irrelevant to the ungrammaticality of (16a). One argument for the idea that scrambling is not feature-driven discussed by Saito & Fukui (1998) (see also Takano 1995 for earlier discussion) has to do with the multiple application of scrambling. As shown in (5b), repeated as (17b) below, multiple elements can undergo scrambling. In addition to (17b), multiple scrambling can apply so as to reverse the linear order between the two scrambled phrases, as in (17a).

(17) *Multiple application of scrambling*

a. Sono hon-o_i Hanako-ni$_j$ Taroo-ga [$_{CP}$ Ziroo-ga t_j t_i age-ta to]
that book-ACC Hanako-to Taroo-NOM Ziroo-NOM give-PAST that
omottei-ru (koto)
think-PRES fact
'(lit.) That book$_i$, to Hanako$_j$, Taroo thinks [that Ziroo gave t_i t_j]'

b. Hanako-ni$_j$ sono hon-o$_i$ Taroo-ga [$_{CP}$ Ziroo-ga t_j t_i age-ta to]
Hanako-to that book-ACC Taroo-NOM Ziroo-NOM give-PAST that
omottei-ru (koto)
think-PRES fact
'(lit.) To Hanako$_j$, that book$_i$, Taroo thinks [that Ziroo gave t_i t_j]'

That is, in (17a) *sono hon-o* 'that book' precedes *Hanako-ni*, while in (17b) the latter precedes the former.

Under the feature-driven view of scrambling, these examples are analyzed as being derived in the manners depicted in (18), respectively (I pretend that XP and YP are head-initial).

(18) *Schematic structures of (17a-b)*

a. [$_{XP}$ $X^0_{[\Sigma]}$ [$_{YP}$ $Y^0_{[\Sigma]}$ [$_{TP}$ … [$_{CP}$ … Hanako-ni … sono hon-o …]]]]

b. [$_{XP}$ $X^0_{[\Sigma]}$ [$_{YP}$ $Y^0_{[\Sigma]}$ [$_{TP}$ … [$_{CP}$ … Hanako-ni … sono hon-o …]]]]

In (18a), X^0 attracts *sono hon-o* 'that book', and Y^0 does *Hanako-ni*, yielding (17a). In (18b), on the other hand, X^0 attracts *Hanako-ni*, and Y^0 does *sono hon-o* 'that book', yielding (17b). It is quite clear that the structure in (18b) violates the MLC, since Y^0 tries to attract *sono hon-o* 'that book' skipping *Hanako-ni*, which also bears the Σ-feature to check its counterpart on X^0. How about (18a)? Suppose that when *Hanako-ni* is attracted to Spec, YP, the Σ-feature of Y^0 but not that of *Hanako-ni* is deleted. Then, a MLC violation results when X^0 tries to reach *sono hon-o* 'that book' skipping *Hanako-ni*. Suppose on the other hand that the Σ-feature of *Hanako-ni* is also deleted when it is attracted to Spec, YP in (18a). Then, no MLC violation should arise for attraction of *sono hon-o* 'that book' by X^0. Hence, it is predicted either that both (18a) and (18b) are illegitimate, or that there is a contrast between them. The fact that (17a-b) are equally grammatical thus suggests that scrambling is not feature-driven, inducing no MLC violation.

More important problem for the MLC analysis is that it fails to capture the paradigm in (19) below (based on Saito 2003:501).

(19) *PBC effect on Japanese scrambling*

a. Hanako-ga Taroo-ni [PRO [$_{PP}$ Sooru-made] ik-u koto]-o
Hanako-NOM Taroo-to Seoul-to go-PRES fact-ACC
meizi-ta (koto)
order-PAST fact
'Hanako ordered Taroo [to go [to Seoul]]'

b. Hanako-ga [$_{PP}$ Sooru-made]$_i$ Taroo-ni [PRO t_i ik-u koto]-o
Hanako-NOM Seoul-to Taroo-to go-PRES fact-ACC
meizi-ta (koto)
order-PAST fact
'(lit.) Hanako, [to Seoul]$_i$, ordered Taroo [to go t_i]'

c. [PRO [$_{PP}$ Sooru-made] ik-u koto]-ga$_i$ Taroo-ni t_i meizi-rare-ta (koto)
Seoul-to go-PRES fact-NOM Taroo-to order-PASS-PAST fact
'(lit.) [To go [to Seoul]]$_i$ was ordered Taroo t_i'

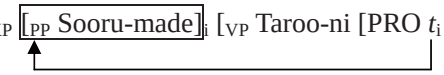
d. *[PRO t_i ik-u koto]-ga$_j$ [$_{PP}$ Sooru-made]$_i$ Taroo-ni t_j meizi-rare-ta (koto)
go-PRES fact-NOM Seoul-to Taroo-to order-PASS-PAST fact
'(lit.) [To go t_i]$_j$, [to Seoul]$_i$, was ordered Taroo t_j'

In (19a), the embedded clause is a control complement, whose head is the nominalizer *koto* 'fact'. (19b) is derived from (19a) via scrambling of the PP *Sooru-made* 'to Seoul'. (19c) shows that the complement clause can be passivized because of its nominal nature. The crucial example is (19d). In (19d), the PP is scrambled first, and then the complement clause is passivized. Saito (2003) argues that the MLC analysis makes a wrong prediction, since the relevant types of movements in (19d) are different: A-movement to Spec, TP and scrambling out of a control complement.[5]

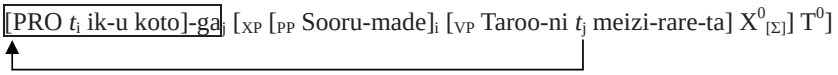
Concretely speaking, (19d) would be derived in the manner depicted in (20) under the MLC analysis.

(20) *A possible derivation of (19d)*

a. *Scrambling of PP*



b. *Passivization of the control complement*



Since scrambling out of a control complement can target the position between the matrix subject and the matrix indirect object as in (19b) (in this case *Hanako-ga* and *Taroo-ni*, respectively), there must be a head X that bears the Σ-feature. At the step in (20a), the PP moves to Spec, XP to check the Σ-feature. At the step in (20b), then, the control complement moves to Spec, TP, being attracted by T^0. Since each step observes the MLC, the derivation is legitimate, contrary to fact. Something more thus seems to be necessary to explain the paradigm in (19).

Then, to solve the problem of the S-structure application of the classical PBC, providing a uniform explanation of the ungrammaticality of (16a) and (19d) at the same time, Saito (2003) proposes the derivational PBC in (1), repeated as (21).

(21) *Derivational PBC*

a. α is subject to Merge only if α is a complete constituent.

b. α is a *complete constituent* $=_{df}$ (i) α is a term, and (ii) if a position within α is a member of a chain γ, then every position of γ is contained within α.

The derivational PBC rules out (16a) and (19d), repeated as (22a-b) below, because both of them involve movement of a constituent that contains only the tail of a chain, namely, scrambling of the remnant CP in (22a) and A-movement of the remnant control complement clause in (22b).

(22) *PBC effect on Japanese scrambling*

a. *$[_{CP}$ Hanako-ga t_i i-ru to$]_j$ $[_{PP}$ Sooru-ni$]_i$ Taroo-ga t_j omottei-ru (koto)
Hanako-NOM be-PRES that Seoul-in Taroo-NOM think-PRES fact
'(lit.) [That Hanako lives $t_i]_j$, [in Seoul]$_i$, Taroo thinks t_j'

b. *[PRO t_i ik-u koto]-ga$_j$ $[_{PP}$ Sooru-made$]_i$ Taroo-ni t_j meizi-rare-ta (koto)
go-PRES fact-NOM Seoul-to Taroo-to order-PASS-PAST fact
'(lit.) [To go $t_i]_j$, [to Seoul]$_i$, was ordered Taroo t_j'

Since it is a constraint on the application of Merge, namely, a part of derivation, no notion of S-structure is involved. Hence, the S-structure application problem is resolved.

Meanwhile, Saito (2003) suggests that the examples in (14), repeated as (23) below, are grammatical because A-movement does not have to leave a trace (Lasnik 1999a, Kuno 2001).

(23) *Licit remnant movement in English*

a. [Criticized t_i by his boss]$_j$, John$_i$ has never been t_j

b. [How likely t_i to win the game]$_j$ is Mary$_i$ t_j?

That is, the traces left by A-movement in (23a-b), namely t_i, are not represented. Then, VP-fronting and *wh*-movement in the relevant examples count legitimate with respect to the derivational PBC. He further suggests that German scrambling is indeed like A-movement in that it does not leave a trace. Thus, the grammaticality of examples like (13a) follows: Since the fronted infinitival clause no longer contains the trace of the scrambling, the derivational PBC is not violated.

Although the derivational PBC analysis solves the S-structure application problem, capturing the classical PBC effect on Japanese scrambling, it is far from clear why it exists in the grammar, as pointed out in Section 2.1. Recall here that there are three possible places to which the source of the classical PBC effect on Japanese scrambling is attributed under the Minimalist framework: LF, PF, and derivation. The first possibility is not plausible, given the fact that scrambling has the radical reconstruction property, as originally discussed in Saito 1989.[6] The third possibility, explored by Kitahara (1997) and Saito (2003), does not seem to be without problems. In what follows, I explore the second possibility, claiming the effect can be captured as a consequence of linearization at PF.

2.3. Proposals and Analysis

In this section, I propose a novel solution for the S-structure application problem of the classical PBC. Specifically, I argue that the PBC effect on Japanese scrambling can be explained as a consequence of F&P's theory of Cyclic Linearization. In Section 2.3.1, I introduce F&P's theory. Section 2.3.2 illustrates that the PBC effect follows from this theory, combined with some independently motivated assumptions. Section 2.3.3 deals with the licit cases of remnant movement found in English and German. Section 2.3.4 is a summary.

2.3.1. Cyclic Linearization and Linearization Preservation

Assuming that structure is built from bottom to top, F&P propose that when Spell-out applies to a domain D, which they call a Spell-out Domain, the relative orderings of syntactic units within the domain are established, which may not be revised or contradicted in a later step of the derivation. This property is termed *Linearization Preservation*, as in (24).[7]

(24) *Linearization Preservation* (Fox & Pesetsky 2003:2)

The linear ordering of syntactic units is affected by Merge and Move *within* a Spell-out Domain, but is fixed once and for all at the end of each Spell-out Domain.

More concretely, at the end of Spell-out Domains, which roughly correspond to phases (Chomsky 2000, 2001), ordering statements are established and added to an *Ordering Table*. Given that Spell-out multiply applies to a single derivation (see Uriagereka 1999, Chomsky 2000, 2001, among others), an Ordering Table of a particular derivation cumulatively receives ordering information at each application of Spell-out.

F&P further propose that if an Ordering Table contains two contradicting orderings, the derivation eventually crashes at PF. For instance, suppose that an Ordering Table contains the ordering statements α<β ('<' means 'precede') and β<α. Then, α is forced to precede and follow β simultaneously, which is impossible by assumption. Thus, if a derivation has established the ordering statement α<β at a Spell-out point, the derivation can converge only if it keeps establishing consistent ordering statements at the later Spell-out points. In this way, the effect of Linearization Preservation follows as a consequence of their model.

To see how the system works more closely, let us consider the schematic derivation in (25).[8]

(25) *Schematic derivation under Cyclic Linearization*

a. *Construction of D* → *Spell-out of D*
   $[_D$ X Y Z] Ordering Table: **X<Y<Z**

b. *Merge of α with D*
   α $[_D$ X Y Z] Ordering Table: X<Y<Z

c. *Movement of X across α* → *Spell-out of the next higher domain D′*
   $[_{D'}$ … X_i … α $[_D$ t_i Y Z] Ordering Table: X<Y<Z
   X<α<Y<Z

c'. *Movement of Y across α* → *Spell-out of the next higher domain D′*
   *$[_{D'}$ … Y_i … α $[_D$ X t_i Z] Ordering Table: X<Y<Z
   Y<α<X<Z

Suppose that Spell-out applies to D, which consists of X, Y, and Z, as shown in (25a). Then, the Ordering Table gets an ordering statement X<Y<Z.[9] Suppose further that a new constituent α is Merged with D, as in (25b). Given that Spell-out does not apply at this

step, the Ordering Table does not receive any information about the relative order between α and the other constituents. Now, (25c) and (25c') are possible subsequent steps. In (25c), the leftmost element within D, namely X, moves across α.[10] When the higher Spell-out Domain D′ is Spelled-out, the Ordering Table gets a new ordering statement X<α<Y<Z, which is consistent with the previously established ordering.[11] Hence, the derivation can eventually converge. On the other hand, in (25c'), Y moves across α and X, and then D′ is Spelled-out. As a result, the ordering statement Y<α<X<Z is added to the Ordering Table, which causes a contradiction: Y simultaneously precedes and follows X. Given Linearization Preservation, if the derivation proceeds to the step in (25c'), it crashes at PF.

Then, is it impossible to move non-edge element Y in (25a) to a higher domain? F&P argue that successive-cyclic movement of Y within D makes this possible. Let us consider the following derivation:

(26) *Successive-cyclic movement of a non-edge element*

a. *Movement of Y within D* → *Spell-out of D*
   $[_D$ Y X t_Y Z$]$ Ordering Table: **Y<X<Z**

b. *Movement of Y across α* → *Spell-out of D′*
   $[_{D'}$ ... Y α $[_D$ t'_Y X t_Y Z$]]$ Ordering Table: Y<X<Z
   Y<α<X<Z

In (26a), Y moves to the edge of D, crossing X, and then D is Spelled-out. As a result, the ordering statement Y<X<Z is added to the Ordering Table at this point. Then, the derivation proceeds to the step in (26b), where Y moves up further and the ordering statement Y<α<X<Z is established at the Spell-out of D′. Since the Ordering Table of this derivation contains no contradiction, the derivation can eventually converge with the movement of Y to the higher domain.

Let us consider a concrete example like (27a), where the embedded *wh*-object has moved to the matrix clause.

(27) *Successive-cyclic long-distance* wh-*movement*

a. What do you think that John bought?

b. *$[_{CP1}$ what$_i$ do you think $[_{CP2}$ that John bought $t_i]]$

c. [$_{CP1}$ what$_i$ do you think [$_{CP2}$ t'_i that John bought t_i]]

Since Chomsky 1973, it has been assumed that *what* in (27a) cannot move to the matrix Spec, CP_1 in a one-fell-swoop fashion as in (27b), but must move through the embedded Spec, CP_2 as in (27c) (I omit the *v*P-domain for a while). The question is why the structure in (27b) is illegitimate. F&P argue that their theory of Cyclic Linearization gives an answer to this question.

If *what* in (27a) undergoes one-fell-swoop movement, the derivation proceeds in the manner depicted in (28).

(28) *Long-distance* wh-*movement without successive-cyclic movement*

a. *Construction of* CP_2 → *Spell-out of* CP_2
[$_{CP2}$ that John bought what] Ordering Table: ***that*<*John*<*bought*<*what***

b. *Movement of* what → *Spell-out of* CP_1
*[$_{CP1}$ what$_i$ do you think [$_{CP2}$ that John bought t_i]]

Ordering Table: *that*<*John*<*bought*<*what*
what*<*do*<*you*<*think*<*that*<*John*<*bought

When Spell-out applies to CP_2 as in (28a), the ordering statement *that*<*John*<*bought*<*what* is established. Then, the derivation proceeds to the step in (28b), where *what* moves to the matrix Spec, CP_1. Spell-out establishes the ordering statement *what*<*do*<*you*<*think*<*that*<*John*<*bought* at this point, leading the derivation to crash at PF. Specifically, *what* is required to precede and follow *that*, *John*, and *bought* simultaneously.

On the other hand, if *what* undergoes successive-cyclic movement, the derivation proceeds in the manner illustrated in (29).

(29) *Long-distance* wh-*movement with successive-cyclic movement*

a. *Movement of* what → *Spell-out of* CP_2
[$_{CP2}$ what$_i$ that John bought t_i] Ordering Table: ***what*<*that*<*John*<*bought***

b. *Movement of* what → *Spell-out of* CP_1

$[_{CP1}$ what$_i$ do you think $[_{CP2}$ t'_i that John bought $t_i]]$

Ordering Table: *what<that<John<bought*

what<do<you<think<that<John<bought

At the step in (29a), *what* moves to the edge of CP_2. As a result, Spell-out of CP_2 establishes the ordering statement *what<that<John<bought*. Then, *what* moves to the matrix Spec, CP_1 as in (29b). Spell-out of CP_1 establishes the ordering statement *what<do<you<think<that<John<bought*. Unlike in the case of (28), *what* is required to precede *that*, *John*, and *bought* in both of the ordering statements. The derivation thus converges successfully. In this way, F&P explain why movement must proceed successive-cyclically: Movement must go through the edge of each Spell-out Domain and otherwise the derivation crashes at PF.[12]

F&P further argue that their system gives an explanation of Holmberg's Generalization (see Holmberg 1999, among others). Simply put, Holmberg's Generalization states that object shift is possible only if the verb moves out of the VP, as the Swedish examples in (30) show (based on Fox & Pesetsky 2005:17).

(30) *Licit and illicit object shift in Swedish*

a. Jag kysste$_i$ henne$_j$ inte $[_{VP}$ t_i $t_j]$
   I kissed her not
b. *… att jag henne$_i$ inte $[_{VP}$ kysste $t_i]$
   … that I her not kissed
c. *Jag har henne$_i$ inte $[_{VP}$ kysst $t_i]$
   I have her not kissed

In (30a), the verb *kysste* 'kissed' moves to the V2-position, and the object *henne* 'her' undergoes object shift. On the other hand, the verb stays within VP in (30b-c) because of the presence of the complementizer *att* 'that' or of the auxiliary *har* 'have', and object shift is not possible in either case.

F&P's explanation of Holmberg's generalization goes as follows. First, they assume that Spell-out Domains include at least CP and VP in languages like Swedish.[13] Then, assuming that object shift, unlike certain other instances of movement such as Ā-movement, does not make use of the edge of VP, they claim that the derivations of the sentences in (30) commonly involve the step depicted in (31).

(31) *Construction of VP* → *Spell-out of VP*
[$_{VP}$ V Obj] Ordering Table: **V<Obj**

Then, the derivations of the examples in (30) send the following ordering statements to their Ordering Tables at the Spell-out of CP, respectively:

(32) *Subsequent steps of (31)*

a. *Object-Shift + V-movement* (= (30a))
[$_{CP}$ … V_i [$_{TP}$ Obj_j Neg [$_{VP}$ t_i t_j]]] Ordering Table: V<Obj
V<Obj<Neg

b. *Object-Shift in an embedded clause* (= (30b))
*[$_{CP}$ … [$_{TP}$ … Obj_i Neg [$_{VP}$ V t_i]]] Ordering Table: V<Obj
Obj<Neg<V

c. *Object-Shift in a clause with an auxiliary* (= (30c))
*[$_{CP}$ … [$_{TP}$ Obj_i Neg [$_{VP}$ V t_i]]] Ordering Table: V<Obj
Obj<Neg<V

Since the Ordering Table of each derivation has already received the ordering statement where the verb precedes the object at the step in (31), (32b-c) induce ordering contradictions. On the other hand, if the verb moves out of the VP so as to precede the shifted object as in (32a) before the Spell-out of CP, it can establish an ordering statement that is consistent with the previously established ordering statement, namely V<Obj. F&P argue that this is the reason why object shift correlates with verb-movement.

2.3.2. Analysis

Having introduced the mechanics of F&P's theory of Cyclic Linearization, I argue in this subsection that it explains the PBC effect on Japanese scrambling. The crucial examples is (22) are repeated below as (33).

(33) *PBC effect on Japanese scrambling*

a. *[$_{CP}$ Hanako-ga t_i i-ru to]$_j$ [$_{PP}$ Sooru-ni]$_i$ Taroo-ga t_j omottei-ru (koto)
Hanako-NOM be-PRES that Seoul-in Taroo-NOM think-PRES fact
'(lit.) [That Hanako lives t_i]$_j$, [in Seoul]$_i$, Taroo thinks t_j'

b. *[PRO t_i ik-u koto]-ga$_j$ [$_{PP}$ Sooru-made]$_i$ Taroo-ni t_j meizi-rare-ta (koto)
go-PRES fact-NOM Seoul-to Taroo-to order-PASS-PAST fact
'(lit.) [To go t_i]$_j$, [to Seoul]$_i$, was ordered Taroo t_j'

In particular, I illustrate that their derivations necessarily crash at PF, if we combine F&P's system with the following three assumptions:

(34) *Assumptions*
a. Japanese is head-final.
b. Complement-to-Spec movement is not allowed.
c. Spell-out Domains in Japanese and Korean include at least CP and *v*P.

First, I assume that Japanese is head-final in the sense that the linearization procedure specifies that in Japanese a head linearly follows everything contained within its projection. This assumption allows a complement to precede its head even when it stays in its base-generated position, contra Kayne 1994. Note that this assumption makes rightward adjunction/movement impossible in the language.[14] Second, I assume, in line with Fukui 1993, Bošković 1994, Murasugi & Saito 1995, Arimoto 1999, Saito & Murasugi 1999, Abels 2003, Grohmann 2003, and Kayne 2005, among others, that if XP is a complement of YP, XP cannot be moved to Spec, YP. This property is called Anti-locality. The idea behind this notion is that movement cannot be "too local." Finally, following Ko (2005a, 2007), I assume that *v*P, including its edge, constitutes a Spell-out Domain in Japanese and Korean.[15]

Before proceeding, I briefly review Ko's (2005a, 2007) argument for (34c). Her claim is based on the account of the Korean examples in (35) and (36) below, which involve Numeral Quantifier (NQ) floating (based on Ko 2007:50-51). In these examples, the NPs associated with NQs, which are called host NPs, and floating NQs are underlined.

(35) *Behavior of object-related NQs in Korean*
a. John-i maykcwu-lul sey-pyeng masiessta
John-NOM beer-ACC 3-CL drank
'John drank three bottles of beer'
b. Maykcwu-lul John-i sey-pyeng masiessta
beer-ACC John-NOM 3-CL drank
'John drank three bottles of beer'

(36) *Behavior of subject-related NQs in Korean*

a. Haksayng-tul-i sey-myeng maykcwu-lul masiessta
student-PL-NOM 3-CL beer-ACC drank
'Three students drank beer'

b. *Haksayng-tul-i maykcwu-lul sey-myeng masiessta
student-PL-NOM beer-ACC 3-CL drank
'Three students drank beer'

As shown in (35b), the object-related NQ *sey-pyeng* 'three' and its host NP *maykcwu-lul* 'beer' can be separated by the subject *John-i*, while the subject-related NQ *sey-myeng* 'three' and its host NP *haksayng-tul-i* 'students' cannot be intervened by the object *maykcwu-lul* 'beer', as in (36b).

The same pattern is found in Japanese, as shown in (37) and (38) below (see Kuroda 1980, Saito 1985 and Miyagawa 1989a, among others).

(37) *Behavior of object-related NQs in Japanese*

a. John-ga biiru-o san-bon nonda
John-NOM beer-ACC 3-CL drank
'John drank three bottles of beer'

b. Biiru-o John-ga san-bon nonda
beer-ACC John-NOM 3-CL drank
'John drank three bottles of beer'

(38) *Behavior of subject-related NQs in Japanese*

a. Gakusei-tati-ga san-nin biiru-o nonda
student-PL-NOM 3-CL beer-ACC drank
'Three students drank beer'

b. *Gakusei-tati-ga biiru-o san-nin nonda
student-PL-NOM beer-ACC 3-CL drank
'Three students drank beer'

If we assume that an NQ and its host NP form a constituent, and that scrambling may strand an NQ (see, for intasnce, Kuroda 1980, Sportiche 1988), the behavior of object-related NQs in (35b) and (37b) indicate that (37b), repeated as (39a), can be analyzed as having a structure like (39b).

(39) *Scrambling of the object leaving the NQ behind*

a. Biiru-o John-ga san-bon nonda
beer-ACC John-NOM 3-CL drank
'John drank three bottles of beer'

b. [… Obj_i … Subj [$_{VP}$ … [$_{NP}$ t_i NQ_{Obj}] …] …]

On the other hand, the behavior of subject-related NQs in (36b) and (38b) has been a puzzle in the literature. This is because nothing seems to prevent (38b), repeated as (40a), from having a structure like (40b).

(40) *Scrambling of the object leaving the NQ behind*

a. *Gakusei-tati-ga biiru-o san-nin nonda
student-PL-NOM beer-ACC 3-CL drank
'Three students drank beer'

b. [… $Subj_j$ … Obj_i … [$_{NP}$ t_j NQ_{Subj}] [$_{VP}$ … t_i …] …]

In (40b), the object undergoes scrambling first, and then the subject is further scrambled across the scrambled object, stranding the NQ_{Subj}. This derivation gives rise to the surface order of (40a).

One way of excluding the structure in (40b) is to assume that subjects cannot be scrambled from the subject position, as proposed by Saito (1985). However, Ko (2005a, 2007) argues that such a scrambling of subjects are indeed attested in certain contexts.[16] More importantly, once we adopt the VP-internal subject hypothesis (Kuroda 1988, Sportiche 1988, among many others), such a ban on subject scrambling fails to work, since nothing appears to exclude the structure in (41), where the object undergoes scrambling to the *v*P-edge and the subject undergoes A-movement to Spec, TP.

(41) *Possible structure of (40a) under the VP-internal subject hypothesis*

[$_{TP}$ $Subj_j$ [$_{vP}$ Obj_i [$_{NP}$ t_j NQ_{Subj}] [$_{VP}$ … t_i …] …] …]

Ko (2005a, 2007) then proposes an alternative account which employs F&P's Linearization Preservation.

Let us consider the schematic derivation in (42).

(42) *Schematic derivation of (36b)/(38b) under Cyclic Linearization*

a. *Movement of Obj* → *Spell-out of* v*P*

$[_{vP}\ \text{Obj}_i\ [_{NP}\ \underline{\text{Subj}}\ \underline{\text{NQ}_{\text{Subj}}}]\ [_{VP}\ \ldots\ t_i\ \ldots]\ \ldots]$

Ordering Table: **Obj<Subj<NQ$_{\text{Subj}}$**

b. *Movement of Subj* → *Spell-out of CP*

$*[_{CP}\ \ldots\ \underline{\text{Subj}_j}\ \ldots\ [_{vP}\ \text{Obj}_i\ [_{NP}\ t_j\ \underline{\text{NQ}_{\text{Subj}}}]\ [_{VP}\ \ldots\ t_i\ \ldots]\ \ldots]\ \ldots]$

Ordering Table: Obj<Subj<NQ$_{\text{Subj}}$

Subj<Obj<NQ$_{\text{Subj}}$

In (42a), the object undergoes scrambling to the edge of *v*P. Then, Spell-out applies to *v*P so that the relative orderings of the elements including those on the edge of *v*P are fixed and sent to the Ordering Table. It is necessary for the object to undergo scrambling at this point of the derivation in order to precede the NQ$_{\text{Subj}}$ at the surface order. Otherwise, the ordering statement where the NQ$_{\text{Subj}}$ precedes the object is established at this point. Note here that this scrambling of the object necessarily gives rise to a linear order where the scrambled object precedes not only the NQ$_{\text{Subj}}$ but also the subject, due to the constituency of the subject and NQ$_{\text{Subj}}$. Hence, if the subject moves up, stranding the NQ behind, and the CP is Spelled-out as in (42b), the Ordering Table gets the ordering statement that contradicts with the previously established ones. Thus, the surface order in which the object intervenes between a subject and a subject-related NQ is ruled out. Then, the ungrammaticality of examples like (36b) and (38b) above follows.

Meanwhile, examples like (35b) and (37b) are derived in the manner schematically depicted in (43).

(43) *Schematic derivation of (35b)/(37b) under Cyclic Linearization*

a. *Movement of Obj* → *Spell-out of* v*P*

$[_{vP}\ \underline{\text{Obj}_i}\ \text{Subj}\ [_{VP}\ \ldots\ [_{NP}\ t_i\ \underline{\text{NQ}_{\text{Obj}}}]\ \ldots]\ \ldots]$

Ordering Table: **Obj<Subj<NQ$_{\text{Obj}}$**

b. *Movement of Subj and Obj* → *Spell-out of CP*

$[_{CP}\ \ldots\ \underline{\text{Obj}_i}\ \ldots\ \text{Subj}_j\ \ldots\ [_{vP}\ t'_i\ t_j\ [_{VP}\ \ldots\ [_{NP}\ t_i\ \underline{\text{NQ}_{\text{Obj}}}]\ \ldots]\ \ldots]\ \ldots]$

Ordering Table: Obj<Subj<NQ$_{\text{Obj}}$

Obj<Subj<NQ$_{\text{Obj}}$

In (43a) the object undergoes scrambling across the subject, stranding the NQ$_{\text{Obj}}$ behind. Spell-out of *v*P then establishes the ordering statement where the subject intervenes

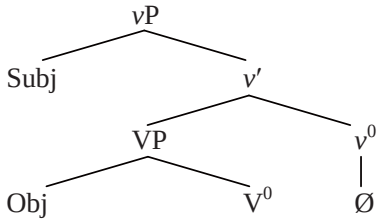
between the object and the NQ_{Obj}, which is consistent with the ultimate surface order of the relevant sentences. In (43b), the subject moves out of the *v*P. Then the object undergoes further scrambling so as to precede the moved subject. When Spell-out applies to the CP, the ordering statement Obj<Subj<NQ_{Obj} is established. Since the ordering statements are consistent, the derivation successfully converges, yielding the surface linear order where the subject appears between the object-related NQ and its host.

What is crucial for Ko's (2005a, 2007) analysis is that the elements on the edge of *v*P are also subject to linearization so that the relative order between the subject and the object is established at the Spell-out of *v*P. Otherwise, the Subj<Obj order established at the step in (42b) may not induce any contradiction in the way we want.[17]

With this much as background, let us turn to the PBC effect on Japanese scrambling. In what follows, I illustrate that the PBC effect on scrambling can be captured by F&P's Linearization Preservation combined with the three assumptions in (34), in particular, Ko's (2005a, 2007) hypothesis that the whole *v*P is subject to linearization. First, let us consider the schematic structure in (44a). For the sake of discussion, I assume that V^0 does not move to v^0 and that v^0 is phonologically null, as indicated by Ø. Thus, v^0 is excluded from ordering statements.[18]

(44) *Configurational possibility 1 at Spell-out of* v*P: No movement*

a.

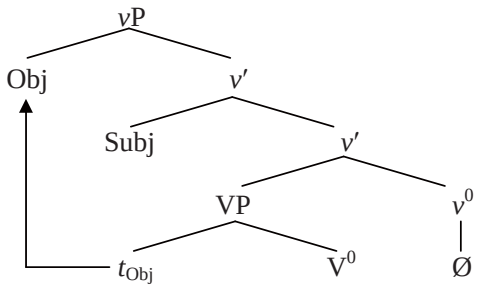


b. Ordering Table: **Subj<Obj<V^0**

In the structure in (44a), no movement has taken place. Hence, when Spell-out applies to *v*P, the ordering statement Subj<Obj<V^0 in (44b) is established. What is important for our purpose is that both the subject and the object are specified to precede the verb in this case. Note that any derivation which has gone through this step must preserve this ordering at each later Spell-out point. This implies that the derivation fails to converge if it yields a surface linear order where the verb precedes either the subject or the object.

Suppose next that the object undergoes movement to the edge of *v*P before Spell-out, as illustrated in (45a).

(45) *Configurational possibility 2 at Spell-out of* v*P: Movement of Obj*

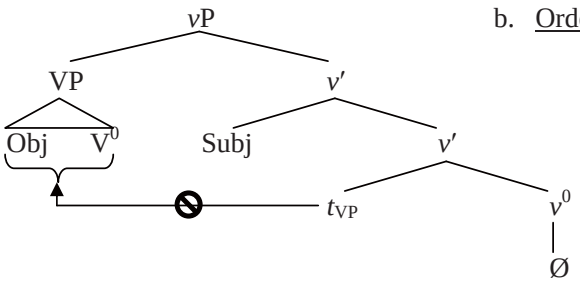
a. 

b. Ordering Table: **Obj<Subj<V^0**

Then, the ordering statement in (45b), where the object precedes the subject is added to the Ordering Table when *v*P is Spelled-out. This enables us to derive the surface OSV order. Notice that the predicate still cannot precede its arguments in a later Spell-out point of the derivation since such a step will necessarily induce an ordering contradiction.

Now, let us consider the structure in (46a) below.

(46) *Configurational possibility 3 at Spell-out of* v*P: Movement of VP*

a. 

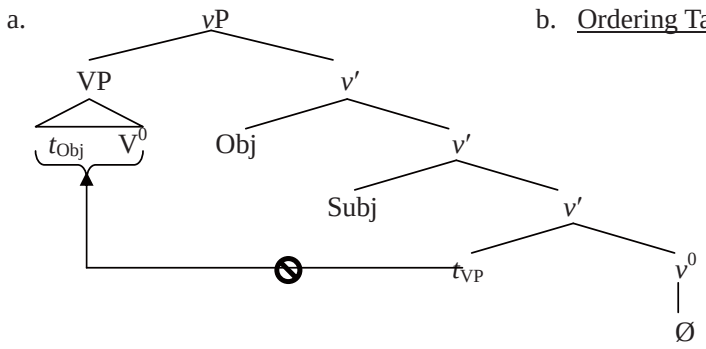
b. Ordering Table: $^{\#}$**Obj<V^0<Subj**

In the structure in (46a), the VP has undergone movement to the edge of *v*P before Spell-out, and as a result, the verb precedes the subject. If this movement is possible, the ordering statement in (46b), where the subject follows the verb can be established. However, this VP-movement is an instance of Complement-to-Spec movement. Hence, this movement is not allowed due to Anti-locality. Consequently, such an ordering statement cannot be established (notated as $^{\#}$).

The final configuration to be examined is (47a) below. In this structure, the object has been scrambled first, and then the VP has been moved. Spell-out of *v*P establishes the ordering statement in (47b) where the verb precedes all the other *v*P-internal elements.

(47) *Configurational possibility 4 at Spell-out of* v*P: Movement of Obj and VP*

a. b. Ordering Table: $^{\#}$**V^0<Obj<Subj**



This structure, however, also violates Anti-locality. Therefore, the ordering where the verb precedes the other elements within *v*P cannot be established.

The results of the discussion so far are summarized in (48).

(48) *Possible and impossible ordering statements established at the Spell-out of* v*P*

a. Subj<Obj<V^0 (= (44b))
b. Obj<Subj<V^0 (= (45b))
c. $^{\#}$Obj<V^0<Subj (= (46b))
d. $^{\#}$V^0<Obj<Subj (= (47b))

Among the four ordering statements, only (48a-b) are allowed under the system advocated here. This means that in Japanese, V^0 cannot precede any *v*P-internal element at the point where *v*P is Spelled-out.[19] Given Linearization Preservation, it follows that the fixed orderings are preserved at each point of later Spell-out.

Then, we can explain the PBC effect on Japanese scrambling. (49) are the relevant examples, repeated from (33).

(49) *PBC effect on Japanese scrambling*

a. *[$_{CP}$ Hanako-ga t_i i-ru to]$_j$ [$_{PP}$ Sooru-ni]$_i$ Taroo-ga t_j omottei-ru (koto)
Hanako-NOM be-PRES that Seoul-in Taroo-NOM think-PRES fact
'(lit.) [That Hanako lives t_i]$_j$, [in Seoul]$_i$, Taroo thinks t_j'

b. *[PRO t_i ik-u koto]-ga$_j$ [$_{PP}$ Sooru-made]$_i$ Taroo-ni t_j meizi-rare-ta (koto)
go-PRES fact-NOM Seoul-to Taroo-to order-PASS-PAST fact
'(lit.) [To go t_i]$_j$, [to Seoul]$_i$, was ordered Taroo t_j'

Let us start with (49a). When Spell-out applies to the embedded *v*P of (49a), we have two possible configurations, as depicted in (50).

(50) *Possible ordering statements for (49a) at the Spell-out of the embedded* v*P*

a. Sooru-ni *stays in-situ* → *Spell-out of the embedded* v*P*
   [$_{vP}$ Hanako-ga [$_{VP}$ Sooru-ni i]] Ordering Table: ***Hanako-ga*<*Sooru-ni*<*i***

b. *Movement of* Sooru-ni → *Spell-out of the embedded* v*P*
   [$_{vP}$ Sooru-ni$_i$ Hanako-ga [$_{VP}$ t_i i]] Ordering Table: ***Sooru-ni*<*Hanako-ga*<*i***

In (50a), the PP *Sooru-ni* 'to Seoul' stays in-situ, so that the ordering statement *Hanako-ga<Sooru-ni<i* is established by Spell-out and sent to the Ordering Table. In (50b), on the other hand, *Sooru-ni* 'to Seoul' undergoes scrambling to the *v*P-edge prior to the Spell-out of *v*P. As a result, the ordering statement *Sooru-ni<Hanako-ga<i* is obtained. Crucially, in both cases *Sooru-ni* 'to Seoul' is specified to precede the embedded verb *i* 'be'. In order to yield the surface linear order of (49a), however, Spell-out must apply to the root CP so as to establish the ordering statement *Hanako-ga<i<ru<to<Sooru-ni<Taroo-ga<omottei<ru*. Then, *Sooru-ni* 'to Seoul' is required to precede and follow at least the embedded verb *i* 'be' simultaneously, leading the derivation to a PF-crash. Thus, the ungrammaticality of (49a) follows.[20]

In the case of (49b), since the subject of the embedded clause is PRO, the ordering statement established at the Spell-out of the embedded *v*P are virtually identical, irrespective of whether the PP *Sooru-made* 'to Seoul' undergoes scrambling to the *v*P-edge, as in (51).

(51) *Possible ordering statements for (49b) at the Spell-out of the embedded* v*P*

a. Sooru-made *stays in-situ* → *Spell-out of the embedded* v*P*
   [$_{vP}$ PRO [$_{VP}$ Sooru-made ik]] Ordering Table: ***Sooru-made*<*ik***

b. *Movement of* Sooru-made → *Spell-out of the embedded* v*P*
   [$_{vP}$ Sooru-made$_i$ PRO [$_{VP}$ t_i ik]] Ordering Table: ***Sooru-made*<*ik***

As shown in (51a-b), the PP *Sooru-made* 'to Seoul' is specified to precede the main verb *ik* 'go' in either case. Recall that this is the only possible ordering possibility at the Spell-out of the embedded *v*P. When Spell-out applies to the root CP of (49b), the ordering statement *ik<u<koto-ga<Sooru-made<Taroo-ni<meizi<rare<ta* is established

and sent to the Ordering Table. As a result, *Sooru-made* 'to Seoul' is required to precede and follow the embedded verb *ik* 'go' at the same time. The derivation crashes at PF, hence the ungrammaticality of (49b).[21]

Summarizing so far, I argued that the S-structure application problem of the classical PBC can be solved, since the PBC effect on Japanese scrambling is explained in terms of linearization at PF. As the proposed analysis explains the examples that have motivated Saito's (2003) derivational PBC, it allows its elimination from the grammar. Moreover, it provides additional evidence for Ko's (2005a, 2007) hypothesis that the whole *v*P, including its edge, constitutes a Spell-out Domain in languages like Japanese.

2.3.3. On Licit Remnant Movements in English and German

This subsection deals with the licit cases of remnant movement found in English and German mentioned in Section 2.2.1. The relevant examples are given in (52) below ((52a-b) are repeated from (23a-b), and (52c) is repeated from (13a)).

(52) *Licit remnant movements in English and German*

a. [Criticized t_i by his boss]$_j$, John$_i$ has never been t_j

b. [How likely t_i to win the game]$_j$ is Mary$_i$ t_j?

c. [t_i Zu lesen]$_j$ hat keiner [das Buch]$_i$ t_j versucht
   to read has no one the book tried
   'No one has tried to read the book'

Recall that these examples are legitimate with respect to the MLC: For instance, in (52a) *John* undergoes A-movement to Spec, TP, and the remnant *criticized by his boss* undergoes VP-fronting. Since the derivational PBC has been eliminated from the grammar, the existence of the traces left by the first movement (namely, t_i in the relevant examples) no longer causes a problem. The question, then, boils down to how the theory of Cyclic Linearization advocated so far can ensure that their derivations converge yielding their respective surface linear orders.

Recall here that F&P have suggested to ignore the *v*P-VP distinction for a Spell-out Domain in Swedish in their explanation of the Holmberg's Generalization. One of the principal reasons is to allow elements on the *v*P-edge such as an external argument to linearly follow a verb, as in (53).[22]

(53) *Yes/no-questions in Swedish*

Hittade han faktist pengarna under sängen?
found he actually money.the under bed.the
'Did he actually find the money under the bed?'

As a general property of the V2 languages, the main verb *hittade* 'found' undergoes V-to-C movement in yes/no-questions (den Besten 1983), crossing the subject *han* 'he'. If the whole *v*P including its edge is subject to linearization in Swedish just like Japanese/Korean, then, the ordering statement where the subject *han* 'he' precedes the verb *hittade* 'found' is established, as in (54a).

(54) *Spell-out of the verbal domain in Swedish*

a. *Construction of* v*P* → *Spell-out of* v*P*
[$_{vP}$ han [$_{VP}$ hittade pengarna under sängen]]
Ordering Table: ***han*<*hittade*<*pengarna*<*under*<*sängen***

b. *Construction of VP* → *Spell-out of VP*
[$_{VP}$ hittade pengarna under sängen]
Ordering Table: ***hittade*<*pengarna*<*under*<*sängen***

On the other hand, if Spell-out targets VP in this language, the linear order between *han* 'he' and *hittade* 'found' can be left unspecified as in (54b) at this point of the derivation. Since *hittade* 'found' precedes *han* 'he' in the surface structure of (53), Spell-out must apply to VP, but not *v*P.

Bearing this in mind, let us consider the example in (55).

(55) *Topicalization of the object in Swedish*

Pengarna hittade han faktist under sängen
money.the found he actually under bed.the
'The money, he actually find under the bed'

In (55), the object *pengarna* 'the money' appears in front of the verb *hittade* 'found'. Recall however that the ordering statement in (54b) specifies that *pengarna* 'the money' follows *hittade* 'found'. Thus, it is necessary to move the object across the verb before Spell-out applies to VP, as in (56).

(56) *Movement of* pengarna → *Spell-out of VP*

[$_{VP}$ pengarna$_i$ hittade t_i under sängen]

Ordering Table: ***pengarna*<*hittade*<*under*<*sängen***

This movement, however, instantiates a Complement-to-Spec movement, which is not allowed under the system advocated in this chapter (see (34b)).

To resolve this discrepancy, I propose the following parameter, assuming that Spell-out universally applies to *v*P:[23]

(57) *Spell-out Domain Parameter for* v*P*

When Spell-out applies to *v*P,

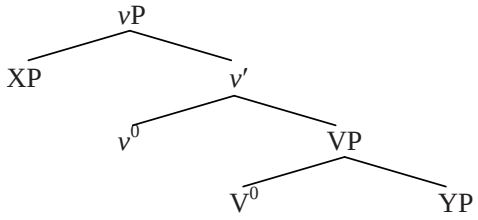
a. Linearize the whole *v*P, including the elements on its edge, or

b. Linearize the complement of v^0.

That is, in a schematic structure (58a), when Spell-out applies to *v*P, a language with the parametric value (57a) establishes the ordering statement in (58b), whereas one with the value in (57b) establishes the ordering statement in (58c).

(58) *Schematic structure of* v*P*

a.



b. Ordering statement established with the value (57a): XP<v^0<V^0<YP

c. Ordering statement established with the value (57b): V^0<YP

Recall that it is crucial for the analysis of the PBC effect that elements on the *v*P-edge are included when Spell-out applies to *v*P. The value in (57a) is thus for languages like Japanese and Korean.

On the other hand, if we assume that Swedish takes the value (57b), the grammaticality of the examples in (53) and (55), repeated in (59) below, can be explained.

(59) *Swedish examples*

a. Hittade han faktist pengarna under sängen?
found he actually money.the under bed.the
'Did he actually find the money under the bed?'

b. Pengarna hittade han faktist under sängen
money.the found he actually under bed.the
'The money, he actually find under the bed'

The problem raised by sentences like (59a) is that the subject *han* 'he' can be preceded by the verb *hittade* 'found' through the verb raising to C^0. Given the parameter setting in (57b), the derivation of (59a) proceeds in the manner depicted in (60).[24]

(60) *Derivation of (59a)*

a. *Construction of* v*P* → *Spell-out of* v*P*
[$_{vP}$ han [$_{VP}$ hittade pengarna under sängen]]
Ordering Table: ***hittade*<*pengarna*<*under*<*sängen***

b. *Construction of CP* → *Spell-out of CP*
[$_{CP}$ hittade$_i$ [$_{TP}$ han$_j$ faktist [$_{vP}$ t_j [$_{VP}$ t_i pengarna under sängen]]]]
Ordering Table: *hittade<pengarna<under<sängen*
hittade*<*han*<*faktist*<*pengarna*<*under*<*sängen

When Spell-out applies to *v*P as in (60a), the linearization procedure specifies the linear ordering of elements within the complement of v^0, namely VP, establishing the ordering statement *hittade<pengarna<under<sängen*. Since *han* 'he' is located outside of the VP, the ordering statement does not contain the information regarding it at this point of the derivation. At the step in (60b), Spell-out applies to the root CP, establishing the ordering statement *hittade<han<faktist<pengarna<under<sängen*.[25] The derivation successfully converges, yielding the surface order of (59a).

In a similar vein, the derivation of (59b) proceeds as follows:

(61) *Derivation of (59b)*

a. *Movement of* pengarna → *Spell-out of* v*P*
[$_{vP}$ pengarna$_i$ han [$_{VP}$ hittade t_i under sängen]]
Ordering Table: ***hittade*<*under*<*sängen***

b. *Construction of CP* → *Spell-out of CP*

[$_{CP}$ pengarna$_i$ hittade$_j$ [$_{TP}$ han$_k$ faktist [$_{vP}$ *t*′$_i$ *t*$_k$ [$_{VP}$ *t*$_j$ *t*$_i$ under sängen]]]]

Ordering Table: *hittade<under<sängen*

pengarna<hittade<han<faktist<under<sängen

At the step in (61a), the object *pengarna* 'the money' undergoes movement to the *v*P-edge prior to the Spell-out of *v*P. As a result, it establishes the ordering statement *hittade<under<sängen*, which does not include the information regarding not only the subject but also the moved object. Then, the derivation proceeds to the step in (61b), where the object, the main verb, and the subject undergo movement their respective landing sites. When Spell-out applies to the root CP, the ordering statement *pengarna<hittade<han<faktist<under<sängen* is established, without inducing a contradiction. Thus, the grammaticality of (59b) follows.

Note that the parameter in (57) is required to generate examples like (59), which do not involve remnant movement. Returning now to the examples in (52), repeated in (62) below, I suggest that the licit cases of remnant movement are also explained by claiming that languages like English and German is like Swedish in that they take the value in (57b).[26] Taking (62a) as representative, I claim that it is derived in the manner depicted in (63).

(62) *Licit remnant movement in English and German*

a. [Criticized *t*$_i$ by his boss]$_j$, John$_i$ has never been *t*$_j$

b. [How likely *t*$_i$ to win the game]$_j$ is Mary$_i$ *t*$_j$?

c. [*t*$_i$ Zu lesen]$_j$ hat keiner [das Buch]$_i$ *t*$_j$ versucht

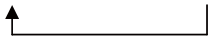
to read has no one the book tried

'No one has tried to read the book'

(63) *Derivation of (62a)*

a. *Movement of* John *to the* v*P-edge* → *Spell-out of* v*P*

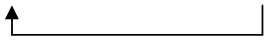
[$_{vP}$ John$_i$ [$_{VP}$ criticized *t*$_i$ by his boss]]



Ordering Table: ***criticized<by<his<boss***

b. *Movement of* John *to Spec, TP*

[$_{TP}$ John$_i$ has never been [$_{vP}$ *t*′$_i$ [$_{VP}$ criticized *t*$_i$ by his boss]]]



Ordering Table: *criticized<by<his<boss*

c. *VP-fronting of* v*P* → *Spell-out of CP*

[$_{CP}$ [$_{vP}$ *t*′$_i$ [$_{VP}$ criticized t_i by his boss]]$_j$ [$_{TP}$ John$_i$ has never been t_j]]

Ordering Table: *criticized<by<his<boss*

criticized<by<his<boss<John<has<never<been

At the step in (63a), *John* moves to the *v*P-edge.[27] When Spell-out applies to *v*P, the ordering statement *criticized<by<his<boss* is established given the parametric value in (57b).[28] Then, *John* undergoes further movement to Spec, TP, as in (63b). At the step in (63c), VP-fronting takes place. I assume with Huang (1993) that VP-fronting in fact moves *v*P to the sentence-initial position.[29] Subsequently, Spell-out of the root CP establishes the ordering statement *criticized<by<his<boss<John<has<never<been*. The derivation successfully converges, yielding the surface linear order of (62a).[30]

The crucial point of the derivation in (63) is that the linear ordering between *John* and the elements contained within the fronted *v*P is allowed to be specified at a significantly later point of the derivation, due to the parametric value in (57b). Assuming that *Mary* in (62b) and *das Buch* 'the book' (62c) can make use of the *v*P-edge, their linear orderings with respect to the elements within the fronted phrases (*how likely to win the game* and *zu lesen* 'to read', respectively) are allowed to be left unspecified until a later point of their respective derivations. Moreover, there is no MLC-violation in the derivation. Thus, the grammaticality of the sentences in (62) follows.[31]

The analysis advocated so far then confirms the MLC analysis of (13b), repeated as (64), since it is legitimate in terms of the theory of Cyclic Linearization: More concretely, the surface linear ordering between *zu lesen* 'to read' and *das Buch* 'the book' in (64) is legitimate, on a par with (62c).

(64) *Illicit remnant movement in German*

*daß	[t_i zu	lesen]$_j$	keiner	[das Buch]$_i$	t_j	versucht	hat
that	to	read	no one	the book		tried	has

'that no one has tried to read the book'

On the other hand, the explanation of the PBC effect in Japanese scrambling discussed in the previous subsection attributes the illicitness of the relevant Japanese examples to an ordering contradiction at PF, keeping the MLC intact. Indeed, the MLC is (trivially) observed in the Japanese examples. Thus, the proposed system restricts remnant

movement so as not to violate the MLC (for instance, German cases), and not to induce a PF-violation (for instance, Japanese cases).

To recap, I suggested in this subsection that licit remnant movements in English and German can be explained once we admit the parameter in (57), which specifies what portion of the structure is subject to the linearization procedure at the Spell-out of *v*P. In particular, I claimed that in languages like Japanese and Korean, the whole *v*P is subject to the linearization procedure, whereas in languages like English, German, and Swedish, only the complement of v^0 is subject to it. Note that the parameter setting for the latter type of the languages is necessary in order to account for the facts concerning their word order possibilities, which are independent of the issue of remnant movement. In this way, the proposed system captures the restrictions on remnant movement in various languages in a uniform fashion.

2.3.4. Summary

In this section, I argued that F&P's theory of Cyclic Linearization, which requires that linear orderings established by Spell-out must be preserved at the end of each later cycle, provides a solution to the S-structure application problem of the classical PBC, conjoined with the following three independently motivated assumptions: Head-finality of Japanese, Anti-locality, which essentially forbids Complement-to-Spec movement, and Ko's (2005a, 2007) hypothesis that the relevant domains for linearization in languages like Japanese include the whole *v*P. Based on these assumptions, I illustrated that derivations of the sentences that have been explained by the derivational PBC always end up with establishing contradicting ordering statements, so that they necessarily induce a PF-crash.

Based on this result, I discussed how the proposed system deals with the licit remnant movement cases found in English and German. I first suggested that it is necessary to postulate a parameter that specifies what of portion of the structure is subject to the linearization procedure at the Spell-out of *v*P, in order to capture the facts regarding basic word order in languages like Swedish (for instance, verb-raising across the subject in yes/no-questions). Then, I illustrated that licit remnant movement cases are explained by assuming that English and German are like Swedish in the parametric choice of the parameter. These languages, unlike Japanese and Korean, allow the elements on the *v*P-edge to be excluded from the ordering statement established by the Spell-out of *v*P, so that remnant movement do not induce an ordering contradiction at PF. In this way, the proposed system explains various patterns of licit and illicit remnant movement, revealing the nature of the restrictions on remnant movement.

2.4. Empirical Evidence for the Proposed Analysis

This section shows that the proposed system has wider empirical coverage than the derivational PBC. Section 2.4.1 concerns with a puzzle regarding the possible landing sites of long-distance scrambling, and Section 2.4.2 deals with certain restrictions on scrambling of ECM and Small Clause complements.

2.4.1. A Puzzle on the Possible Landing Sites of Long-Distance Scrambling

In this subsection I show that the proposed analysis can solve a puzzle regarding the possible landing sites of long-distance scrambling. The puzzle has to do with the following examples (based on Saito 1985:267):

(65) *Long-distance scrambling out of a finite clause*

a. Taroo-ga minna-ni [$_{CP}$ Hanako-ga sono hon-o mottei-ru to]
Taroo-NOM all-to Hanako-NOM that book-ACC have-PRES that
it-ta (koto)
say-PAST fact
'Taroo said to all [that Hanako has that book]'

b. Sono hon-o$_i$ Taroo-ga minna-ni [$_{CP}$ Hanako-ga t_i mottei-ru to]
that book-ACC Taroo-NOM all-to Hanako-NOM have-PRES that
it-ta (koto)
say-PAST fact
'(lit.) That book$_i$, Taroo said to all [that Hanako has t_i]'

c. ??Taroo-ga sono hon-o$_i$ minna-ni [$_{CP}$ Hanako-ga t_i mottei-ru to]
Taroo-NOM that book-ACC all-to Hanako-NOM have-PRES that
it-ta (koto)
say-PAST fact
'Taroo, that book$_i$, said to all [that Hanako has t_i]'

(65b) is derived from (65a) via long-distance scrambling of the embedded object *sono hon-o* 'that book' to the sentence-initial position. Saito (1985) observes that the sentence becomes marginal if a phrase that has undergone long-distance scrambling out of a finite clause follows the subject of the higher clause, as in (65c). Note that the presence of the indirect object *minna-ni* 'to all', which belongs to the matrix clause, indicates that the object has indeed been moved to the matrix clause.

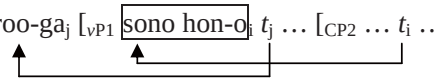
The examples in (65b) and (65c) are presumably analyzed as having the following

structures, respectively:[32]

(66) *Structures of (65b-c)*

a. [$_{CP1}$ sono hon-o$_i$ [$_{TP1}$ Taroo-ga$_j$ [$_{vP1}$ t'_i t_j … [$_{CP2}$ … t_i …]]]]

b. [$_{CP1}$ [$_{TP1}$ Taroo-ga$_j$ [$_{vP1}$ sono hon-o$_i$ t_j … [$_{CP2}$ … t_i …]]]]



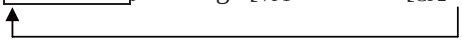
In (66a), the embedded object, *sono hon-o* 'that book', has been moved to the edge of the matrix vP_1 first, and then it has been further scrambled over the matrix subject *Taroo-ga* in Spec, TP_1. This gives rise to the surface order of (65b). On the other hand, in (66b), the scrambled object stays in the edge of the matrix vP_1, and this results in the surface order of (65c). The contrast found in (65b-c) suggests that although the structure in (66a) is legitimate, the one in (66b) has some problem. The puzzle is that nothing seems to force the second scrambling of the object over the matrix subject.

This puzzle, however, can be solved if *v*P constitutes a Spell-out Domain in Japanese, as extensively discussed in the previous section. Let us consider the derivation in (67):[33]

(67) *Derivation of (65b-c)*

a. *Long-distance scrambling of the object* → *Spell-out of* vP_1

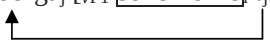
[$_{vP1}$ sono hon-o$_i$ Taroo-ga [$_{VP1}$ minna-ni [$_{CP2}$ t_i …] it]



Ordering Table: ***sono*<*hon-o*<*Taroo-ga*<*minna-ni*<$\mathbf{CP_2}$<*it***

b. *Movement of* Taroo-ga *to Spec, TP₁*

[$_{TP1}$ Taroo-ga$_j$ [$_{vP1}$ sono hon-o$_i$ t_j [$_{VP1}$ minna-ni [$_{CP2}$ t_i …] it] -ta]



Ordering Table: *sono*<*hon-o*<*Taroo-ga*<*minna-ni*<CP_2<*it*

c. *Construction of CP₁* ***without*** *scrambling* → *Spell-out of CP₁*

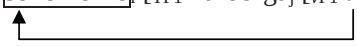
*[$_{CP1}$ [$_{TP1}$ Taroo-ga$_j$ [$_{vP1}$ sono hon-o$_i$ t_j [$_{VP1}$ minna-ni [$_{CP2}$ t_i …] it] -ta]]

Ordering Table: *sono*<*hon-o*<*Taroo-ga*<*minna-ni*<CP_2<*it*

Taroo-ga*<*sono*<*hon-o*<*minna-ni*<$\mathbf{CP_2}$<*it*<*ta

c'. *Construction of CP₁* ***with*** *scrambling* → *Spell-out of CP₁*

[$_{CP1}$ sono hon-o$_i$ [$_{TP1}$ Taroo-ga$_j$ [$_{vP1}$ t'_i t_j [$_{VP1}$ minna-ni [$_{CP2}$ t_i …] it] -ta]]



Ordering Table: *sono*<*hon-o*<*Taroo-ga*<*minna-ni*<CP_2<*it*

sono*<*hon-o*<*Taroo-ga*<*minna-ni*<$\mathbf{CP_2}$<*it*<*ta

As shown in (67a), if the embedded object *sono hon-o* 'that book' is moved to the edge of matrix vP$_1$, the Ordering Table receives the ordering statement where the object precedes the matrix subject when the matrix vP$_1$ is Spelled-out. Then, the matrix subject *Taroo-ga* moves to the Spec of the matrix TP$_1$, as in (67b). If the derivation proceeds to the step in (67c), where the scrambled object stays in the edge of the matrix vP$_1$, Spell-out of the matrix CP$_1$ establishes the ordering statement where the embedded object is followed by the matrix subject. Consequently, the derivation cannot converge because of an ordering contradiction. On the other hand, if the step in (67c') is chosen as the next step of (67b), the derivation can converge. This is because the embedded object has been scrambled again over the matrix subject in (67d), so that Spell-out of the matrix CP$_1$ establishes the ordering statement which is consistent with previously established ones. In this way, the puzzle can be solved: A phrase which undergoes long-distance scrambling cannot follow the matrix subject because the long-distance scrambling makes the phrase precede the matrix subject at the Spell-out of vP.

Note that this analysis presupposes that the edge of the matrix VP is not available as a landing site for phrases that has undergone long-distance scrambling out of a finite clause. If this position is available, Spell-out of the matrix vP may establish the ordering statement where the matrix subject *Taroo-ga* precedes the embedded object *sono hon-o* 'that book', which has undergone long-distance scrambling, as shown in (68) below.

(68) *Scrambling to the edge of the matrix* ***VP*** → *Spell-out of the matrix* v*P*

[$_{vP}$ Taroo-ga [$_{VP}$ sono hon-o$_i$ … [$_{CP2}$ t_i …]]]

Ordering Table: ***Taroo-ga*<*sono*<*hon-o***

In the rest of this subsection, I argue that although the VP-edge is in principle available, long-distance scrambling out of a finite clause cannot make use of this option, completing the analysis of the paradigm in (65) discussed above.

As Saito (1985) observes, the subject of the higher clause may precede or follow the phrase which has been scrambled out of a control complement, contrary to cases like (65), as shown in (69) below (based on Saito 1985:225).

(69) *Long-distance scrambling out of a control complement*

a. Taroo-ga Hanako-ni$_i$ [PRO$_i$ sono hon-o yomuyoo] it-ta (koto)
Taroo-NOM Hanako-to that book-ACC read.to say-PAST fact
'Taroo said Hanako [to read that book]'

b. Sono hon-o$_i$ Taroo-ga Hanako-ni$_j$ [PRO$_j$ t_i yomuyoo] it-ta (koto)
that book-ACC Taroo-NOM Hanako-to read.to say-PAST fact
'(lit.) That book$_i$, Taroo said Hanako [to read t$_i$]'

c. Taroo-ga sono hon-o$_i$ Hanako-ni$_j$ [PRO$_j$ t_i yomuyoo] it-ta (koto)
Taroo-NOM that book-ACC Hanako-to read.to say-PAST fact
'(lit.) Taroo, that book$_i$, said Hanako [to read t_i]'

(69a) is the baseline. (69b) and (69c) are derived from (69a) via long-distance scrambling of the embedded object *sono hon-o* 'that book' to the sentence-initial position and the position between the matrix subject and the indirect object, respectively. Unlike (65b) and (65c), there is no contrast between (69b) and (69c): Both of them are equally acceptable.

Given the discussion so far, the grammaticality of (69b) follows, since it can be derived in the manner depicted in (70).[34]

(70) *Derivation of (69b)*

a. *Long-distance scrambling of the object* → *Spell-out of* vP_1
[$_{vP1}$ sono hon-o$_i$ Taroo-ga$_j$ [$_{VP1}$ Hanako-ni$_k$ [PRO$_k$ t_i …] …]]

Ordering Table: ***sono*<*hon-o*<*Taroo-ga*<*Hanako-ni***

b. *Movement of* sono hon-o *and* Taroo-ga → *Spell-out of* CP_1
[$_{CP1}$ sono hon-o$_i$ [$_{TP}$ Taroo-ga$_j$ [$_{vP}$ t'_i t_j [$_{VP}$ Hanako-ni$_k$ [PRO$_k$ t_i …]]]]]

Ordering Table: *sono<hon-o<Taroo-ga<Hanako-ni*
sono*<*hon-o*<*Taroo-ga*<*Hanako-ni

On the other hand, if the derivation illustrated in (71) is the only option, we fail to capture the fact that (69c) is significantly better than (65c).

(71) *Derivation of (69c)*

a. *Long-distance scrambling of the object* → *Spell-out of* vP_1
[$_{vP1}$ sono hon-o$_i$ Taroo-ga$_j$ [$_{VP1}$ Hanako-ni$_k$ [PRO$_k$ t_i …] …]]

Ordering Table: ***sono*<*hon-o*<*Taroo-ga*<*Hanako-ni***

b. *Construction of CP_1 → Spell-out of CP_1*

*[$_{CP1}$ [$_{TP}$ Taroo-ga$_j$ [$_{vP}$ sono hon-o$_i$ t_j [$_{VP}$ Hanako-ni$_k$ [PRO$_k$ t_i …]]]]]

Ordering Table: *sono<hon-o<Taroo-ga<Hanako-ni*
Taroo-ga<sono<hon-o<Hanako-ni

That is, if the object *sono hon-o* 'that book' can make use of only the *v*P-edge, the derivation fails to derive the surface linear order of (69c).

Suppose however that the edge of VP is indeed available. Then, the derivation depicted in (72) is available for (69c).

(72) *Derivation of (69c)*

a. *Long-distance scrambling to the VP-edge → Spell-out of* vP_1

[$_{vP1}$ Taroo-ga$_j$ [$_{VP1}$ sono hon-o$_i$ Hanako-ni$_k$ [PRO$_k$ t_i …] …]]

Ordering Table: ***Taroo-ga<sono<hon-o<Hanako-ni***

b. *Construction of CP_1 → Spell-out of CP_1*

[$_{CP1}$ [$_{TP}$ Taroo-ga$_j$ [$_{vP}$ t_j [$_{VP}$ sono hon-o$_i$ Hanako-ni$_k$ [PRO$_k$ t_i …]]]]]

Ordering Table: *Taroo-ga<sono<hon-o<Hanako-ni*
Taroo-ga<sono<hon-o<Hanako-ni

Thus, the VP-edge is available if long-distance scrambling takes place out of a control complement.

The question is why the edge of VP is not available for cases of long-distance scrambling out of a finite clause. I suggest that the difference between scrambling out of a finite clause and out of a control complement in their availability of the VP-edge stems from the fact that the former is an Ā-movement (see Saito 1992, among others) while the latter qualifies as A-movement (see Mahajan 1990, Nemoto 1993, among others; see also footnote 5). Let us consider the following examples:

(73) *Long-distance scrambling out of a finite clause*

a. *Taroo-ga otagai-no sensei-ni [$_{CP}$ Hanako-ga karera-o home-ta
Taroo-NOM each.other-GEN teacher-to Hanako-NOM they-ACC praise-PAST
to] it-ta (koto)
that say-PAST fact
'Taroo said to each other's teacher [that Hanako praised them]'

b. *Karera-o_i Taroo-ga otagai-no sensei-ni [$_{CP}$ Hanako-ga t_i
they-ACC Taroo-NOM each.other-GEN teacher-to Hanako-NOM
home-ta to] it-ta (koto)
praise-PAST that say-PAST fact
'(lit.) $Them_i$, Taroo said to each other's teacher [that Hanako praised t_i]'

(74) *Long-distance scrambling out of a control complement*

a. *Taroo-ga otagai-no sensei-ni [PRO karera-o homeruyoo]
Taroo-NOM each.other-GEN teacher-to they-ACC praise.to
it-ta (koto)
say-PAST fact
'Taroo said to each other's teacher [to praise them]'

b. Karera-o_i Taroo-ga otagai-no sensei-ni [PRO t_i homeruyoo]
they-ACC Taroo-NOM each.other-GEN teacher-to praise.to
it-ta (koto)
say-PAST fact
'(lit.) $Them_i$, Taroo said to each other's teacher [to praised t_i]'

c. Taroo-ga karera-o_i otagai-no sensei-ni [PRO t_i homeruyoo]
Taroo-NOM they-ACC each.other-GEN teacher-to praise.to
it-ta (koto)
say-PAST fact
'(lit.) Taroo, $them_i$, said to each other's teacher [to praised t_i]'

(73a) and (74a) are ungrammatical because the anaphor *otagai* 'each other' is not bound in these examples. As shown in (73b), long-distance scrambling of *karera-o* 'them' out of a finite CP does not save the sentence. The ungrammaticality of (73b), thus, suggests that this scrambling is an instance of Ā-movement. On the other hand, the fact that (74b) is grammatical indicates that long-distance scrambling out of a control complement counts as A-movement. The same effect is observed if the scrambled object appears between the matrix subject and the indirect object, as shown in (74c).

Then, if the scrambling to the VP-edge strictly has an A-property, while scrambling to the *v*P-edge can have both A- and Ā-properties, we can capture the difference between scrambling out of a finite complement and out of a control complement with respect to the availability of that position. That is, in the latter case, the relevant movement can be an A-movement, so that it can make use of the VP-edge without any problem. On the other hand, the relevant movement is unambiguously an Ā-movement in the former case. Hence, if it stops at the VP-edge, it results in an improper movement. Therefore, if a

phrase undergoes long-distance scrambling out of a finite clause, only the *v*P-edge is the possible landing site for it.[35] As a result, the scrambled phrase necessarily precedes the subject of the higher clause at the Spell-out of the relevant *v*P. In this way, the proposed theory of Cyclic Linearization solves a puzzle regarding the possible landing sites of long-distance scrambling.[36]

The analysis advocated so far makes a novel prediction. Recall that Japanese selects the parametric value (57a). Hence, Spell-out of *v*P specifies the element that undergoes long-distance scrambling to the matrix *v*P-edge to precede the matrix subject. Then, it is predicted that if a language with the parametric value (57b) allows long-distance scrambling, the element that undergoes long-distance scrambling out of a finite clause can follow the matrix subject. Let us now consider the following examples from Russian, focusing on the word order within the embedded clause:[37]

(75) *Word order possibilities in Russian*

a. Ya dumayu [chto mal'čiki čitajut knigi] (SVO)
I think that boys.NOM read books.ACC
'I think that boys read books'

b. Ya dumayu [chto mal'čiki knigi čitajut] (SOV)

c. Ya dumayu [chto knigi mal'čiki čitajut] (OSV)

d. Ya dumayu [chto knigi čitajut mal'čiki] (OVS)

e. Ya dumayu [chto čitajut mal'čiki knigi] (VSO)

f. Ya dumayu [chto čitajut knigi mal'čiki] (VOS)

As shown in (75), Russian allows all the six possible word orders for a sentence with a subject, an object and a verb.[38] This fact (in particular the availability of the orders where the subject linearly follows the verb, namely the OVS, VSO, VOS ones) suggests that Russian selects the parametric value (57b).

As shown in (76a), long-distance scrambling of *etu knigu* 'that book' to the sentence initial position is possible. In addition to this, the object can undergo long-distance scrambling to the position immediately after the matrix subject, as in (76b). There is no contrast in (76a-b), unlike the case of (65b-c) in Japanese.[39]

(76) *Long-distance scrambling out of a finite clause in Russian*

a. Etu knigu_i Masha skazala/dumala/znala [chto Ivan prochjol t_i]
that book.ACC Masha.NOM said/thought/know that Ivan.NOM read
'(lit.) That book_i, Masha said/thought/knows [that Ivan read t_i]'

b. Masha etu knigu$_i$ skazala/dumala/znala [chto Ivan prochjol t_i]
Masha.NOM that book.ACC said/thought/know that Ivan.NOM read
'(lit.) Masha, that book$_i$ said/thought/knows [that Ivan read t_i]'

Therefore, the prediction is borne out, providing further support for the proposed analysis.

2.4.2. On Restrictions on Scrambling of ECM and Small Clause Complements

This subsection deals with certain restrictions on scrambling of ECM and Small Clause (SC) complements in Japanese. Relevant examples are given in (77).

(77) *ECM and SC constructions in Japanese*
a. Taroo-ga Ziroo-o tensai-da to sinzitei-ru (koto)
Taroo-NOM Ziroo-ACC genius-COP that believe-PRES fact
'Taroo believes Ziroo to be a genius'
b. Taroo-ga Ziroo-o kasikoku omottei-ru (koto)
Taroo-NOM Ziroo-ACC smart consider-PRES fact
'Taroo considers Ziroo smart'

(77a) is an instance of the ECM construction in Japanese (see, among many others, Kuno 1972, 1976, Saito 1983, Kaneko 1988, Sakai 1998, Breuning 2001a, b, Hiraiwa 2001, 2005, Tanaka 2002, Takano 2003, Kawai 2006, Taguchi 2009), where the thematic subject of the embedded clause, namely *Ziroo*, is marked with the accusative Case-marker *-o*. (77b) is an example of the SC construction, extensively discussed in Kikuchi & Takahashi (1991) (see also Nakau 1973, Inoue 1976, Kitagawa 1985, Fukumitsu 2001, Takahashi 2002). Again, the subject of the SC *Ziroo* is marked with *-o*.

Let us start with the pattern exhibited by the ECM construction. Since at least Kuno 1972, it has been pointed out that there is a restriction on scrambling of the ECM complement. As in (78a), the ECM complement *tensai-da to* 'to be a genius' cannot be moved across the accusative-marked subject *Ziroo-o*.

(78) *Scrambling of an ECM complement*
a. *Tensai-da to Taroo-ga Ziroo-o sinzitei-ru (koto)
genius-COP that Taroo-NOM Ziroo-ACC believe-PRES fact
'(lit.) To be a genius, Taroo believes Ziroo'

b * Taroo-ga tensai-da to Ziroo-o sinzitei-ru (koto)
Taroo-NOM genius-COP that Ziroo-ACC believe-PRES fact
'(lit.) Taroo, to be a genius, believes Ziroo'

c. Ziroo-o tensai-da to Taroo-ga sinzitei-ru (koto)
Ziroo-ACC genius-COP that Taroo-NOM believe-PRES fact
'(lit.) Ziroo to be a genius, Taroo believes'

As shown in (78b), the ECM complement cannot appear between the matrix subject *Taroo-ga* and *Ziroo-o*, either. On the other hand, if the accusative-marked subject is moved so as to precede the moved ECM complement as in (78c), the sentence improves.

Kikuchi & Takahashi (1991:85) make a similar observation for the SC construction, as shown in (79).

(79) *Scrambling of an SC complement*

a. *Kasikoku Taroo-ga Ziroo-o omottei-ru (koto)
smart Taroo-NOM Ziroo-ACC consider-PRES fact
'(lit.) Smart, Taroo considers Ziroo'

b. *Taroo-ga kasikoku Ziroo-o omottei-ru (koto)
Taroo-NOM smart Ziroo-ACC consider-PRES fact
'(lit.) Taroo, smart, considers Ziroo'

c. Ziroo-o kasikoku Taroo-ga omottei-ru (koto)
Ziroo-ACC smart Taroo-NOM consider-PRES fact
'(lit.) Ziroo smart, Taroo considers'

That is, the SC complement *kasikoku* 'smart' cannot be moved across *Ziroo-o*, as in (79a-b), while it can be moved when *Ziroo-o* is also moved, as in (79c).

The movement of *Ziroo-o* itself does not save the sentence, if it follows the moved ECM/SC complement, as in (80).

(80) *Scrambling of an ECM/SC complement*

a. *Tensai-da to Ziroo-o Taroo-ga sinzitei-ru (koto)
genius-COP that Ziroo-ACC Taroo-NOM believe-PRES fact
'(lit.) To be a genius, Ziroo, Taroo believes'

b. *Kasikoku Ziroo-o Taroo-ga omottei-ru (koto)
smart Ziroo-ACC Taroo-NOM consider-PRES fact
'(lit.) Smart, Ziroo, Taroo considers'

In (80a-b), *Ziroo-o* is moved across the matrix subject *Taroo-ga*. Unlike (78c) and (79c), however, it linearly follows the moved ECM/SC complement, and the sentences are ungrammatical.

The generalization that can be drawn from the examples in (78)-(80) is something like (81):

(81) *Generalization on scrambling of ECM/SC complements*
An ECM/SC complement can undergo scrambling if its accusative-marked subject linearly precedes the ECM/SC complement at the surface.

One might claim that the patterns observed so far can be explained if an ECM/SC complement and its accusative-marked subject form a constituent so that movement cannot apply in a way to break the constituency. For instance, Kikuchi & Takahashi (1991) employ this idea to explain the pattern in (79). However, there is evidence that indicates that it is not the whole story.

To see this, let us first consider the examples in (82a), comparing it with (77a), which is repeated as (82b).

(82) *Case-marking on ECM/SC subjects*
a. Taroo-ga Ziroo-ga tensai-da to sinzitei-ru (koto)
Taroo-NOM Ziroo-NOM genius-COP that believe-PRES fact
'Taroo believes that Ziroo is a genius'
b. Taroo-ga Ziroo-o tensai-da to sinzitei-ru (koto)
Taroo-NOM Ziroo-ACC genius-COP that believe-PRES fact
'Taroo believes Ziroo to be a genius'

(82a) minimally differs from (82b) in that the embedded subject is marked with the nominative Case-marker *-ga*.

Although the sentences in (82) look quite similar, Kuno (1972, 1976) observes the following contrast with respect to the placement of the adverb which is intended to modify the matrix predicate.

(83) *Adverb-placement*

a. *Taroo-ga Ziroo-ga orokanimo tensai-da to sinzitei-ru (koto)
Taroo-NOM Ziroo-NOM stupidly genius-COP that believe-PRES fact
'Stupidly, Taroo believes that Ziroo is a genius'

b. Taroo-ga Ziroo-o orokanimo tensai-da to sinzitei-ru (koto)
Taroo-NOM Ziroo-ACC stupidly genius-COP that believe-PRES fact
'Stupidly, Taroo believes Ziroo to be a genius'

That is, the matrix adverb *orokanimo* 'stupidly' can appear between the ECM complement and its accusative-marked subject as in (83b), whereas it cannot in the position after the nominative-marked subject as in (83a).

Kuno (1972, 1976) then suggests that the nominative-marked subject in (83a) is located within the embedded clause as in (84a) below, whereas the accusative-marked subject in (83b) is located within the matrix clause as in (84b).[40]

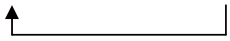
(84) *Structures of (83a-b)*

a. Taroo-ga [Ziroo-ga (*orokanimo) tensai-da to] sinzitei-ru
b. Taroo-ga Ziroo-o orokanimo [tensai-da to] sinzitei-ru

He further suggests that the accusative-marked subject undergoes raising-to-object (Postal 1974, Lasnik & Saito 1991, Chomsky & Lasnik 1993, Koizumi 1995, Bošković 1997, among many others), as in (85).

(85) *Raising-to-object analysis of (83b)*

Taroo-ga Ziroo-o_i orokanimo [t_i tensai-da to] sinzitei-ru



That is, *Ziroo-o* in (85) is base-generated as the subject of the embedded clause, and then undergoes raising to the matrix object position.[41]

The fact that the accusative-marked subject of the SC complement can follow the matrix adverb as in (86a) below indicates that it has a structure like (86b).

(86) *Structure of the SC construction*

a. Taroo-ga Ziroo-o orokanimo kasikoku omottei-ru (koto)
Taroo-NOM Ziroo-ACC stupidly smart consider-PRES fact
'Stupidly, Taroo considers Ziroo smart'

b. Taroo-ga Ziroo-o$_i$ orokanimo [t_i kasikoku] omottei-ru

That is, *Ziroo-o* is moved to the matrix clause, crossing the matrix adverb *orokanimo* 'stupidly'. The grammaticality of (83b) and (86b) thus indicate that the accusative-marked subjects in the ECM/SC constructions do not have to form a constituent with the ECM/SC complements at the surface.

The structures in (85) and (86b), schematically shown in (87a), provides a key to the generalization in (81).

(87) *Schematic structures of the ECM/SC constructions*

a. … DP$_{nom}$… DP$_{acci}$ … [$_{XP}$ t_i …] V$_{matrix}$

b. … [$_{XP}$ t_i …]$_j$ … DP$_{acci}$ … t_j … V$_{matrix}$

In order to derive the surface word order where the accusative-marked subject (indicated as DP$_{acc}$) linearly follows the ECM/SC complement (represented as XP), the XP has to be moved across DP$_{acc}$, as in (87b). This results in a violation of the classical PBC, because the trace t_i contained in the XP is left unbounded, as has been frequently suggested in the previous literature (see, for instance, Breuning 2001a, b, and Tanaka 2002 for the ECM cases). Note at the same time that if the movement of DP$_{acc}$ to the matrix clause in (87a) is indeed an instance of A-movement, the structures in (87) count legitimate under the MLC analysis and the derivational PBC analysis: For the former, the feature that triggers the A-movement of DP$_{acc}$ differs from the one that triggers scrambling of the ECM/SC complement; for the latter, since the A-movement of DP$_{acc}$ does not have to leave a trace by assumption, the trace t_i in the moved XP does not exist. In what follows, I illustrate that the proposed analysis of the PBC effect successfully captures the generalization in (81), irrespective of the nature of the movement of DP$_{acc}$.

Before proceeding to the concrete analysis, I introduce a piece of stronger evidence for the idea that the accusative-marked phrase is indeed base-generated as a subject of the ECM/SC complement, discussed in Sakai 1998 and Hiraiwa 2001, 2005. The evidence has to do with distribution of the Negative Polarity Items (NPIs) formed by combining an indeterminate pronoun such as *dare* 'who' and the quantificational particle *-mo* 'any' (Kuroda 1965).[42] Let us consider the examples in (88).

(88) *Distribution of the NPIs*

a. Dare-mo ko-nakat-ta (koto)
who-any come-NEG-PAST fact
'No one came'

b. Taroo-ga [dare-ga ku-ru to]-mo omottei-na-i (koto)
Taroo-NOM who-NOM come-PRES that-any think-NEG-PRES fact
'Taroo thinks that no one will come'

c. *Dare-ga [Taroo-ga ku-ru to]-mo omottei-na-i (koto)
who-NOM Taroo-NOM come-PRES that-any think-NEG-PRES fact
'No one thinks that Taroo will come'

In (88a), the particle *-mo* is directly attached to the indeterminate pronoun *dare* 'who', forming the NPI *dare-mo* 'anyone'. Since Kuroda 1965, it has been observed that an indeterminate pronoun can function as an NPI if it is in the c-command domain of the particle *-mo*, as in (88b): The particle *-mo* is attached to the embedded clause, and c-commands the indeterminate pronoun *dare* 'who'. However, if the indeterminate is base-generated outside of the c-command domain of *-mo* as in (88c), it cannot be interpreted as an NPI.

Bearing this in mind, let us consider the examples in (89).

(89) *Distribution of the NPIs in the ECM construction*

a. Taroo-ga dare-ga tensai-da to-mo sinzitei-na-i (koto)
Taroo-NOM who-NOM genius-COP that-any believe-NEG-PRES fact
'Taroo believes that no one is a genius'

b. Taroo-ga dare-o tensai-da to-mo sinzitei-na-i (koto)
Taroo-NOM who-ACC genius-COP that-any believe-NEG-PRES fact
'Taroo believes no one to be a genius'

In both of the examples in (89), *-mo* is attached to the embedded clause. In (89a), the indeterminate pronoun *dare* 'who' is marked with the nominative Case-marker, whereas the one in (89b) is marked with the accusative Case-marker. The fact that there is no contrast between (89a-b) indicates that both of them are base-generated within the embedded clause.

The same argument can be constructed for the SC construction, as shown in (90).

(90) *Distribution of the NPIs in the SC construction*

Taroo-ga dare-o kasikoku-mo omottei-na-i (koto)
Taroo-NOM who-ACC smart-any consider-NEG-PRES fact
'Taroo considers no one smart'

In (90), the particle *-mo* is attached to the SC predicate, and the accusative-marked subject can function as an NPI, on a par with the examples in (89).

Having established that accusative-marked subjects in the ECM/SC constructions are indeed base-generated as a subject of the embedded ECM/SC complement, I provide an explanation of the generalization in (81), repeated as (91).

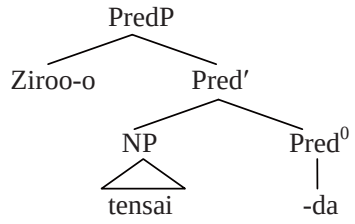
(91) *Generalization on scrambling of ECM/SC complements*

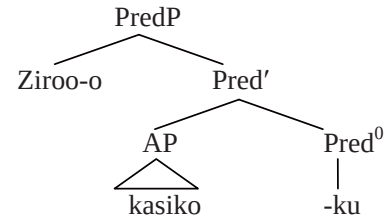
An ECM/SC complement can undergo scrambling if its accusative-marked subject linearly precedes the ECM/SC complement at the surface.

Under the proposed analysis of the PBC effect in terms of the theory of Cyclic Linearization, (91) follows if Spell-out applies to the ECM/SC complement so as to specify that the accusative-marked subject linearly precedes the other elements within the ECM/SC complement.

For the sake of concreteness, I assume, following Nishiyama (1999, 2005), that the ECM/SC complements involve the following structures:

(92) *Structures of ECM/SC predicates*

a.


b.


In (92), *-da* and *-ku* project their own projection, labeled as Pred(icative)P (Bowers 1993).[43] They take the predicative NP *tensai* 'genius' and AP *kakiso* 'smart' as their complements, respectively. *Ziroo-o* is base-generated as their subjects. Then, assuming that Spell-out applies to PredP, the ordering statements in (93) are established, respectively.[44]

(93) *Ordering statements established at the Spell-out of PredP*

a. *Ziroo-o<tensai<da*

b. *Ziroo-o<kasiko<ku*

Then, if the derivation proceeds so that it establishes an ordering statement where the accusative subject *Ziroo-o* follows the other elements within the ECM/SC complements, namely *tensai-da* 'genius' and *kakuko-ku* 'smart' for the cases at hand, it induces an ordering contradiction at PF. On the other hand, the derivation successfully converges even if the ECM/SC complements undergo scrambling, as long as the accusative-marked subject precedes them at each point of Spell-out. This derivation yields the surface linear order where the accusative-marked subject precedes the ECM/SC complement at the surface. Thus, the generalization in (91) follows.

2.5. Conclusion

In this chapter, I proposed a novel explanation of the PBC effect on Japanese scrambling in terms of linearization at PF, solving the long-standing problem regarding this effect, namely, the S-structure application problem. Specifically, I argued that F&P's theory of Cyclic Linearization, which requires that linear orderings established by Spell-out must be preserved at the end of each later cycle, provides a straightforward solution. The crucial notion of Linearization Preservation in (24) is repeated as (94).

(94) *Linearization Preservation*

The linear ordering of syntactic units is affected by Merge and Move *within* a Spell-out Domain, but is fixed once and for all at the end of each Spell-out Domain.

Then, combining the theory with the three assumptions in (34), repeated as (95), I illustrated that derivations of the sentences that have been explained by the derivational PBC always end up with contradicting ordering statements, so that they necessarily induce a PF-crash.

(95) *Assumptions*

a. Japanese is head-final.

b. Complement-to-Spec movement is not allowed.

c. Spell-out Domains in Japanese and Korean include at least CP and *v*P.

Since the relevant derivations are excluded by a PF-problem, no notion of S-structure is

involved in the proposed explanation. thus, it solves the S-structure application problem of the classical PBC.

Furthermore, I examined the licit cases of remnant movement found in English and German. I first suggested that it is necessary to postulate a parameter that specifies what portion of the structure is subject to the linearization procedure at the Spell-out of *v*P, in order to capture the facts regarding word order possibilities in languages like Swedish. The relevant parameter in (57) is repeated as (96) below.

(96) *Spell-out Domain Parameter for* v*P*

When Spell-out applies to *v*P,

a. Linearize the whole *v*P, including the elements on its edge, or
b. Linearize the complement of v^0.

Then, I illustrated that the licit cases of remnant movement are explained by assuming that English and German are like Swedish in they choose the parametric value in (96b). These languages, unlike Japanese and Korean, allow the elements on the *v*P-edge to be excluded from the ordering statement established by the Spell-out of *v*P, so that remnant movement do not induce an ordering contradiction at PF. Meanwhile, the proposed explanation of the PBC effect on Japanese scrambling provides strong evidence for Ko's (2005a, 2007) hypothesis that the whole *v*P is subject to Spell-out in languages like Japanese/Korean. This is because the explanation crucially assumes for languages like Japanese the choice of the parametric value in (96a), which embodies the essential idea of Ko's (2005a, 2007) hypothesis under the assumed framework. In this way, the proposed system explains various patterns of licit and illicit remnant movement in a uniform fashion, revealing the nature of the restrictions on remnant movement.

I also argued that the proposed analysis has wider empirical coverage than the derivational PBC, discussing two phenomena. The first one has to do with Saito's (1985) observation that a phrase that undergoes long-distance scrambling out of a finite clause cannot follow the subject of the higher clause. I argued that once a phrase undergoes long-distance scrambling out of a finite clause, it must be moved to the edge of the *v*P of the higher clause. Consequently, Spell-out of the *v*P always establishes an ordering statement where the scrambled phrase precedes the subject of the higher clause. Therefore, the former cannot follow the latter at the surface structure, due to Linearization Preservation. The second phenomenon is a restriction on scrambling of the ECM/SC complements. I first illustrated that scrambling of the ECM/SC complements is allowed when their accusative-marked subjects linearly precede the moved ECM/SC

complements. It is then argued that the proposed analysis of the PBC effect in terms of the theory of Cyclic Linearization provides a uniform explanation of this generalization.

The analysis advocated in this section captures one kind of the empirical facts that have motivated Saito's (2003) derivational PBC, namely the PBC effect on overt Merge. In the next chapter, I turn to another empirical motivation of the derivational PBC, which is called the PBC effect on covert Merge.

Notes to Chapter 2

[1] This chapter is a revised and extended version of Takita (2009).

[2] Under the strict interpretation of the classical PBC, it excludes lowering and sideward movement, as well as remnant movement. The status of lowering and sideward movement in the grammar, however, is not quite clear. For instance, although Chomsky (1995) argues that overt lowering is excluded in terms of linearization (cf. Kayne 1994), Bošković & Takahashi (1998) argue that covert lowering is allowed in some circumstance. As for sideward movement, various studies such as Nunes (1995, 2001, 2004) argue that it is indeed a possible type of movement. Hence, I will restrict the discussion to remnant movement in this chapter.

[3] To make the examples more natural, I will place *koto* 'the fact that' at the end of them if necessary. Note that the English translations I provide for the Japanese examples are intended to show the rough structure of the sentences, and the sentence final *koto* is excluded from the translations.

[4] More precisely, the Σ-feature is borne by the respective head of the CP and the PP.

[5] Scrambling out of a control complement shows both A- and Ā-properties (see Mahajan 1990, Nemoto 1993, among others). The example in (ia) indicates that such a scrambling has Ā-properties. Meanwhile, the grammaticality of (ib) suggests that it qualifies as A-movement.

(i) a. Hanako-ga otagai-o_i [Taroo-to Ziroo]-ni [PRO t_i hihansu-ru koto]-o
Hanako-NOM each.other-ACC Taroo-and Ziroo-to criticize-PRES fact-ACC
meizi-ta (koto)
order-PAST fact
'(lit.) Hanako, each other$_i$, ordered Taroo and Ziroo [to criticize t_i]'

b. Hanako-ga [Taroo-to Ziroo]-o_i otagai-no hahaoya-ni [PRO t_i hihansu-ru
Hanako-NOM Taroo-and Ziroo-ACC each.other-GEN mother-to criticize-PRES
koto]-o meizi-ta (koto)
fact-ACC order-PAST fact
'(lit.) Hanako, [Taroo and Ziroo]$_i$, ordered each other's mother [to criticize t_i]'

Thus, even if scrambling in Japanese is feature-driven, the relevant feature should be distinct from the one which triggers A-movement to Spec, TP.

[6] See Collins & Sabel (2007) for a recent approach that attributes the PBC effect to LF. As far as I can see, however, their analysis does not seem to be extended to the PBC effect on Japanese scrambling.

[7] F&P note that an application of Spell-out may establish some other relations among syntactic units. However, I will concentrate on linear order, as in F&P.

[8] For ease of exposition, I will use more informal notation for ordering statements. I will indicate the ordering statement which is newly added to the Ordering Table at the relevant step in boldface. Finally, elements in ordering statements that induce an ordering contradiction are indicated by shading. See also footnote 9 and 11.

[9] The ordering statement X<Y<Z is indeed an abbreviated form of the two ordering statements X<Y and Y<Z, which instruct that the phonologically non-null elements dominated by X precede those dominated by Y, and that the phonologically non-null elements dominated by Y precede those dominated by Z, respectively (Fox & Pesetsky 2005:7, fn.7 note that "dominate" means "reflexively dominate" to cover the cases where X, Y, or Z is a word). For ease of exposition, however, I will indicate the terminal elements, namely words, when the actual examples are discussed.

[10] Movement out of the previously Spelled-out domains is excluded under the Phase Impenetrability Condition (PIC, Chomsky 2000, 2001), which prohibits operations to access to those domains. F&P's theory, however, is designed to derive the effects of the PIC, so that the PIC can be abandoned. Hence, nothing blocks such a movement. F&P also assume that traces are invisible for linear order establishments.

[11] More precisely, Spell-out of D′ establishes the ordering statement X<α<D. Since X has moved out of D, the first phonologically non-null element within D at this point is Y. The ordering statement X<α<D is then interpreted so as that X and α precede Y and Z. The ordering statement X<α<Y<Z is an abbreviated notation of this information. Note that under this conception Spell-out does not apply to the domains that have been already Spelled-out.

[12] Note that under the theory of Cyclic Linearization, the source of illicitness in one-fell-swoop long-distance movement is attributed to an ordering contradiction at PF. It is predicted then that one-fell-swoop movement counts legitimate if ellipsis somehow removes the ordering contradiction. as pointed out by F&P. See Chapter 5 for more detailed discussion.

[13] Following F&P, I ignore the distinction between *v*P and VP at this point. I come back to this issue in Section 2.3.2. and Section 2.3.3.

[14] Focus particles like *-sae* 'even' and *-mo* 'also' linearly follow the head of a projection although they seem to be adjoined to the projection in question, as shown in (i).

(i) a. Taroo-ga [hon-o yomi]-sae/-mo si-ta
Taroo-NOM book-ACC read-even/-also do-PAST
'Taroo even/also [read a book]'

b. Taroo-ga [wakaku]-sae/-mo at-ta
Taroo-NOM young-even/-also be-PAST
'Taroo was even/also [young]'

They behave like adjuncts but not heads in that they do not affect the selectional relations between the main predicate and the higher element, as pointed out by Sells (1995) and Aoyagi (1998). For instance, insertion of these particles requires some verbal element to appear right before tense morphemes. If the main predicate is a verb as in (ia), *su* 'do' appears, while if it is an adjective as in (ib), *ar* 'be' does. Note that the relation between the main predicate and the higher verbal element cannot be local if the particle has its own projection. Then, these particles are adjuncts that appear to right-adjoin to the projection. One remarkable property of these adjuncts is that they are suffixes. Assuming, essentially in line with Aoyagi (1998), that these particles are adjuncts having a feature [+suffixal], I suggest that the linearization procedure specifies that these [+suffixal] elements to follow a head so as to satisfy their morphological properties..

[15] Ko (2005a) argues that Spell-out Domains in these languages also include VP (recall that F&P assume that VP constitutes a Spell-out Domain for languages like Swedish). See Section 2.3.3 for this issue.

[16] One potential piece of evidence that argues for the idea that a subject can undergo scrambling leaving an NQ has to do with the fact that certain class of adverbs such as *way* 'why' can intervene between an subject-related NQ and its host in Korean, as in (i) (based on Ko 2007:52). The same holds for Japanese, as in (ii) (see Miyagawa 1989a, Koizumi 1994, among others).

(i) [Haksayng-tul-i way sey-myeng hakkyo-lul ttenass nunci] anta
student-PL-NOM why 3-CL school-ACC left Q know
'(I) know why three students left the school'

(ii) [Gakusei-tati-ga naze san-nin gakkoo-o yameta ka] sitteiru
student-PL-NOM why 3-CL school-ACC left Q know
'(I) know why three students left the school'

Suggesting that the *wh*-adjuncts like *way* 'why' are base-generated in CP (see Ko 2005b and references cited therein), Ko (2005a, 2007) argues that the relevant part of (i) and (ii) have the following schematic structure, where the subject first undergoes A-movement to Sepc, TP and then does clause-internal scrambling across 'why'.

(iii) $[_{CP}$ $Subj_i$ *why* $[_{TP}$ t'_i… $[_{vP}$ $[_{NP}$ t_i $NQ_{Subj}]$ …] …]

[17] The sentence where an adverb appears between a subject-related NQ and its host discussed in footnote 16 is derived in the manner depicted in (i) below:

(i) a. *Spell-out of* v*P*

$[_{vP}\ [_{NP}\ \underline{\text{Subj}_i}\ \underline{\text{NQ}_{\text{Subj}}}]\ \ldots]$ Ordering Table: **Subj<NQ$_{\text{Subj}}$**

b. *Movement of Subj → Spell-out of CP*

$[_{CP}\ \underline{\text{Subj}_i}$ *why* $[_{TP}\ t'_i \ldots\ [_{vP}\ [_{NP}\ t_i\ \underline{\text{NQ}_{\text{Subj}}}]\ \ldots]\ \ldots]$

Ordering Table: Subj<NQ$_{\text{Subj}}$

Subj<Adv<NQ$_{\text{Subj}}$

Given that the adverb is base-generated outside of *v*P, it is not included in the ordering statement established by the Spell-out of *v*P, as in (ia). Subsequently the adverb is introduced to the derivation and the subject is moved across it (via A-movement to Spec, TP), stranding the NQ, as in (ib). Then, Spell-out of the CP establishes the ordering statement Subj<Adv<NQ$_{\text{Subj}}$, which is consistent with the previously established one. Hence, it follows that the adverb can appear between the subject-related NQ and its host.

[18] These assumptions do not affect the analysis in the text. See also footnote 19.

[19] Let us suppose that V^0 obligatory moves at least to v^0 in Japanese, contrary to the assumption made in the text. Then, no matter what movement takes place within *v*P, Spell-out of the *v*P establishes the ordering statements where the *v*-V complex follows everything within it. Consequently, it follows that V^0 cannot precede any other *v*P-internal element at the Spell-out of *v*P.

The conclusion that V^0 cannot precede any other *v*P-internal element at the Spell-out of *v*P still holds for cases in which the verb has three arguments if we assume that all the internal arguments are base-generated within VP (Hoji 1985, Larson 1988). Things become a little complicated if we assume that there is an independent functional head like Appl(icative) that introduces the indirect object (see Marantz 1993, Ura 1996, Pylkkänen 2002, and Yatsushiro 2003, among others). One potential problem is that if ApplP is located between v^0 and V^0, the VP-movement to the edge of *v*P cannot be blocked by Anti-locality. That is, a structure like (i) becomes available.

(i) $[_{vP}\ \boxed{[_{VP}\ \text{DO}\ \text{V}^0]}_i\ \text{Subj}\ [_{ApplP}\ \text{IO}\ t_i\ \text{Appl}^0]\ v^0]$

Ordering Table: **DO<V^0<Subj<IO**

Hence, the ordering statement where a verb precedes some *v*P-internal elements may be established.

There are at least two possible solutions to this problem. The first one is to assume that V^0 always undergoes head-movement up to v^0, picking up Appl^0, as shown in (ii).

(ii) $[_{vP}\ \text{Subj}\ [_{ApplP}\ \text{IO}\ [_{VP}\ \text{DO}\ t_i]\ t_j]\ [_{v}{}^{0}\ [_{\text{Appl}}{}^{0}\ \text{V}^0{}_i\text{+Appl}]_j\text{+}v]]$

Because of head-movement, V^0 always appears on the right-edge. Thus, the ordering statements in which V^0 precedes other *v*P-internal elements can never be established. Note that this solution enables us to explain the ungrammatical cases without assuming Anti-locality, since VP-movement no longer brings V^0 in front of other *v*P-internal elements.

The other solution is to assume that the ApplP also constitutes a Spell-out Domain in this language. This option forces the VP to move through the edge of ApplP to derive the intended surface order, but it is not allowed due to Anti-locality. In Takita (2008), I argued for this assumption by examining interaction of scrambling and quantifier scope (see McGinnis 2001 for independent evidence that ApplP, in addition to *v*P, constitutes a phase in some languages). I leave this issue for future research.

[20] Note that the verb *i* 'be' is an unaccusative verb. I assume, following Ko (2005a, 2007), that Spell-out applies to not only transitive but also unaccusative/passive *v*P. See Chapter 4 for more direct evidence for this assumption (see also Legate 2003 for an independent argument for the phase-hood of unaccusative/passive *v*P).

[21] The analysis advocated in the text appears to be incompatible with the movement theory of control advocated by Hornstein (1999), among many others, who argues that an obligatory control relation is created via Merge of the controller in the position of PRO followed by raising of it to the higher θ-position. That is, if the controller of PRO in (49b), namely *Taroo-ni* 'to Taroo', is Merged in the position of PRO before the Spell-out of the embedded *v*P, the linear order between *Taroo-ni* 'to Taroo' and the embedded verb *ik* 'go' is determined so as that the former precedes the latter. Then, it is predicted that the embedded verb *ik* 'go' never precedes *Taroo-ni* 'to Taroo' at the surface. This prediction is not borne out, as shown in (i), repeated from (19c), however (See also Ko 2005a:72, fn.60 for a similar remark on independent grounds).

(i) [PRO [$_{PP}$ Sooru-made] ik-u koto]-ga$_i$ Taroo-ni t_i meizi-rare-ta (koto)
Seoul-to go-PRES fact-NOM Taroo-to order-PASS-PAST fact
'(lit.) [To go [to Seoul]]$_i$ was ordered Taroo t_i'

See Takita (to appear d) for a modification of the movement theory of control, which may solve the apparent incompatibility between the theory of Cyclic Linearization and the standard version of the movement theory of control.

[22] The Swedish example in (53) discussed by Fox & Pesetsky (2003:41), are indeed based on the examples in Peter Svenonius' on-line "A Minimal Syntax of Swedish" (http://www.hum.uit.no/a/svenonius/lingua/flow/li/minig/enmini_sv.html). The example in (55) is also taken from there.

[23] Fox & Pesetsky (2003) discuss various options that allow external arguments to be excluded

from the ordering statement established at the Spell-out of the verbal domain. Related to this issue, Ko (2005a) proposes that in language like Japanese and Korean, not only *v*P but also VP is subject to Spell-out. It might be possible under her assumptions to postulate a parameter that distinguishes Japanese/Korean-type languages from the others in that Spell-out applies to *v*P in the former but not the latter (note that her system does not necessarily exclude a derivational step like (56), where the object moves within the VP). I leave for future work a comparison of the approach presented in the text with these various possibilities.

[24] If V^0 moves to v^0 prior to Spell-out, the information regarding the verb is also absent from the ordering statement established at the step in (60a). If this is the case, however, we must give up F&P's account of Holmberg's generalization reviewed in Section 2.3.1, since the ordering relation between the verb and the object is also left unspecified. Hence, I keep assuming that V^0 stays within VP when the ordering statement is established. See also Section 5.4.1 of Chapter 5 for a discussion on the interaction between Spell-out and head-movement.

[25] I assume in the absence of counterevidence that Spell-out of CP universally linearizes the whole CP, including the elements on its edge. One conceptual argument for this assumption is that it eliminates one awkward aspect of Chomsky's (2000, 2001) conception of Spell-out. Under his conception, Spell-out sends the information of the complement of a phase-head to the interfaces. Limiting ourselves to the PF-interface, when Spell-out applies to the root CP of a sentence like (i) below, only the information of the TP is sent to PF. In order to pronounce the sentence appropriately, however, the information of the elements on the CP-edge must be Spelled-out somehow.

(i) $[_{CP}$ what$_i$ did $[_{TP}$ John buy $t_i]]$

Under the assumed conception of Spell-out, however, it sends all the information to PF when the root CP is Spelled-out. Hence, no extra device/step is required. I leave for future work whether this assumption is empirically tenable or not.

On the other hand, it is also theoretically elegant if the proposed parameter can be generalized to both *v*P and CP so as that the Spell-out of CP in languages like Japanese linearizes the whole CP while the Spell-out of CP in languages like English linearizes TP. Mamoru Saito (p.c.) suggests that a detailed examination of multiple *wh*-questions can provide a key to this issue. I also leave this issue for future research.

[26] As German is a V2-language, it allows both SVO and OVS orders, just like Swedish, as in (i).

(i) a. Hans kaufte das Buch (SVO)
Hans bought the book 'Hans bought the book'

b. Das Buch kaufte Hans (OVS)
the book bought Hans 'The book, Hans bought'

Even in English, main verbs can precede the subject in certain contexts. Quotative inversion discussed by Collins (1997) and Collins & Branigan (1997) is one such case. In (iib), the verb *thought* precedes the subject *Mary* (based on Collins 1997:31).

(ii) a. "I am so happy", Mary thought
b. "I am so happy", thought Mary

Given these facts, it is not unlikely to assume that German and English select the value in (57b).

[27] Recall that in the explanation of Holmberg's Generalization in Section 2.3.1, F&P assume that object shift demands an object to stay in-situ. It is thus necessary to assume that A-movement such as passivization differs from object shift in that the former allows movement to the *v*P-edge (cf. Legate 2003) but the latter does not.

[28] Recall that it has been assumed that Spell-out applies to unaccusative/passive *v*Ps (see footnote 20).

[29] See Section 4.2.1 of Chapter 4 for a review of Huang's (1993) idea that VP-fronting involves movement of *v*P. Note at the same time that for the specific example discussed in the text it does not matter whether *v*P or VP moves in VP-fronting, because virtually identical linear strings are derived in either case.

[30] If all auxiliaries including *has* and *been* project their own VP and *v*P, and that their *v*Ps are also subject to Spell-out, the derivation in (63) proceeds as follows (see also Section 5.3.1.2 of Chapter 5 for a related discussion):

(i) a. *Movement of* John

$[_{vPbeen}$ John$_i$ $[_{VP}$ been $[_{vP}$ t'_i $[_{VP}$ criticized t_i by his boss]]]]

Ordering Table: *criticized<by<his<boss*

b. *Movement of the lowest* v*P* → *Spell-out of* vP_{been}

$[_{vPbeen}$ $\boxed{[_{vP}\ t'_i\ [_{VP}\ \text{criticized}\ t_i\ \text{by his boss}]]}_j$ John$_i$ $[_{VP}$ been $t_j]]$

Ordering Table: *criticized<by<his<boss*

been

c. *Movement of* John *and the lowest* v*P* → *Spell-out of* vP_{has}

[$_{vPhas}$ [$_{vP}$ t'_i [$_{VP}$ criticized t_i by his boss]]$_j$ John$_i$ [$_{VP}$ has [$_{vPbeen}$ t'_j t''_i [$_{VP}$ been t_j]]]]

Ordering Table: *criticized<by<his<boss*
been
has<been

d. *Construction of TP*

[$_{TP}$ John$_i$ has$_k$ never [$_{vPhas}$ [$_{vP}$ t'_i [$_{VP}$ criticized t_i by his boss]]$_j$ t'''_i [$_{VP}$ t_k [$_{vPbeen}$ t'_j t''_i [$_{VP}$ been t_j]]]]]

Ordering Table: *criticized<by<his<boss*
been
has<been

e. *Construction of CP* → *Spell-out of CP*

[$_{CP}$ [$_{vP}$ t'_i [$_{VP}$ criticized t_i by his boss]]$_j$ [$_{TP}$ John$_i$ has$_k$ never [$_{vPhas}$ t''_j t'''_i [$_{VP}$ t_k [$_{vPbeen}$ t'_j t''_i [$_{VP}$ been t_j]]]]]]

Ordering Table: *criticized<by<his<boss*
been
has<been
criticized<by<his<boss<John<has<never<been

Though it seems to be quite complicated, what happens in this derivation is that *John* and the lowest *v*P move successive-cyclically. At each point of Spell-out, the derivation establishes an ordering statement that is consistent with the ones previously established. Hence, the derivation converges without an ordering contradiction.

[31] The proposed analysis thus predicts that the following examples, discussed in Lasnik & Saito 1992 (see also Kroch & Joshi 1985), are legitimate in terms of the theory of Cyclic Linearization:

(i) *[How likely t_i to be a riot]$_j$ is there t_j? (cf. There is likely to be a riot)

(ii) *[How likely t_i to be taken of John] is advantage$_i$ t_j? (cf. Advantage is likely to be taken of John)

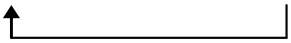
In (i), the expletive *there* undergoes A-movement, and in (ii) a part of idiom chunk does. In each case, the second instance of the movement is *wh*-movement. Thus, these examples are formally identical to the examples in (62), although there is a contrast in grammaticality. See Nomura (2001), Abels (2002), and Boeckx (2002) for recent analyses of this contrast.

[32] I omit the successive-cyclic movement within the embedded clause for simplicity.

[33] Omitting successive-cyclic movement within the embedded clause, scrambling of the object starts from the edge of CP_2 in (67a). The derivation within CP_2 proceeds as follows:

(i) a. *Construction of* vP_2 → *Spell-out of* vP_2

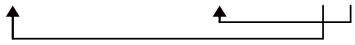
$[_{vP2}$ sono hon-o$_i$ Hanako-ga $[_{VP2}$ t_i mottei]]



Ordering Table: ***sono*<*hon-o*<*Hanako-ga*<*mottei***

b. *Construction of* CP_2 → *Spell-out of* CP_2

$[_{CP2}$ sono hon-o$_i$ $[_{TP2}$ Hanako-ga$_j$ $[_{vP2}$ t'_i t_j $[_{VP2}$ t_i mottei]] -ru] to]



Ordering Table: *sono*<*hon-o*<*Hanako-ga*<*mottei*

sono*<*hon-o*<*Hanako-ga*<*mottei*<*ru*<*to

[34] For the sake of simplicity, in the derivations (70), (71) and (72), the elements contained within the embedded complement are excluded from the ordering statements.

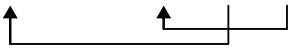
[35] The analysis presented in the text presupposes that scrambling is not a tucking-in operation in the sense of Richards 2001 (see also Takano 2008 for a similar argument). That is, if the inner Spec, *v*P is available for a scrambled phrase, the linear order where the matrix subject precedes the scrambled phrase may be established at the Spell-out of matrix *v*P. Suppose on the other hand that a scrambled phrase is marginally allowed to use the inner Spec position for its landing site. Then, we may capture the difference in acceptability between the cases of the PBC effect in (65) and the cases where a scrambled phrase follows a subject of the higher clause in (69). If the inner Spec, *v*P is marginally available, the scrambled phrase may follow the subject of the higher clause at the Spell-out of *v*P. On the other hand, tucking-in does not help to avoid an ordering contradiction in the cases of the PBC effect.

[36] We saw in footnote 5 that scrambling out of a control complement shows Ā-properties, in addition to A-properties, as exemplified by (i). Since the anaphor *otagai* 'each other' follows the matrix subject in (i), the analysis advocated in the text implies that *otagai-o* 'each other' is moved to the matrix VP-edge. However, if it stops there, it should induce a Condition C violation since the matrix VP-edge is an A-position.

(i) Hanako-ga otagai-o_i [Taroo-to Ziroo]-ni [PRO t_i hihansu-ru koto]-o
Hanako-NOM each.other-ACC Taroo-and Ziroo-to criticize-PRES fact-ACC
meizi-ta (koto)
order-PAST fact
'(lit.) Hanako, each other$_i$, ordered Taroo and Ziroo [to criticize t_i]'

Then, I suggest that (i) has a structure like (ii), where *otagai-o* 'each other' is further scrambled to the matrix *v*P-edge after the Spell-out of the matrix *v*P. Because of the movement of *Hanako-ga* to Spec, TP_1, the derivation can converge with the intended surface linear order.

(ii) [$_{TP1}$ Hanako-ga$_j$ [$_{vP1}$ otagai-o_i t_j [$_{VP1}$ t'_i [Taroo-to Ziroo-ni] [$_{CP2}$ … t_i …] …] …] …]



Since the matrix *v*P-edge can be an Ā-position by hypothesis, a Condition C violation can be circumvented, provided that Condition C is a condition on the output of the derivation, as argued by Saito (2003, 2005).

[37] I thank Elena Koulidobrova (p.c.) for collecting the Russian data. Serbo-Croatian seems to exhibit a similar pattern (Miloje Despic, p.c.).

[38] Japanese apparently allow the word orders other than SOV and OSV, but they are restricted only in matrix clauses. See Takita (to appear b) for a summary of such constructions.

[39] Elena Koulidobrova (p.c.) points out to me that (76b) might require a certain context like the following: Ivan wrote a paper about a book. Someone has suggested that Masha, who is Ivan's teacher, did not think he had read the book itself (but only heard what people say about the book), and that is why he got a bad grade. But, in fact, this is not the case: "*Masha etu knigu znala chto Ivan prochjol* (lit. Marsha, that book$_i$, knows that Ivan read t_i)", but he is just a bad writer. What is important for our purpose is that such a context does not seem to improve the relevant sentences in Japanese.

[40] Kuno (1972, 1976) provides several observations that indicate the accusative-marked subject is indeed in the matrix clause, which I do not repeat here. See Kuno (1972, 1976) and the papers mentioned in the text.

[41] One issue related to the raising-to-object analysis is that it seems to involve A-movement out of a tensed CP: This is because the ECM complements in Japanese seem to be headed by *to* 'that', which is taken as a complementizer, and the embedded predicates appear to be specified for tense. Taking these facts seriously, it has been occasionally suggested that the accusative phrase is base-generated as a matrix object, and from there it binds/controls a phonologically null element in the embedded subject position (see Saito 1982, Oka 1988, Nemoto 1993, and Takano 2003, among

many others). Under this analysis, which is sometimes called the prolepsis analysis, (82b) would be analyzed as having a structure like (i).

(i) Taroo-ga Ziroo-o_i [$_{CP}$ *pro*/PRO_i tensai-da to] omottei-ru

That is, the sentence is structurally similar to a sentence like *Taroo thinks of Ziroo that he is a genius* in English. Furthermore, the structure in (i) is also compatible with the observation that the accusative-marked phrase can be followed by a matrix adverb.

Various researchers, however, have revealed that A-movement out of a tensed CP (or, at least Case-licensing across a tensed clause-boundary) is cross-linguistically attested, and have made several proposals to accommodate it (see Massam 1985, Ura 1994, Uchibori 2000, 2001, Breuning 2001a, b, Hiraiwa 2001, 2005, Tanaka 2002, Şener 2008, and Taguchi 2009, among many others). Recall also that long-distance scrambling out of a control complement, which is taken as a CP even in English, counts as A-movement, as discussed in Section 2.4.1 (see also footnote 5). Thus, I assume that the accusative-marked subject is base-generated in the embedded subject position, unlike the prolepsis analysis. I provide more convincing evidence for this position in the text.

[42] See also McGloin (1976), Muraki (1978), Nishigauchi (1990), Watanabe (1992), Aoyagi & Ishii (1994), Kishimoto (2001), Kratzer & Shimoyama (2002), Takahashi (2002), and Hiraiwa (2005) for previous discussions on this type of the NPIs.

[43] More precisely, Nishiyama (1999) assumes that *-da* is a contracted form of *de-ar-u* (see also Nakayama 1988 and Urushibara 1993), and proposes that *de* projects PredP, which is then taken as a complement of the verb *ar* 'be'. As far as I can tell, this does not affect the argument presented in the text, however.

[44] The assumption that PredP is subject to Spell-out is not implausible, since Bowers (1993) originally proposes that in a transitive sentence $Pred^0$ introduces an external argument, taking a VP as its complement. That is, PredP plays a role of *v*P in more current term. Put differently, I suggest that Pred is a variety of *v*.

Chapter 3
A Note on the Proper Binding Condition Effect on Covert Merge

3.1. Introduction

The analysis advocated in Chapter 2, which is based on the theory of Cyclic Linearization, captures one of the empirical facts that have motivated Saito's (2003) derivational Proper Binding Condition (PBC), namely the PBC effect on scrambling, which is an instance of *overt* Merge. In this chapter, I examine another piece of evidence for the derivational PBC, focusing on a constraint on an ellipsis process called *argument ellipsis*. As is well known, Japanese is among the languages that allow phonologically null arguments. Thus, both subjects and objects can be null, as shown in (1).[1]

(1) *Null arguments in Japanese*

Taroo$_i$-ga	Hanako$_j$-ni	[kinoo	Δ_i	kooen-de	Δ_j	mikaketa to]	itta (koto)
Taroo-NOM	Hanako-DAT	yesterday		park-in		saw that	said fact

'(lit.) Taroo$_i$ said to Hanako$_j$ that [Δ_i (= he) saw Δ_j (= her) in the park yesterday]'

Since Kuroda 1965, these null arguments have been analyzed as *pro*, which is the phonologically null counterpart of pronouns.

It has been noticed that there are some cases where this *pro* analysis does not seem to work, however. The examples in (2), discussed in Otani & Whitman 1991, illustrate one such case (see also Huang 1987 for similar observations in Chinese). In (2a), the object contains the anaphor *zibun* 'self', and it sets up the context for the sentences in (2b) and (2c). (2b), where the object is missing, is ambiguous, allowing the missing object to refer to either Taroo's mother as in (2b-i), or Hanako's mother as in (2b-ii). The former reading is called the strict reading, and the latter the sloppy reading (see Sag 1976, Williams 1977). On the other hand, the example in (2c), where the overt pronoun *kanozyo-o* 'her' appears in the object position, is unambiguous: The sloppy reading is not available for this sentence.

(2) *Sloppy reading with null arguments*

a. Taroo-wa [zibun-no hahaoya]-o sonkeisiteiru
Taroo-TOP self-GEN mother-ACC respect
'Taroo respects his mother'

b. Hanako-mo Δ sonkeisiteiru
Hanako-also respect
'(lit.) Hanako also respects Δ' (i) Δ = Taroo's mother
(ii) Δ = Hanako's mother'

c. Hanako-mo kanozyo-o sonkeisiteiru
Hanako-also her-ACC respect
'Hanako also respects her' (i) her = Taroo's mother
(ii) *her = Hanako's mother

This observation suggests that it is not likely that the null element in (2b) is *pro*, given that *pro* is the phonologically null counterpart of overt pronouns. Hence, something more is involved in (2b).

To accommodate this observation, several types of analyses have been proposed in the literature. Among them is the argument ellipsis analysis, independently proposed by Oku (1998) and Kim (1999).[2] They propose that in languages like Japanese and Korean, arguments can be directly elided if appropriate antecedents are provided. Under the argument ellipsis analysis, then, (2b) with the sloppy reading is analyzed as having a structure like (3), where the object *zibun-no hahaoya-o* 'self's mother' undergoes ellipsis under identity with the object in the antecedent clause, namely (2a).[3]

(3) *Structure of (2b) under the argument ellipsis analysis*
Hanako-mo [zibun-no hahaoya]-o sonkeisiteiru

In (3) the elided object contains the anaphor *zibun* 'self'. Then, if it is bound by the subject *Hanako*, the sloppy reading results.[4]

Since argument ellipsis targets arguments by proposal, it is expected that not only nominal but also clausal arguments are also subject to it. This expectation is confirmed by the examples in (4).

(4) *Argument ellipsis of clausal arguments*

a. Taroo-wa [$_{CP}$ zibun-no teian-ga saiyoosareru to] omotteiru
Taroo-TOP self-GEN proposal-NOM is.accepted that think
'Taroo thinks [that his proposal will be accepted]'

b. Hanako-mo Δ omotteiru
Hanako-also think
'(lit.) Hanako also thinks Δ (= that her proposal will be accepted)'

c. Hanako-mo [$_{CP}$ zibun-no teian-ga saiyoosareru to] omotteiru

(4a) is the antecedent for (4b). The fact that (4b) has the sloppy reading indicates that argument ellipsis also applies to CP arguments. That is, (4b) can have a representation like (4c).

The constraint on argument ellipsis which I focus on in this chapter has to do with the following examples in (5), discussed by Shinohara (2006a, b) and Saito (2007). In (5a), the embedded object *hon-o* 'book' undergoes long-distance scrambling, and the sentence sets up the context for (5b-c). In (5b), the object *zassi-o* 'magazine' is scrambled to the sentence-initial position. If we elide the argument CP of (5b), the sentence becomes totally ungrammatical, as in (5c).

(5) *Interaction of scrambling and argument ellipsis*

a. Hon-o$_i$ Taroo-wa [$_{CP}$ Hanako-ga t_i katta to] itta
book-ACC Taroo-TOP Hanako-NOM bought that said
'(lit.) A book$_i$, Taroo said [that Hanako bought t_i]'

b. Zassi-o$_j$ Ziroo-wa [$_{CP}$ Hanako-ga t_j katta to] itta
magazine-ACC Ziroo-TOP Hanako-NOM bought that said
'(lit.) A magazine$_j$, Ziroo said [that Hanako bought t_j]'

c. *Zassi-o Ziroo-wa Δ itta
magazine-ACC Ziroo-TOP said
'(lit.) A magazine$_j$, Ziroo said Δ (= that Hanako bought t_j)'

Note that the scrambling of the object should not be problematic since (5b) is grammatical. Note further that CP arguments are subject to argument ellipsis, as we have seen in (4). Thus, the ungrammaticality of (5c) suggests that there is a certain constraint on argument ellipsis.

Following Oku's (1998) idea that argument ellipsis involves a *covert* instance of Merge, Shinohara (2006a, b) argues that the constraint follows from the derivational

PBC, as I review later. In this chapter, however, I argue that the constraint can be explained without appealing to the derivational PBC. I show that it follows from an independently required licensing mechanism of arguments. Meanwhile, I show that the essential aspect of Shinohara's (2006a, b) analysis is still maintained, even if the derivational PBC is abandoned.

In order to achieve the goals of this chapter mentioned above, I first argue in Section 3.2 that argument ellipsis is indeed required to explain the null argument phenomena in languages like Japanese. Reviewing Shinohara's (2006a, b) analysis in detail, Section 3.3 then offers an alternative explanation of the constraint on argument ellipsis. Section 3.4 summarizes this chapter.

3.2. Arguments for Argument Ellipsis

In this section, I introduce several arguments for the argument ellipsis analysis of the null argument phenomena in Japanese. In Section 3.2.1, I briefly review the previous analyses of the basic data. Then, Section 3.2.2 argues that the argument ellipsis analysis is empirically superior to the others.

3.2.1. Previous Analyses of the Basic Data

This subsection reviews some of the previous analyses by illustrating how they account for the basic data exemplified by (2), repeated as (6).

(6) *Sloppy reading with null arguments*

a. Taroo-wa [zibun-no hahaoya]-o sonkeisiteiru
   Taroo-TOP self-GEN mother-ACC respect
   'Taroo respects his mother'

b. Hanako-mo Δ sonkeisiteiru
   Hanako-also respect
   '(lit.) Hanako also respects Δ' (i) Δ = Taroo's mother
   (ii) Δ = Hanako's mother'

c. Hanako-mo kanozyo-o sonkeisiteiru
   Hanako-also her-ACC respect
   'Hanako also respects her' (i) her = Taroo's mother
   (ii) *her = Hanako's mother

What is important for our purpose is that (6b), whose object is null, allows the sloppy reading.

Let us start with Otani & Whitman's (1991) analysis, which we call the VP-ellipsis analysis. They try to relate the observation that sentences with null objects in Japanese allows the sloppy reading to the fact that English VP-ellipsis exhibits a similar pattern as shown in (7).

(7) *Sloppy reading in English VP-ellipsis*
   a. John respects his mother, and Mary does Δ, too
   b. John respects his mother, and Mary respects her, too

In (7a) VP-ellipsis applies to the VP of the second clause, while (7b) contains a full VP with an overt pronoun. Only (7a) allows the sloppy reading where the object contained within the elided VP refers to Mary's mother.

Otani & Whitman (1991), following Huang's (1987) analysis of similar examples in Chinese, claim that VP-ellipsis is indeed involved in null object cases like (6b). They argue that verbs in the languages in question evacuate VP via V-raising, so that VP-ellipsis targets a VP that contains nothing but an object. That is, a sentence with null objects like (6b) is analyzed to have a schematic structure like (8a) below.[5] On the other hand, VP-ellipsis in English targets a VP that contains both a verb and an object, since V does not move to T overtly in this language (see Emonds 1978, Pollock 1989, and Chomsky 1993, among others). Then, a sentence like (7a) has a structure like (8b).

(8) *Schematic structures of (6b) and (7a) under the VP-ellipsis analysis*
   a. *Japanese: VP-ellipsis with V-raising*
      $[_{TP}$ … Subj … $[_{VP}$ … Obj … $t_i]$ V_i+T]
   b. *English: VP-ellipsis without V-raising*
      $[_{TP}$ … Subj … T $[_{VP}$ V … Obj …]]

Since both of (8a) and (8b) involve ellipsis, the availability of the sloppy readings can be easily captured.

The argument ellipsis analysis briefly introduced in Section 3.1 is similar to the VP-ellipsis analysis in that it invokes ellipsis. However, under this analysis what is elided is not VP but an argument of the predicate. Thus, (6b) is analyzed as having a schematic structure like (9) under the argument ellipsis analysis, where the object is directly elided (cf. (3)).[6]

(9) *Schematic structure of (6b) under the argument ellipsis analysis*
[$_{TP}$ … Subj … [$_{VP}$ … Obj … V] T]

Since ellipsis is involved, the availability of the sloppy reading follows.[7]

Let us turn to the null indefinite analysis proposed by Hoji (1998). Under this analysis, Japanese is claimed to have a phonologically null indefinite noun (see also Ishii 1991 for such null indefinites in Japanese). Thus, (6b) is analyzed to have a structure like (10) (ec_{indef} stands for the null indefinite).[8]

(10) *Schematic structure of (6b) under the null indefinite analysis*
[$_{TP}$ … Subj … [$_{VP}$ … ec_{indef} … V] T]

Notice that unlike the other analyses discussed above, ellipsis is not involved in this analysis. Why then is the sloppy reading available for (6b)?

Hoji (1998) explicitly denies that sentences like (6b) have the sloppy reading. According to this analysis, the reading where Hanako respects her own mother, which we are calling the sloppy reading, appear to be available for (6b) because it is compatible with the situation described by a sentence like (11). In (11), the overt indefinite noun *hahaoya-o* 'mother' appears in the object position.

(11) *Sentence with an indefinite noun*
Hanako-mo hahaoya-o sonkeisiteiru
Hanako-also mother-ACC respect
'Hanako also respects a mother'

(11) is true in a situation where Hanako respects a mother, including her own mother. Thus, it follows that the relevant reading is available for (6b).

So far, all the previous analyses can account for the basic data in some way or another. In the next subsection, I discuss several arguments for the argument ellipsis analysis.

3.2.2. Arguments for the Argument Ellipsis Analysis

Let us start with Saito's (2007) argument against the null indefinite analysis. His argument is based on examples like (12) below. (12a) sets up the context for both (12b) and (12c). Both (12b) and (12c) contain negation, but (12b) has a null object whereas (12c) has the overt indefinite noun *booru-o* 'ball' as its object.

(12) *Sentences with null objects and indefinite nouns*

a. Sensei-wa subete-no itinensei$_i$-ni [zibun$_i$-no booru]-o keraseta
teacher-TOP all-GEN first.graders-DAT self-GEN ball-ACC made.kick
'The teacher let all the first-graders kick their own balls'

b. Demo, ninensei-ni-wa Δ kerase-nakat-ta
but second.graders-DAT-TOP make.kick-NEG-PAST
'(lit.) But, she/he didn't let the second-graders kick Δ'

c. Demo, ninensei-ni-wa booru-o kerase-nakat-ta
but second.graders-DAT-TOP ball-ACC make.kick-NEG-PAST
'But, she/he didn't let the second-graders kick balls'

If the null object in (12b) is the null counterpart of the overt indefinite noun in (12c), it should be possible for these two sentences to have the same interpretation. However, this is not the case: Suppose that there are two second-graders, John and Bill. Although (12b) is true in the situation where John kicked Bill's ball and Bill kicked John's ball, (12c) is false in this situation. This fact leads Saito (2007) to conclude that the null indefinite analysis cannot deal with these cases.

On the other hand, the VP-ellipsis analysis and the argument ellipsis analysis straightforwardly accommodate the relevant data, assigning the following structures to (12b), respectively:

(13) *Structures of (12b) under the VP-ellipsis and the argument ellipsis analysis*

a. … [$_{TP}$ ninensei-ni-wa [$_{VP}$ [zibun-no booru]-o t_i] kerase$_i$-nakat-ta]

b. … [$_{TP}$ ninensei-ni-wa [$_{VP}$ [zibun-no booru]-o kerase] -nakat-ta]

In (13a), the verb *kerase* 'make kick' undergoes V-raising, and the VP that contains the object is elided via VP-ellipsis. In (13b), on the other hand, the object itself is elided via argument ellipsis. Hence, either analysis captures the availability of the intended reading naturally. Thus, Saito's (2007) observation argues for the analyses that employ ellipsis.

Let us now turn to some pieces of empirical evidence that favors the argument ellipsis analysis over the VP-ellipsis analysis. The first one has to do with part-whole constructions in Korean, discussed by Kim (1999). The relevant example is given in (14a) (based on Kim 1999:258).[9]

(14) *Part-whole constructions in Korean*

a. Mike-nun James-lul tali-lul ketecha-ss-ta
Mike-TOP James-ACC leg-ACC kicked-PAST-IND
'Mike kicked James on the leg'

b. [$_{TP}$ Subj [$_{VP}$ whole-NP part-NP V] T]

As schematically shown in (14b), a whole-NP precedes a part-NP in this construction.

Let us then consider the examples in (15) below (based on Kim 1999:259). (15a) has the anaphor *caki* 'self' within the whole-NP, and it sets up the context for (15b).

(15) *Part-whole constructions in the ellipsis context*

a. Jerry-nun [caki-uy ai]-lul phal-ul ttayli-ess-ta
Jerry-TOP self-GEN child-ACC arm-ACC hit-PAST-IND
'Jerry hit his child on the arm'

b. Kulena Sally-nun Δ tali-lul ttayli-ess-ta
but Sally-TOP leg-ACC hit-PAST-IND
'(lit.) But Sally hit Δ (= Jerry's child/Sally's child) on the leg'

(15b) allows the reading in which the missing whole-NP refers to Sally's own child. That is, the sloppy reading is possible for sentences with missing whole-NPs.

Given the structure in (14b) for the relevant construction, (15b) would be analyzed as having a structure like (16) under the VP-ellipsis analysis.

(16) *Structure of (15b) under the VP-ellipsis analysis*

… [$_{TP}$ Sally-nun [$_{part\text{-}NP}$ tali]-lul$_i$ [$_{VP}$ [$_{whole\text{-}NP}$ caki-uy ai]-lul t_i t_j] ttayli$_j$-ess-ta]

Under the VP-ellipsis analysis, V-raising is required anyway. Thus, the verb *ttayli* 'hit' has evacuated the VP in (16). In this structure, the whole-NP, namely *caki-uy ai-lul* 'self's child', stays within the VP, whereas the part-NP, namely *tali-lul* 'leg', has moved out of the VP, crossing the whole-NP. If the VP is elided, the surface string of (15b) results.

The ungrammaticality of (17) below suggests that a part-NP cannot be moved across a whole-NP, however (based on Kim 1999:259).

(17) *Movement of a part-NP across a whole-NP*

*Kulena Sally-nun tali-lul$_i$ [caki-uy ai]-lul t_i ttayli-ess-ta
but Sally-TOP leg-ACC self-GEN child-ACC hit-PAST-IND
'But Sally hit her child on the leg'

Hence, the VP-ellipsis analysis fails to capture the availability of the sloppy reading in sentences such as (15b).

On the other hand, (15b) has the structure depicted in (18) under the argument ellipsis analysis.

(18) *Structure of (15b) under the VP-ellipsis analysis*

… [$_{TP}$ Sally-nun [$_{VP}$ [$_{whole\text{-}NP}$ caki-uy ai]-lul [$_{part\text{-}NP}$ tali]-lul ttayli] ess-ta]

Since argument ellipsis directly targets the whole-NP, which is an argument of the verb, the part-NP does not have to move across it. Therefore, the availability of the sloppy reading is readily captured.[10]

The second piece of evidence for the argument ellipsis analysis has to do with the examples given in (19), discussed by Oku (1998) and Saito (2007).

(19) *Adjunct ellipsis not possible*

a. Taroo-wa [zibun-no sippai]-de kaisya-o kubininatta
Taroo-TOP self-GEN mistake-for company-ACC was.fired
'Taroo was fired from the company because of his mistakes'

b. *Hanako-wa Δ zimusyo-o kubininatta
Hanako-TOP office-ACC was.fired
'(intended) Hanako was fired from the office because of her mistakes'

In (19a), the anaphor is contained in the adjunct. The fact that (19b) lacks the intended sloppy reading suggests that adjuncts cannot be null.

The fact that arguments can be null as in (6) but adjuncts cannot be null as in (19) suggests that it is necessary for the required ellipsis process to be sensitive to the argument/adjunct distinction. Although argument ellipsis meets this requirement by definition, VP-ellipsis is blind to such a distinction since it targets the VP without looking into it. Therefore, it would assign a structure like (20) to (19b).

(20) *Structure of (19b)*

[$_{TP}$ Hanako-wa zimusyo-o$_i$ [$_{VP}$ [zibun-no sippai]-de t_i t_j] kubininat$_j$-ta]

Since the adjunct is contained within the elided VP, it is not clear why the intended reading is not available for (19b).

In fact, Oku (1998:172-173) notes that English VP-ellipsis allows adjuncts to be included into the ellipsis site, based on the following example:

(21) *Adjuncts in English VP-ellipsis*

a. Bill washed the car carefully, but John didn't Δ

b. … [$_{TP}$ John didn't [$_{VP}$ wash the car carefully]]

According to Oku (1998:173), "the most prominent reading of [(21a)] is that John didn't wash the care carefully, implying that John did wash the car but not in a careful manner". This fact indicates that (21a) has a structure like (21b), where the adjunct is included in the elided VP.

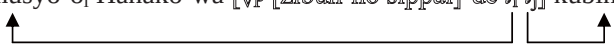
One might claim that the lack of the intended reading for (19b) has to do with the fact that the object *zimusyo-o* 'office' has been moved out of the elided VP in (20). We can show that it is not the case by comparing examples in (22) and (23) below, however. In the examples in (22a-b), which are repeated from (19a-b) with slight modifications, the objects undergo scrambling across the subjects in both conjuncts. Thus, the VP-ellipsis analysis would assign a structure like (22c) to (22b), where the adjunct is included in the ellipsis site. On the other hand, the sentences in (23a-b) contain a ditransitive verb, and the direct objects undergo scrambling to the sentence-initial positions in both conjuncts. Thus, (23b) can be analyzed as having a structure like (23c).

(22) *Adjuncts in the ellipsis context*

a. Kaisya-o$_i$ Taroo-wa [zibun-no sippai]-de t_i kubininatta
company-ACC Taroo-TOP self-GEN mistake-for was.fired
'Taroo was fired from the company because of his mistakes'

b. *Zimusyo-o$_i$ Hanako-wa Δ kubininatta
office-ACC Hanako-TOP was.fired
'(intended) Hanako was fired from the office because of her mistakes'

c. [$_{TP}$ zimusyo-o$_i$ Hanako-wa [$_{VP}$ [zibun-no sippai]-de t_i t_j] kubininat$_j$-ta]

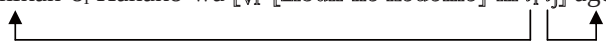


(23) *Indirect objects in the ellipsis context*

a. Ringo-o_i Taroo-wa [zibun-no kodomo]-ni t_i ageta
apple-ACC Taroo-TOP self-GEN child-DAT gave
'Taroo gave his child an apple'

b. Mikan-o_i Hanako-wa Δ ageta
orange-ACC Hanako-TOP gave
'(intended) Hanako gave her child an orange'

c. [$_{TP}$ mikan-o_i Hanako-wa [$_{VP}$ [zibun-no kodomo]-ni t_i t_j] age$_j$-ta]



Just like in the case of (19), the intended sloppy reading for the missing adjunct, which would be allowed if the structure in (22c) is possible, is not available for (22b). On the other hand, the intended sloppy reading for the missing indirect object is available for (23b). This contrast suggests that the movement of the object out of the elided VP should not matter. What plays a role here is the argument/adjunct distinction.

Recall at this point that in the case of the part-whole constructions in Korean, ellipsis *is* possible, despite the *restricted* word order. In the case of adjunct ellipsis, ellipsis is *not* possible, despite the *free* word order between an object and an adjunct (cf. (22a). Therefore, the VP-ellipsis analysis undergenerates in the former case and it overgenerates in the latter case.

To sum up, I first reviewed three types of approaches to the fact that null arguments in Japanese allow the sloppy reading. Then, I discussed some facts which indicate that the argument ellipsis analysis is empirically superior to the VP-ellipsis analysis and the null indefinite analysis.[11]

3.3. PBC Effect on Argument Ellipsis

3.3.1. PBC Effect on Argument Ellipsis with the Derivational PBC

Having established that argument ellipsis is indeed necessary to explain the null argument phenomena in Japanese, let us return to the constraint on argument ellipsis discussed by Shinohara (2006a, b) and Saito (2007). The relevant paradigm in (5) is repeated as (24) below.

(24) *Interaction between scrambling and argument ellipsis*

a. Hon-o_i Taroo-wa [$_{CP}$ Hanako-ga t_i katta to] itta
book-ACC Taroo-TOP Hanako-NOM bought that said
'(lit.) A book$_i$, Taroo said [that Hanako bought t_i]'

b. Zassi-o$_j$ Ziroo-wa [$_{CP}$ Hanako-ga t_j katta to] itta
magazine-ACC Ziroo-TOP Hanako-NOM bought that said
'(lit.) A magazine$_j$, Ziroo said [that Hanako bought t_j]'

c. *Zassi-o Ziroo-wa Δ itta
magazine-ACC Ziroo-TOP said
'(lit.) A magazine$_j$, Ziroo said Δ (= that Hanako bought t_j)'

(24a) is the antecedent, followed by (24b) and (24c). In (24b), the clausal argument remains as it is, while it is elided in (24c). Given that long-distance scrambling of *zassi-o* 'magazine' and argument ellipsis of clausal arguments are independently attested (see (4) for the latter point), the puzzle is why (24c) results in ungrammaticality.

Moreover, the same pattern is observed even if the scrambled phrases are identical. To see this, observe first that argument ellipsis of clausal arguments is possible even if the matrix verbs are different, as in (25).[12]

(25) *Argument ellipsis of clausal arguments with different matrix verbs*

a. Taroo-wa [$_{CP}$ zibun-ga sakini sono teiri-o syoomeisita to]
Taroo-TOP self-NOM first that theorem-ACC proved that
syutyoosita
claimed
'Taroo claimed that he (= Taroo) proved the theorem first'

b. Ziroo-wa Δ hanronsita
Ziroo-TOP counter-argue
'(lit.) Ziroo counter-argued Δ (= that Ziroo proved the theorem first)'

(25a), which serves as an antecedent, contains the verb *syutyoosu* 'claim' as the matrix verb, while (25b) contains the verb *hanronsu* 'counter-argue' as the matrix verb. The fact that (25b) have the sloppy reading suggests that the complement CP undergoes argument ellipsis.

Let us now consider the examples in (26) below. In all the examples in (26), the same phrase, namely *sono hon-o* 'that book' undergoes long-distance scrambling.

(26) *Interaction between scrambling and argument ellipsis*

a. Sono teiri-o$_i$ Taroo-wa [$_{CP}$ zibun-ga sakini t_i syoomeisita to] syutyoosita
that theorem-ACC Taroo-TOP self-NOM first proved that claimed
'(lit.) That theorem$_i$, Taroo claimed [that he proved t_i first]'

b. Sono teiri-o$_j$ Ziroo-wa [$_{CP}$ zibun-ga sakini t_j syoomeisita to] hanronsita
that theorem-ACC Ziroo-TOP self-NOM first proved that counter-argued
'(lit.) That theorem$_j$, Ziroo counter-argued [that he proved t_j first]'

c. *Sono teiri-o Ziroo-wa Δ hanronsita
that theorem-ACC Ziroo-TOP counter-argued
'(lit.) That theorem$_j$, Ziroo counter-argued Δ (= that Ziroo proved t_j first)'

Just like (24), (26b) is without any problem, whereas (26c) is hopeless. Note that the difference between *syutyoosu* 'claim' in (26a) and *hanronsu* 'counter-argue' in (26c) has nothing to do with the ungrammaticality of (26c), given the observation in (25).

Based on the pattern found in (24) and (26), Shinohara (2006a, b) posits the following generalization:

(27) *Generalization on the interaction of ellipsis and subextraction*
Constituents that contain only a subpart of a chain cannot be elided.

This generalization, however, does not hold for other ellipsis constructions such as sluicing and VP-ellipsis, as Shinohara (2006a, b) points out. Let us consider the examples in (28).

(28) *Sluicing and VP-ellipsis in English*

a. John met someone, but I don't know [$_{CP}$ who$_i$ [$_{TP}$ John met t_i]]

b. What VP-ellipsis can do, and [$_{CP}$ what$_i$ it can't [$_{VP}$ do t_i]] (cf. Johnson 2001)

(28a) is an example of sluicing, where the TP is elided in the second conjunct. (28b) exemplifies VP-ellipsis, where the VP in the second conjunct is elided. The grammaticality of these examples suggests that the constituents that contain only a subpart of a chain can be elided, contrary to what the generalization (27) states. Then,

Shinohara (2006) tries to answer why (27) holds for argument ellipsis but not for sluicing and VP-ellipsis.

Shinohara (2006a, b) argues that the derivational PBC gives an elegant explanation of this peculiar behavior of argument ellipsis. She further suggests that her analysis sheds new light on the debate regarding the mechanism of ellipsis, namely whether ellipsis involves LF-copying (Williams 1977, Fiengo & May 1994, and Chung, Ladusaw & McCloskey 1995, among others) or PF-deletion (Sag 1976, Merchant 2001, Fox & Lasnik 2003, among others).

First, Shinohara (2006a, b) claims that argument ellipsis involves LF-copying, while sluicing and VP-ellipsis are derived by PF-deletion. Specifically, following Oku (1998), she argues that at LF the missing argument in argument ellipsis is copied from the antecedent clause, and the copy is Merged into the missing argument position. For ease of exposition, let us take the examples in (29) as a concrete case.

(29) S*entence with a null object*

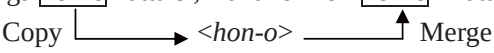
Taroo-ga hon-o katta si, Hanako-mo Δ katta
Taroo-NOM book-ACC bought and Hanako-also bought
'(lit.) Taroo bought a book, and Hanako also bought Δ (= a book)'

Under the LF-copying analysis of argument ellipsis, (29) is derived in the manner depicted in (30).

(30) *Derivation of (29) under the LF-copying analysis*

a. *Overt syntax*: Taroo-ga hon-o katta si, Hanako-mo ___ katta

b. *LF*: Taroo-ga hon-o katta si, Hanako-mo <hon-o> katta



The object position of the second conjunct is empty in overt syntax, as in (30a). Then, at LF, the missing argument, namely *hon-o* 'book', is copied from the first conjunct, and is Merged into the object position of the second conjunct, as illustrated in (30b).[13] Note that the copied element, surrounded by angled brackets, does not have any phonetic realization, since the relevant operation takes place at LF. Thus, (30b) involves a covert instance of Merge.

Given that argument ellipsis involves covert Merge, the derivational PBC provides a straightforward answer to the question of why the generalization (27) holds for argument ellipsis. Let us consider the examples in (26a) and (26c), repeated as (31a) and

(31b), respectively.

(31) *Interaction between scrambling and argument ellipsis*

a. Sono teiri-o_i Taroo-wa [$_{CP}$ zibun-ga sakini t_i syoomeisita to] syutyoosita
that theorem-ACC Taroo-TOP self-NOM first proved that claimed
'(lit.) That theorem$_i$, Taroo claimed [that he proved t_i first]'

b. *Sono teiri-o Ziroo-wa Δ hanronsita
that theorem-ACC Ziroo-TOP counter-argued
'(lit.) That theorem$_j$, Ziroo counter-argued Δ (= that Ziroo proved t_j first)'

At the surface structure, (31b) contains a gap in the object position.

Now, suppose that (31b) is interpreted by LF-copying. Then, the CP argument in the antecedent clause, namely (31a) is copied and Merged into that position at LF, as illustrated in (32) below.

(32) *LF-copying of the clausal argument*

sono teiri-o_i Taroo-wa [$_{CP}$ zibun-ga sakini t_i syoomeisita to] syutyoosita (= (31a))
↓ Copy & Merge
sono teiri-o Ziroo-wa <[$_{CP}$ zibun-ga sakini t_i syoomeisita to]> hanronsita (= (31b))

This operation violates the derivational PBC, given in (33).

(33) *Derivational PBC* (Saito 2003:507-508)

a. α is subject to Merge only if α is a complete constituent.
b. α is a *complete constituent* =$_{df}$ (i) α is a term, and (ii) if a position within α is a member of a chain γ, then every position of γ is contained within α.

That is, in (32), the CP argument contains the trace of the scrambled element *sono hon-o* 'that book', namely t_i, but excludes the head of the chain. Thus, it does not count as a complete constituent. As a result, it fails to be subject to Merge, rendering the derivation in (32) impossible.

Recall now that Shinohara (2006a, b) claims that sluicing and VP-ellipsis involve PF-deletion. Let us take the sluicing example in (34) as a concrete case.

(34) *Sluicing in English*

John met someone, but I don't know who Δ

Under the PF-deletion analysis, (34) has the derivation depicted in (35) (strikethrough indicates that they are deleted at PF).

(35) *Derivation of (34) under the PF-deletion analysis*

a. *Overt syntax*: John met someone, but I don't know [$_{CP}$ who$_i$ [$_{TP}$ John met t_i]]

b. *PF*: John met someone, but I don't know [$_{CP}$ who$_i$ ~~[$_{TP}$ John met t_i]~~]

In (35a), the *wh*-phrase *who* moves to Spec, CP in narrow syntax, and then, the TP is deleted at PF, as in (35b). What is crucial for our purpose is that the ellipsis site, the TP here, is not Merged at LF unlike the argument ellipsis cases. This is the reason why the derivational PBC does not prevent an ellipsis site of sluicing or of VP-ellipsis from containing a subpart of a chain. In this way, Shinohara (2006a, b) answers the question why the generalization (27) does not hold for sluicing and VP-ellipsis: The difference between argument ellipsis on the one hand and sluicing and VP-ellipsis on the other stems from the difference in the operations involved, namely LF-copying for the former and PF-deletion for the latter.

3.3.2. PBC Effect on Argument Ellipsis without the Derivational PBC

In this subsection, I argue that the PBC effect with argument ellipsis can be explained without the derivational PBC, by a close examination of the nature of the trace contained within the covertly Merged phrase. Moreover, I show that the analysis can maintain the essential point of Shinohara's (2006a, b) analysis.

Under the analysis reviewed in Section 3.3.1 above, the schematic derivation in (36), where XP and YP correspond to the scrambled phrases, violates the derivational PBC.

(36) *Schematic derivation of examples with the PBC effect*

a. *Overt syntax*: [$_{Clause1}$ … XP$_i$ … [$_{CP}$ … t_i …] …], [$_{Clause2}$ … YP … [$_{CP}$ ___] …]

b. *LF*: [$_{Clause\ 1}$ … XP$_i$ … [$_{CP}$ … t_i …] …], [$_{Clause2}$ … YP … <[$_{CP}$ … t_i …]> …]

Copy & Merge

Specifically, the step in (36b), where the CP argument is covertly Merged, violates the

derivational PBC. This step, however, should be legitimate if the derivational PBC is eliminated from the grammar as we have been claiming. Furthermore, linearization seems to be irrelevant because the relevant operation is covert so that it does not affect linear orderings at PF. Then, what is the source of illicitness of the derivation in (36)? I propose that the LF representation of (36b) is ruled out because there is no place for the YP to be integrated into the interpretation of the sentence.

Let us consider the nature of the trace contained in the covertly Merged CP more closely. Recall that the trace in question is that of scrambling. As reviewed in Section 2.2 of Chapter 2, scrambling exhibits the radical reconstruction property (Saito 1989). The relevant examples are given in (37) and (38) below.

(37) *Structural condition on* wh*-phrases and the Q-morpheme*

a. Taroo-ga [$_{CP}$ dare-ga sono hon-o katta ka] siritagatteiru (koto)
Taroo-NOM who-NOM that book-ACC bought Q want.to.know fact
'Taroo wants to know [who bought that book]'

b. *Dare-ga [$_{CP}$ Taroo-ga sono hon-o katta ka] siritagattei-ru (koto)
who-NOM Taroo-NOM that book-ACC bought Q want.to.know fact
'(lit.) Who wants to know [Taroo bought that book]'

First, the contrast between (37a) and (37b) indicates that a *wh*-phrase like *dare-ga* 'who' must be contained within the CP where it takes scope so that it is c-commanded by the Q-morpheme *ka*. Then, (38) is the crucial paradigm.

(38) *Long-distance scrambling of a* wh*-phrase out of an interrogative clause*

a. Taroo-ga [$_{CP}$ Hanako-ga dono hon-o katta ka] siritagattei-ru (koto)
Taroo-NOM Hanako-NOM which book-ACC bought Q want.to.know fact
'Taroo wants to know [which book Hanako bought]'

b. Dono hon-o$_i$ Taroo-ga [$_{CP}$ Hanako-ga t_i katta ka] siritagattei-ru (koto)
which book-ACC Taroo-NOM Hanako-NOM bought Q want.to.know fact
'(lit.) Which book$_i$, Taroo wants to know [Hanako bought t_i]'

The point is that (38b), in which the *wh*-phrase *dono hon-o* 'which book' undergoes scrambling out of an interrogative CP where it takes scope, is grammatical on a par with (38a). Saito (1989) argues the grammaticality of (38b) follows if the scrambled *wh*-phrase can be reconstructed into its original position at LF so that it is c-commanded by the Q-morpheme.

Under the derivational theorizing in the minimalism, Saito (2003, 2005) updates the analysis of radical reconstruction in terms of chain interpretation based on Chomsky's (1993) copy and deletion analysis of movement.[14] Under Saito's implementation of copy and deletion analysis of movement, deletion of features applies in a cyclic fashion as movement takes place. To see how the system works, let us take a sentence like (39), which involves *wh*-movement, as a concrete example.

(39) *Simple* wh-*movement in English*
Who$_i$ did John see t_i?

Assuming that a *wh*-phrase is a bundle of features, at least including phonetic features π, a *wh*-operator feature Op, and an argument feature arg, that is responsible for the argumenthood of the phrase, this sentence is analyzed as being derived in a manner depicted in (40), where the relevant copies are indicated by bold underline.[15]

(40) *Derivation of (39)*

a. *Movement of* who *via copy of features*
[$_{CP}$ **who$_i$** [$_{TP}$ John see **who$_i$**]
{π, Op, arg} {π, Op, arg}

b. *Deletion of features*
[$_{CP}$ **who$_i$** [$_{TP}$ John see **who$_i$**]
{π, Op, ~~arg~~} {~~π~~, ~~Op~~, arg}

c. *Result of (40b)*
[$_{CP}$ **who$_i$** [$_{TP}$ John see **who$_i$**]
{π, Op} {arg}

When the *wh*-phase is attracted to Spec, CP, all the features of the *wh*-phrase are copied, as in (40a), since movement is nothing but copying of features under the copy theory of movement. Then, deletion applies to the copies of features so as to retain each of them at only one position, as in (40b) (deleted features are indicated by double-strikethrough). First, Saito assumes that the π-features are retained at Spec, CP since the movement in question is an overt movement. Then, he claims that a copy of a feature is retained in the position where the feature enters a selectional relation to a head in a broad sense. In the case of the arg-feature of (40), the higher copy is deleted, retaining the lower copy at the tail position of the chain, because the arg-feature is selected by a verb. On the other

hand, deletion targets the lower copy of the Op-feature, retaining the higher one at the head position of the chain. This is because the *wh*-phrase is attracted by the interrogative C head, and this attraction relation counts as a selectional relation between the C head and the *wh*-phrase in the relevant sense. As a result, we obtain the representation in (40c), in which the Op-feature in Spec, CP acts as an operator and the arg-feature in the object position is interpreted as a variable for the *wh*-operator.

Applying this mechanism to scrambling, Saito argues that the radical reconstruction property of scrambling naturally follows. For instance, (38b), repeated as (41), is derived in a manner depicted in (42):

(41) *Long-distance scrambling of a* wh-*phrase out of an interrogative clause*
Dono hon-o$_i$ Taroo-ga [$_{CP}$ Hanako-ga t_i katta ka] siritagattei-ru (koto)
which book-ACC Taroo-NOM Hanako-NOM bought Q want.to.know fact
'(lit.) Which book$_i$, Taroo wants to know [Hanako bought t_i]'

(42) *Derivation of (41)*

a. *Scrambling of* dono hon-o *to the embedded CP-edge via copy of features*
[$_{CP}$ dono hon-o$_i$ [$_{TP}$ Hanako-ga dono hon-o$_i$ katta] ka]
{π, Op, arg} {π, Op, arg}

b. *Deletion of features*
[$_{CP}$ dono hon-o$_i$ [$_{TP}$ Hanako-ga dono hon-o$_i$ katta] ka]
{π, Op, ~~arg~~} {~~π~~, ~~Op~~, arg}

c. *Result of (42b)*
[$_{CP}$ dono hon-o$_i$ [$_{TP}$ Hanako-ga dono hon-o$_i$ katta] ka]
{π, Op} {arg}

d. *Scrambling of* dono hon-o *to the matrix clause via copy of features*
[dono hon-o$_i$ Taroo-ga [$_{CP}$ dono hon-o$_i$ [$_{TP}$ … dono hon-o$_i$ …] ka] siritagatteiru]
{π, Op} {π, Op} {arg}

e. *Deletion of features*
[dono hon-o$_i$ Taroo-ga [$_{CP}$ dono hon-o$_i$ [$_{TP}$ … dono hon-o$_i$ …] ka] siritagatteiru]
{π, ~~Op~~} {~~π~~, Op} {arg}

f. *Result of (42e)*
[dono hon-o$_i$ Taroo-ga [$_{CP}$ dono hon-o$_i$ [$_{TP}$ … dono hon-o$_i$ …] ka] siritagatteiru]
{π} {Op} {arg}

First, the *wh*-phrase *dono hon-o* 'which book' is moved to the embedded Spec, CP, as in (42a). Since the *wh*-phrase takes scope at that position, deletion of features applies to the chain as in (42b), which is parallel to the step in (40b). As a result, we obtain the representation in (42c). Then, the derivation proceeds to the step in (42d), where the *wh*-phrase in the embedded Spec, CP undergoes further scrambling to the matrix sentence-initial position. Note that the features copied onto that position are only the π-features and the Op-feature, since the arg-feature on the copy in the embedded Spec, CP has been deleted by this step. Then, deletion of features applies again, as in (42e). This time, the higher copy of the Op-feature is deleted, retaining the lower copy because it is selected at the departure site but not at the landing site. On the other hand, the π-features are retained at the head of the chain. Then, the representation in (42f) is obtained. Since the *wh*-phrase takes embedded scope through the Op-feature in the embedded Spec, CP, binding a variable in the object position, provided by the arg-feature retained in that position, the representation in (42f) is legitimate with the intended interpretation of (41). Thus, the grammaticality of (41) follows. Note that this analysis captures the radical reconstruction property of scrambling without literally "reconstructing" (namely, putting back) the scrambled phrase: Radical reconstruction stems from the fact that scrambling leaves some features of the scrambled phrase in its departure and intermediate landing sites.

What is important for our purpose is that under this analysis, a trace of scrambling is nothing but the features retained by the copy-deletion procedure, which at least includes an argument feature. Now, let us reconsider the derivation in (36), repeated as (43), under this view of scrambling chains:

(43) *Schematic derivation of examples with the PBC effect*

a. *Overt syntax*: $[_{\text{Clause1}} \ldots \text{XP}_i \ldots [_{\text{CP}} \ldots t_i \ldots] \ldots], [_{\text{Clause2}} \ldots \text{YP} \ldots [_{\text{CP}} \_\_\_] \ldots]$

b. *LF*: $[_{\text{Clause 1}} \ldots \text{XP}_i \ldots \boxed{[_{\text{CP}} \ldots t_i \ldots]} \ldots], [_{\text{Clause2}} \ldots \text{YP} \ldots \langle \boxed{[_{\text{CP}} \ldots t_i \ldots]} \rangle \ldots]$ Copy & Merge

Minimally, XP and YP consist of their own phonetic features and an argument feature, since both of them are intended to be an argument of the embedded clause. Then, the structure in (43a) is derived in the following manner:

(44) *Derivation of (43a) under the copy and deletion analysis*

a. *Underlying structure*

$[_{Clause1} \ldots [_{CP} \ldots XP_i \ldots] \ldots], [_{Clause2} \ldots YP \ldots [_{CP} \_\_\_] \ldots]$

$\{\pi_{XP}, arg_{XP}\}$ $\{\pi_{YP}, arg_{YP}\}$

b. *Scrambling of XP via copy of features*

$[_{Clause1} \ldots \underline{XP}_i \ldots [_{CP} \ldots \underline{XP}_i \ldots] \ldots], [_{Clause2} \ldots YP \ldots [_{CP} \_\_\_] \ldots]$

$\{\pi_{XP}, arg_{XP}\}$ $\{\pi_{XP}, arg_{XP}\}$ $\{\pi_{YP}, arg_{YP}\}$

c. *Deletion of features*

$[_{Clause1} \ldots \underline{XP}_i \ldots [_{CP} \ldots \underline{XP}_i \ldots] \ldots], [_{Clause2} \ldots YP \ldots [_{CP} \_\_\_] \ldots]$

$\{\pi_{XP}, \cancel{arg_{XP}}\}$ $\{\cancel{\pi_{XP}}, arg_{XP}\}$ $\{\pi_{YP}, arg_{YP}\}$

d. *Result of (44c)*

$[_{Clause1} \ldots \underline{XP}_i \ldots [_{CP} \ldots \underline{XP}_i \ldots] \ldots], [_{Clause2} \ldots YP \ldots [_{CP} \_\_\_] \ldots]$

$\{\pi_{XP}\}$ $\{arg_{XP}\}$ $\{\pi_{YP}, arg_{YP}\}$

Since the embedded clause in the second clause is empty in overt syntax, YP must be base-generated in the matrix position, as in (44a). On the other hand, XP is Merged in its argument position, as in (44a). Omitting successive-cyclic movement within the embedded clause, XP then undergoes long-distance scrambling to the matrix clause, as in (44b). As in (44c), deletion of features applies so as that the π-features of XP are retained in the moved position whereas the argument feature of XP remains in the argument position. As a result, the representation in (44d) is obtained.[16]

Then, when LF-copying applies to (44d), we obtain the representation in (45), which is an articulated version of (43b).

(45) *LF-copying of the clausal argument*

$[_{Clause1} \ldots \underline{XP}_i \ldots \boxed{[_{CP} \ldots \underline{XP}_i \ldots]} \ldots], [_{Clause2} \ldots YP \ldots \langle \boxed{[_{CP} \ldots \underline{XP} \ldots]} \rangle \ldots]$

$\{\pi_{XP}\}$ $\{arg_{XP}\}$ $\{\pi_{YP}, arg_{YP}\}$ $\{arg_{XP}\}$

Copy & Merge

Note that in (45) YP has its own argument feature, arg_{YP}, which is distinct from that of XP, namely, arg_{XP}. In order to be interpreted, arg_{YP} must be connected to the embedded verb, contained within the copied CP argument. However, the intended argument position of the verb has been already occupied by XP, or more precisely arg_{XP}, so that there is no place for YP to be interpreted.

In this sense, the relevant part of (45) is formally identical to that of the example in

(46a), illustrated in (46b) below, omitting the phonetic features.

(46) *Sentence with two objects*

a. *Zassi-o Ziroo-wa [$_{CP}$ Hanako-ga hon-o katta to] itta
magazine-ACC Ziroo-TOP Hanako-NOM book-ACC bought that said
'(lit.) A magazine, Ziroo said that Hanako bought a book'

b. [zassi-o$_i$ … [… hon-o$_j$ … katta] …]
{π, arg$_i$} {π, arg$_j$}

Intuitively, (46a) is ungrammatical because *zassi-o* 'magazine' and *hon-o* 'book' cannot be an object of the embedded verb *kaw* 'buy' at the same time. Under the analysis advocated so far, this intuition is formally expressed as a competition between the argument feature of *zassi-o* 'magazine' and that of *hon-o* 'book': Both of them must be licensed to receive an appropriate interpretation, but the verb is capable of licensing only one of them as its object.

Then, the ungrammatical cases of argument ellipsis in (24) and (31), repeated as (47) and (48), can be explained by the same mechanism that rules out (46a), whatever the relevant principle is (for instance, the θ-criterion).

(47) *Interaction between scrambling and argument ellipsis*

a. Hon-o$_i$ Taroo-wa [$_{CP}$ Hanako-ga t_i katta to] itta
book-ACC Taroo-TOP Hanako-NOM bought that said
'(lit.) A book$_i$, Taroo said [that Hanako bought t_i]'

b. *Zassi-o Ziroo-wa Δ itta
magazine-ACC Ziroo-TOP said
'(lit.) A magazine$_j$, Ziroo said Δ (= that Hanako bought t_j)'

(48) *Interaction between scrambling and argument ellipsis*

a. Sono teiri-o$_i$ Taroo-wa [$_{CP}$ zibun-ga sakini t_i syoomeisita to]
that theorem-ACC Taroo-TOP self-NOM first proved that
syutyoosita
claimed
'(lit.) That theorem$_i$, Taroo claimed [that he proved t_i first]'

b. *Sono teiri-o Ziroo-wa Δ hanronsita
that theorem-ACC Ziroo-TOP counter-argued
'(lit.) That theorem$_j$, Ziroo counter-argued Δ (= that Ziroo proved t_j first)'

In particular, (47b) corresponds to (46a) above, and (48b) corresponds to (49a), given in below.

(49) *Sentence with two objects*

a. *Sono teiri-o Ziroo-wa [$_{CP}$ zibun-ga sono teiri-o syoomeisita
that theorem-ACC Ziroo-TOP self-NOM that theorem-ACC proved
to] hanronsita
that counter-argued
'(lit.) That theorem, Ziroo counter-argued that he proved that theorem first'

b. [sono teiri-o_i … [… sono teiri-o_j … katta] …]
{π, arg_i} {π, arg_j}

Since the two instances of *sono teirio* 'that theorem' in (49a) do not form a single chain but do form two independent (trivial) chains, their respective argument features are distinct from each other, on a par with the case of (46). Hence, they compete with each other, so that the sentence is ruled out by the same mechanism that excludes (46a).[17]

Crucially, the derivational PBC is unnecessary to account for the ungrammaticality of (46a) and (49a). Therefore, we can explain why the generalization in (27) holds for argument ellipsis without appealing to the derivational PBC.

Meanwhile, this refinement is consistent with Shinohara's (2006a, b) conclusion that argument ellipsis involves LF-copying, that is, covert Merge, while sluicing and VP-ellipsis are derived by PF-deletion. Her conclusion is based on the fact that the generalization in (27) does not hold for sluicing and VP-ellipsis. That is, sluicing and VP-ellipsis, unlike argument ellipsis, freely allow a constituent which contains a "free" trace to be elided, as the sluicing example in (50) shows (cf. (34)).

(50) *Sluicing in English*

John met someone, but I don't know [$_{CP}$ who$_i$ ~~[$_{IP}$ John met t_i]~~]

If sluicing and VP-ellipsis involve PF-deletion, unlike argument ellipsis, this fact naturally follows. A *wh*-phrase and its trace within an ellipsis site can be connected via movement in narrow syntax, prior to deletion at PF. That is, the relevant part of (50) is derived in the manner depicted in (51).

(51) *Derivation of (50) under the PF-deletion analysis*

a. Wh-*movement of* who *via copy of features*
John met someone, but I don't know [$_{CP}$ who$_i$ [$_{TP}$ John met who$_i$]]
{π, Op, arg} {π, Op, arg}

b. *Deletion of features*
John met someone, but I don't know [$_{CP}$ who$_i$ [$_{TP}$ John met who$_i$]]
{π, Op, ~~arg~~} {~~π~~, ~~Op~~, arg}

c. *Result of (51b)*
John met someone, but I don't know [$_{CP}$ who$_i$ [$_{TP}$ John met who$_i$]]
{π, Op} {arg}

d. *Deletion at PF*
John met someone, but I don't know [$_{CP}$ who$_i$ ~~[$_{TP}$ John met who$_i$]~~]
{π, Op} {arg}

The steps from (51a) through (51c) take place in narrow syntax. The *wh*-phrase *who* undergoes movement via copy and deletion of features. As a result, the representation in (51c) results. Then, PF-deletion of TP yields the required surface string without affecting the semantic aspects of the representation in (51c). Thus, the grammaticality of (50) follows.

On the other hand, suppose that the *wh*-phrase in (50) is base-generated in Spec, CP, and the content of the empty TP, is supplied by LF-copying, as shown in (52).

(52) *Derivation of (50) under the LF-copying analysis*

a. *Overt syntax*: [$_{TP}$ John met someone], but I don't know [$_{CP}$ who [$_{TP}$ ___]]
{π, arg} {π, Op, arg}

b. *LF*: [$_{TP}$ John met someone], but I don't know [$_{CP}$ who <[$_{TP}$ John met someone]>]
{π, arg} {π, Op, arg} {π, arg}
Copy & Merge

Since *someone* is an argument of the verb *meet* in the first clause, it must have its own argument feature. Then, the copied TP, that replaces empty TP of the second clause, must also contain the argument feature of *someone*. Hence, the argument feature of the *wh*-phrase fails to be interpreted, on a par with the argument ellipsis cases. That is, the argument feature of *who* and that of *someone* contained in the copied TP compete with each other. Thus, (50) is incorrectly predicted to be ungrammatical.[18]

Therefore, only when we assume that argument ellipsis involves LF-copying, namely covert Merge, while sluicing and VP-ellipsis involve PF-deletion, it follows that only the former disallows a constituent which contains a subpart of a chain to be elided. In this way, we can maintain Shinohara's (2006a, b) conclusion without the derivational PBC.

3.4. Conclusion

In this chapter, I examined the constraint on covert instance of Merge, which has been taken as empirical evidence for the derivational Proper Binding Condition. Specifically, it was shown that the constraint can be explained without appealing to the derivational PBC. Therefore, the analysis advocated so far enable us to eliminate the derivational PBC from the grammar, capturing a wider range of empirical facts.

First, I discussed several facts that favor the analysis in terms of argument ellipsis, which directly elides an argument of a predicate under identity with its appropriate antecedent. Then, I examined the constraint on argument ellipsis. The core observation is the following: If subextraction such as long-distance scrambling takes place from a constituent, the constituent in question cannot be elided, even though it is otherwise elidable. This leads Shinohara (2006a, b) to posit the following generalization.

(53) *Generalization on the interaction of ellipsis and subextraction*
Constituents that contain only a subpart of a chain cannot be elided.

Even more interestingly, (53) holds for argument ellipsis while it does not for other ellipsis constructions such as sluicing and VP-ellipsis. After reviewing Shinohara (2006a, b) analysis of this difference based on the derivational PBC, I argued that the empirical facts can be explained by an independently necessary licensing mechanism of arguments, so that the derivational PBC is not necessary. Meanwhile, I illustrated that the proposed analysis can maintain the essential point of her analysis, which attributes the difference between argument ellipsis on the one hand and sluicing and VP-ellipsis on the other to whether the ellipsis operation in question is LF-copying or PF-deletion. Specifically, it was shown that the difference follows from the assumption that argument ellipsis is an instance of LF-copying whereas sluicing and VP-ellipsis involve PF-deletion.

Notes to Chapter 3

[1] Throughout this chapter, I use the symbol Δ to indicate a phonologically null element theory-neutrally.

[2] Although Oku (1998) and Kim (1999) originally called the operation in question *NP-ellipsis*, I adopt the term *argument ellipsis*, following Saito 2004, 2007 and Takahashi 2007, 2008a, b. One of the reasons for this choice is that not only NPs/DPs but also CPs and PPs can be elided as long as they are arguments of a verb, as we see later in the text.

[3] Materials given in outline are intended to indicate that they are elided, without committing to whether the ellipsis process in question is an instance of PF-deletion (Sag 1976, Merchant 2001, Fox & Lasnik 2003, among others) or of LF-copying (Williams 1977, Fiengo & May 1994, and Chung, Ladusaw & McCloskey 1995, among others).

[4] When the strict reading obtains, I assume in line with Saito 2004 that *pro* appears in the relevant position. In what follows, I omit the strict reading, which seems to be always available, when it is not at issue.

[5] Although Otani & Whitman (1991) assumes that VP-ellipsis is an instance of LF-copying, I abstract away from this aspect of their analysis.

[6] Unlike the VP-ellipsis analysis, the argument ellipsis analysis does not directly bear on the issue of whether V raises to T. Throughout this chapter, I use the structure where a verb remains in-situ if V-to-T raising is not an issue in order to avoid unnecessary complications.

[7] Although space limitations prohibit me from going into detail, Tomioka (2003) and Moriyama & Whitman (2004) suggest that the null arguments in question result from NP-ellipsis (traditionally called N'-ellipsis; see Jackendoff 1971, Lobeck 1990, 1995 and Saito & Murasugi 1990, among many others). As Takahashi (2008b) points out, it is not clear how their approaches accommodate the fact that arguments other than DP/NP (such as CP) can be elided.

[8] As far as the materials discussed in this chapter are concerned, V-to-T raising is not an issue for the null indefinite analysis. Hence, I use the structure where V remains in-situ.

[9] See, for instance, Yoon 1989 and Maling & Kim 1992 for detailed discussions of the part-whole constructions in Korean.

[10] It is not completely impossible to replicate Kim's (1999) point using Japanese examples, though the result is obscured by the double-*o* constraint (Harada 1973), which, roughly speaking, blocks a single predicate from having more than one instance of accusative-marked NPs. However, his point can be replicated by using dative-marked NPs. As shown in (ia), some verbs like *kisusu* 'kiss' can appear in the part-whole construction which involve two dative-marked NPs. Moreover, the part-NP (*odeko-ni* 'on the forehead' in this case) cannot move across the whole-NP, as in (ib).

(i) a. Taroo-ga [$_{\text{whole-NP}}$ Hanako]-ni [$_{\text{part-NP}}$ odeko]-ni kisusita (koto)
Taroo-NOM Hanako-DAT forehead-DAT kissed fact
'Taroo kissed Hanako on the forehead'

b.* Taroo-ga [$_{\text{part-NP}}$ odeko]-ni$_{\text{i}}$ [$_{\text{whole-NP}}$ Hanako]-ni t_{i} kisusita (koto)
Taroo-NOM forehead-DAT Hanako-DAT kissed fact
'(lit.) Taroo kissed, on the forehead$_{\text{i}}$, Hanako t_{i}'

Then, let us consider the sentences in (ii). (iia) contains the anaphor *zibun* 'self' within the whole-NP, and it serves as an antecedent for (iib).

(ii) a. Taroo-wa [zibun-no kodomo]-ni hoho-ni kisusita
Taroo-TOP self-GEN child-DAT cheek-DAT kissed
'Taroo kissed his child on the cheek'

b. Hanako-mo Δ odeko-ni kisusita
Hanako-also forehead-DAT kissed
'(intended) Hanako also kissed her child on the forehead'

Importantly, (iib) allows the sloppy reading for the missing whole-NP, on a par with the Korean examples in (15) in the text. I thank William Snyder (p.c.) for raising this issue, and Hideaki Yamashita (p.c.) for pointing out the usefulness of the relevant examples.

[11] In Takita (to appear a), I provided further evidence for the argument ellipsis analysis, based on a novel set of data concerning so-called *-sika* NPIs (see, for instance, Muraki 1978, Takahashi 1990, Aoyagi & Ishii 1994, Kato 1994, Tanaka 1997, and Saito 2005 for detailed discussion of the properties of *-sika* NPIs).

[12] Otani & Whitman (1991:351) makes a similar observation, providing examples like (i).

(i) a. Jane-ga zibun-no kodomo-o taiensaseta node
Jane-NOM self-GEN child-ACC withdrew.from.kindergarten since
'Since Jane withdrew her child from kindergarten,'

b. Mary-wa Δ nyuuensaseta
Mary-TOP enrolled.in.kindergarten
'(lit.) Mary enrolled Δ (= Mary's child) in kindergarten'

Despite the verbs in (ia) and (ib) differ from each other, the sentence in (ib), which involves the null object, allows the sloppy reading. See also Xu (1986) for a similar observation in Chinese.

[13] Elaborating Shinohara's (2006a, b) analysis, Saito (2007) points out that if covert Merge takes place during the overt structure building, as proposed by Boballjik (1995) and Nissenbaum (2000), for instance, the derivation in question does not necessarily invoke counter-cyclicity. To be more specific, he suggests that a derivation can use LF objects that are constructed in the preceding discourse, in addition to the elements taken from the Lexicon. Given that legitimate LF objects cannot have phonological features, Merge of those LF objects always results in a covert instance of it. Note that under this conception of LF-copying, it is not necessary to assume that Copy is an independent operation: Just like a lexical item is selected from the Lexicon, a legitimate LF object is selected from the preceding discourse. For ease of exposition, however, I continue to use the notions of LF (as a component where covert Merge takes place) and of copying.

[14] Chomsky's (1993) copy and deletion analysis, on which Saito (2003, 2005) builds his analysis, does not seem to be compatible with Chomsky's (2007, 2008) No-Tampering Condition, which demands that Merge of X and Y leave the two syntactic objects unchanged. Saito's (2003, 2005) analysis is chosen just for the ease of exposition, and nothing hinges upon this choice as long as it is ensured that a copy is left behind under movement. I thank Hisatsugu Kitahara (p.c.) and Mamoru Saito (p.c.) for this issue.

[15] For ease of exposition, I omit successive-cyclic movement if it is not at issue. As far as I can tell, this does not affect the argument. Features of irrelevant phrases are also omitted hereafter.

[16] Without omitting successive-cyclic movement to the embedded CP, the derivation of Clause 1 in (43a) proceeds as follows:

(i) a. *Underlying structure*

$[_{Clause1} \ldots [_{CP} \ldots [_{VP} \ldots XP_i \ldots] \ldots] \ldots]$

$\{\pi_{XP}, arg_{XP}\}$

b. *Scrambling of XP to the embedded CP-edge via copy and deletion of features*

$[_{Clause1} \ldots [_{CP} \underline{XP_i} \ldots [_{VP} \ldots \underline{XP_i} \ldots] \ldots] \ldots]$

$\{\pi_{XP}, \cancel{arg_{XP}}\}$ $\{\cancel{\pi_{XP}}, arg_{XP}\}$

c. *Result of (ib)*

$[_{Clause1} \ldots [_{CP} \underline{XP_i} \ldots [_{VP} \ldots \underline{XP_i} \ldots] \ldots] \ldots]$

$\{\pi_{XP}\}$ $\{arg_{XP}\}$

d. *Scrambling of XP to the matrix clause via copy and deletion of features*

$[_{Clause1} \underline{XP_i} \ldots [_{CP} \underline{XP_i} \ldots [_{VP} \ldots \underline{XP_i} \ldots] \ldots] \ldots]$

$\{\pi_{XP}\}$ $\{\cancel{\pi_{XP}}\}$ $\{arg_{XP}\}$

e. *Result of (id)*

$[_{Clause1}\ \underline{XP}_i \ldots [_{CP}\ \underline{XP}_i \ldots [_{VP} \ldots \underline{XP}_i \ldots] \ldots] \ldots]$

$\{\pi_{XP}\}$ $\{\ \ \}$ $\{arg_{XP}\}$

At the step in (ib), XP undergoes scrambling to the embedded CP-edge, and deletion of features applies so as that the π-features of XP are retained in the moved position whereas the argument feature of XP remains its argument position. As a result, the representation in (ic) is obtained. Subsequently, XP undergoes further scrambling to the matrix clause, as in (id). This time, only the π-features are copied onto the landing site, and those of the intermediate copy in the embedded CP-edge are deleted. Since the all the features of the intermediate copy are deleted in the course of the derivation, it receives no interpretation either at LF or at PF, which is a desired result. Consequently, the representation in (ie) is obtained, which is essentially identical to the output of the derivation in (44).

[17] Hisatsugu Kitahara (p.c.) points out to me that if we assume the principle proposed by Chomsky (2000:103), which states that "[external] Merge in θ-position is required of (and restricted to) arguments" (see also Section 4.4.2 of Chapter 4 on this principle), the ungrammaticality of the relevant examples follows, since this principle rules out the structure where the "scrambled" argument in the second conjunct (more generally, YP in (45)) is Merged in non-θ-position to begin with. I fully agree with his point, but note at the same time that the logic of the analysis presented in the text is not affected by this particular interpretation of the θ-criterion.

[18] The grammaticality of (50) can be accounted for even under the LF-copying analysis if we assume that the *wh*-phrase base-generated in the Spec, CP of the second clause consists of only phonetic features and a *wh*-operator feature, lacking an argument feature. This amounts to admitting the existence of two types of *who* in the lexicon; *who* with {π, Op, arg} and *who* with {π, Op}. This assumption, then, requires postulating such a counterpart for all the *wh*-phrases. Hence, the LF-copying analysis seems to be less elegant than the PF-deletion analysis, which does not require such an assumption.

One possible argument for the existence of *who* {π, Op} is that English allows resumptive pronouns in some special contexts like islands. However, they cannot appear in the usual situation, as in (i).

(i) *Who did you see him?

The ungrammaticality of (i) is hard to capture under the theory that admits two types of *wh*-phrases. This is because in such a theory the representation like (ii) should be possible for (i).

(ii) [$_{CP}$ who [$_{TP}$ … him …]]
{π, Op} {π, arg}

This representation should be legitimate as long as the *wh*-chain concerns, because it is formally identical to (51), omitting the phonetic features. On the other hand, the analysis presented in the text easily deals with the ungrammaticality of (i), because it assigns a representation like (iii) for (i).

(iii) [$_{CP}$ who [$_{TP}$ … him …]]
{π, Op, arg} {π, arg}

In (iii) the arg-feature of *who* and that of *him* compete with each other for the argument position of the verb. Thus, it is excluded by the argument licensing mechanism, as in the case of (49). Therefore, the LF-copying analysis with two types of *wh*-phrases is problematic in both conceptual and empirical respects.

Chapter 4
Cyclic Linearization and VP-scrambling in Japanese

4.1. Introduction

This chapter examines the so-called VP-scrambling in Japanese in light of the theory of Cyclic Linearization developed in Chapter 2. One concrete example of VP-scrambling in Japanese is given in (1).[1]

(1) *VP-scrambling in Japanese*

a. Taroo-ga [ringo-o tabe]-sae si-ta (koto)
Taroo-NOM apple-ACC eat-even do-PAST fact
'Taroo [even ate an apple]'

b. [Ringo-o tabe]-sae$_i$ Taroo-ga t_i si-ta (koto)
apple-ACC eat-even Taroo-NOM do-PAST fact
'(lit.) [Even eat an apple]$_i$, Taroo did t_i'

(1a) is the baseline example. In (1b), a constituent consisting of the object and the verb, which is suffixed by the particle *-sae* 'even', appears in the sentence-initial position.[2] Since *-sae* 'even' separates the main verb and a tense morpheme (in the case of (1a-b), *tabe* 'eat' and *-ta*, respectively), the verb *su* 'do' is required to appear right before the tense morpheme, irrespective of whether the VP undergoes scrambling.[3] In (1b), the subject linearly follows the verb. Recall here that under the analysis of the Proper Binding Condition (PBC) effect in terms of the theory of Cyclic Linearization advocated in Chapter 2, a derivation induces a PF-crash in Japanese if it gives rise to the surface linear order in which a predicate precedes its argument. Thus, VP-scrambling in Japanese seems to be a direct counterexample to the proposed analysis.

As is reviewed in the following section, several studies have attributed the source of some restrictions on Japanese VP-scrambling to the PBC in some or other way (see, among many others, Hoji, Miyagawa & Tada 1989, Hasegawa 1990, Hoshi 1994, Saito & Hoshi 2000, Hiraiwa 2003, and Saito 2006). In particular, Saito (2006) argues that VP-scrambling provides evidence for the derivational PBC, which I tried to eliminate from the grammar in the preceding chapters. Despite this background, I argue in this chapter that the theory of Cyclic Linearization plays a crucial role to explain the restrictions on Japanese VP-scrambling.

By introducing the basic properties of Japanese VP-scrambling, I first illustrate that the verb *su* 'do' appearing in Japanese VP-scrambling is a control verb (see Hasegawa 1990, Ohkado 1991, Hoshi 1994, Saito & Hoshi 2000, and Saito 2006, among others). Then, I propose an explanation of the properties of VP-scrambling in terms of the theory of Cyclic Linearization. In a nutshell, it is shown that in all the illicit cases of Japanese VP-scrambling, the constituent that appears after the scrambled VP at the surface structure is necessarily Merged within the projection of the main verb. Then, the relative linear order between the constituent in question and the main verb is fixed so as that the former precedes the latter. As a result, the derivation of the illicit cases of VP-scrambling always end up with establishing contradicting ordering statements, inducing a PF-crash. Therefore, the restrictions on Japanese VP-scrambling can be explained without the PBC, further supporting the approach pursued in the previous chapters.

This chapter is organized as follows: In Section 4.2, I introduce background on Japanese VP-scrambling, reviewing some previous analyses. In particular, it is shown that the raising-control distinction is a crucial factor. Section 4.3 gives an analysis of the observation in terms of the theory of Cyclic Linearization. In Section 4.4, I discuss some implications of the proposed analysis and remaining issues raised by it. Section 4.5 summarizes this chapter.

4.2. Background on VP-scrambling

4.2.1. Basic Properties of VP-scrambling and Previous Approaches

In this subsection, I introduce background of Japanese VP-scrambling, reviewing some virtues and problems of the previous analyses. Let us start with Hoji, Miyagawa, & Tada's (1989) observations. The paradigm in (2) suggests that VP-scrambling can strand a subject but not an object of a transitive verb ((2a-b) are repeated from (1)).

(2) *VP-scrambling with a transitive verb*

a. Taroo-ga [ringo-o tabe]-sae si-ta (koto)
Taroo-NOM apple-ACC eat-even do-PAST fact
'Taroo [even ate an apple]'

b. [Ringo-o tabe]-sae$_i$ Taroo-ga t_i si-ta (koto)
apple-ACC eat-even Taroo-NOM do-PAST fact
'(lit.) [Even eat an apple]$_i$, Taroo did t_i'

c. *[Tabe]-sae$_i$ Taroo-ga ringo-o t_i si-ta (koto)
eat-even Taroo-NOM apple-ACC do-PAST fact
'(lit.) [Even eat]$_i$, Taroo did t_i an apple'

d. *[Tabe]-sae$_i$ ringo-o Taroo-ga t_i si-ta (koto)
eat-even apple-ACC Taroo-NOM do-PAST fact
'(lit.) [Even eat]$_i$, Taroo did t_i an apple'

e. *[Taroo-ga tabe]-sae$_i$ ringo-o t_i si-ta (koto)
Taroo-NOM eat-even apple-ACC do-PAST fact
'(lit.) [Taroo even eat]$_i$, did t_i an apple'

As in (5c-e), it is not possible for an object to be stranded in any linear order.

Subjects of ditransitive and unergative verbs can be stranded, as shown in (3) and (4). The examples in (3) involve a ditransitive verb, and those in (4) do an unergative verb.

(3) *VP-scrambling with a ditransitive verb*

a. Taroo-ga [Hanako-ni hon-o age]-sae si-ta (koto)
Taroo-NOM Hanako-DAT book-ACC give-even do-PAST fact
'Taroo [even gave a book to Hanako]'

b. [Hanako-ni hon-o age]-sae$_i$ Taroo-ga t_i si-ta (koto)
Hanako-DAT book-ACC give-even Taroo-NOM do-PAST fact
'(lit.) [Even gave a book to Hanako]$_i$, Taroo did t_i'

(4) *VP-scrambling with an unergative verb*

a. Taroo-ga [warai]-sae si-ta (koto)
Taroo-NOM laugh-even do-PAST fact
'Taroo [even laughed]'

b. [Warai]-sae$_i$ Taroo-ga t_i si-ta (koto)
laugh-even Taroo-NOM do-PAST fact
'[Even laugh]$_i$, Taroo did t_i'

Hoji, Miyagawa, & Tada (1989) point out that unaccusative and passive verbs exhibit a different pattern, as shown in (5) and (6). The examples in (5) contain an unaccusative verb, and those in (6) do a passive verb.[4]

(5) *VP-scrambling with an unaccusative verb*

a. Fune-ga [sizumi]-sae si-ta (koto)
ship-NOM sink-even do-PAST fact
'(lit.) A ship [even sank]'

b. *[Sizumi]-sae$_i$ fune-ga t_i si-ta (koto)
sink-even ship-NOM do-PAST fact
'(lit.) [Even sink]$_i$, a ship did t_i'

(6) *VP-scrambling with a passive verb*

a. Ringo-ga [Taroo-niyotte tabe-rare]-sae si-ta (koto)
apple-NOM Taroo-by eat-PASS-even do-PAST fact
'An apple was [even eaten by Taroo]'

b. *[Taroo-niyotte tabe-rare]-sae$_i$ ringo-ga t_i si-ta (koto)
Taroo-by eat-PASS-even apple-NOM do-PAST fact
'(lit.) [Even eaten by Taroo]$_i$, an apple was t_i'

The ungrammaticality of (5b) and (6b) suggests that it is not possible for subjects of unaccusative and passive verbs to be stranded.

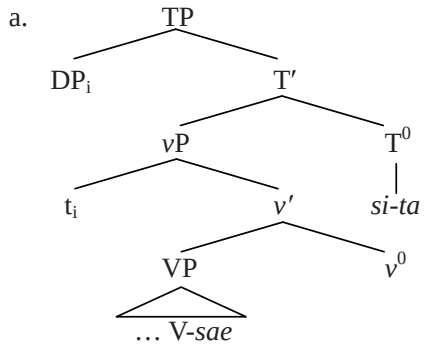
Based on these kinds of observations, it has been suggested that the following generalization holds (cf. Hoji, Miyagawa, &Tada 1989).

(7) *Generalization on VP-scrambling*
Japanese VP-scrambling allows an external argument but not an internal argument to be stranded.

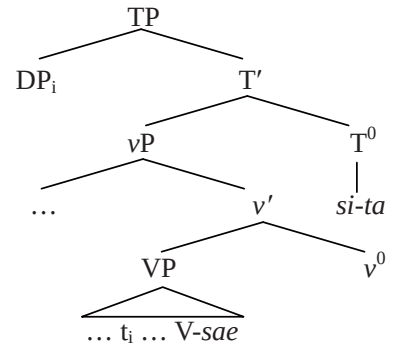
That is, a subject of (di)transitive and unergative verbs is an external argument, so that it is strandable under VP-scrambling (cf. (2b), (3b) and (4b)); on the other hand, a subject of unaccusative and passive verbs and an object of transitive verbs are internal arguments, so that they cannot be stranded (cf. (2c-e), (5b) and (6b)). Hoji, Miyagawa, &Tada (1989) offer one account for the generalization in (7), proposing that what moves in Japanese VP-scrambling is a projection excluding the base-generated position of an external argument (see also Yatsushiro 1997, 1999). Rephrasing their insight in more current terms, it is the VP in (8) below, but not *v*P, that undergoes movement in VP-scrambling. Before VP-scrambling applies, sentences in which an external argument is intended to be stranded have a structure like (8a), while those in which an internal argument is intended to be stranded have a structure like (8b) (the landing site of the DP in (8b) may differ, depending on whether A-movement or scrambling is involved).

(8) *Structures before VP-scrambling applies*

a.



b.



Note that the VP in (8b) but not the one in (8a) contains a trace. Thus, movement of the VP creates an unbound trace only in (8b), inducing a violation of the classical PBC (Fiengo 1977, Saito 1989).

There is, however, a hitherto unnoticed fact that suggests what is moved in Japanese VP-scrambling is not a VP but a *v*P. To see this, let us first consider the examples in (9), cited from Huang (1993:108). (9a) involves topicalization of the object *those pictures of himself*, whereas (9b) involves VP-fronting of *criticize himself*.

(9) *Reconstruction asymmetry between topicalization and VP-fronting in English*
   a. Those pictures of himself$_{i/j}$, John$_i$ thinks Bill$_j$ will buy *t*
   b. Criticize himself$_{*i/j}$, John$_i$ thinks Bill$_j$ will not *t*

The crucial point here is that the reflexive *himself* contained within the moved phrase can be bound by the matrix subject *John* in (9a) but not in (9b).

Rephrasing Huang's (1993) insight in more current terms, the asymmetry between topicalization and VP-fronting can be explained if English VP-fronting moves a *v*P, which includes a trace of the embedded subject. When reconstruction takes place to the embedded Spec, CP, (9a) and (9b) have the structures in (10a) and (10b), respectively.

(10) *VP-fronting in English as* v*P-movement*
   a. John$_i$ thinks [$_{CP}$ [$_{DP}$ those pictures of himself$_{i/j}$]$_k$ [$_{TP}$ Bill$_j$ will [$_{vP}$ t_j [$_{VP}$ buy t_k]]]]
   b. John$_i$ thinks [$_{CP}$ [$_{vP}$ t_j [$_{VP}$ criticize himself$_{*i/j}$]]]$_k$ [$_{TP}$ Bill$_j$ will not t_k]]

In (10a), the DP in the embedded Spec, CP does not contain a trace of *Bill*. On the other hand, the *v*P in the embedded Spec, CP contains a trace of *Bill*, namely t_j, in (10b). Therefore, the Specified Subject Condition (SSC, Chomsky 1973) effect is observed only in the latter configuration, blocking the binding relation between *John* and *himself*.

Bearing this in mind, let us consider the examples in (11) from Japanese. The ungrammaticality of (11a), which sets the standard for (11b-c), indicates that the reflexive *karezisin* requires a local masculine antecedent (see Nakamura 1987, 1989, Katada 1988, 1991, Aikawa 1993). In (11b), the reflexive is contained within the embedded object *karezisin-no syasin-o* 'pictures of himself', which undergoes long-distance scrambling, and it can be bound by the matrix subject *Taroo*. On the other hand, in (11c), which involves VP-scrambling, the reflexive fails to be bound by *Taroo*, on a par with (11a).

(11) *Reconstruction asymmetry between scrambling and VP-scrambling in Japanese*

a. *Taroo-ga [$_{CP}$ Hanako-ga [[karezisin-no syasin]-o home]-sae
Taroo-NOM Hanako-NOM himself-GEN picture-ACC praise-even
si-ta to] it-ta (koto)
do-PAST that say-PAST fact
'(lit.) Taroo said that [Hanako [even praised [pictures of himself]]]'

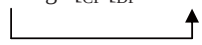
b. [Karezisin-no syasin]-o$_i$ Taroo-ga [$_{CP}$ Hanako-ga [t_i home]-sae
himself-GEN picture-ACC Taroo-NOM Hanako-NOM praise-even
si-ta to] it-ta (koto)
do-PAST that say-PAST fact
'(lit.) [Pictures of himself]$_i$, Taroo said that [Hanako [even praised t_i]]'

c. *[[Karezisin-no syasin]-o home]-sae$_i$ Taroo-ga [$_{CP}$ Hanako-ga t_i
himself-GEN picture-ACC praise-even Taroo-NOM Hanako-NOM
si-ta to] it-ta (koto)
do-PAST that say-PAST fact
'(lit.) [Even praised [pictures of himself]]$_i$, Taroo said that [Hanako did t_i]'

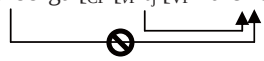
This asymmetry between long-distance scrambling and VP-scrambling follows if Japanese VP-scrambling moves a *v*P, on a par with English VP-fronting. When reconstruction takes place into the embedded Spec, CP, (11b) and (11c) have the structures in (12a) and (12b), respectively.

(12) *Structures of (11b-c)*

a. Taroo-ga [$_{CP}$ [$_{DP}$ karezisin-no syasin]-o$_i$ [$_{TP}$ Hanako-ga$_j$ [$_{vP}$ t_j [$_{VP}$ t_i home]]-sae sita] to] itta



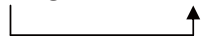
b. Taroo-ga [$_{CP}$ [$_{vP}$ t_j [$_{VP}$ karezisin-no syasin-o home]]-sae$_i$ [$_{TP}$ Hanako-ga$_j$ t_i sita] to] itta



The SSC effect arises only in (12b). Note that if what moves in VP-scrambling is indeed a VP, (11c) would have a structure like (13).

(13) *Structure of (11c) with movement of VP*

Taroo-ga [$_{CP}$ [$_{VP}$ karezisin-no syasin-o home]-sae$_i$ [$_{TP}$ Hanako-ga$_j$ [$_{vP}$ t_j t_i] sita] to] itta



Since the scrambled VP in (13) contains no trace of *Hanako*, the SSC effect should be absent, on a par with (12a). Thus, the contrast between (11b) and (11c) provides evidence for the idea that VP-scrambling moves a *v*P.

Returning now to the structures in (8), it should be clear that movement of *v*P necessary creates unbounded traces in both (8a) and (8b). Recall that the trace contained in the VP of (8a) is unambiguously created by A-movement while the one contained in the VP of (8b) can result from either A-movement or scrambling, depending on the types of the stranded constituent. Thus, it might be possible to accommodate somehow the cases where a trace of scrambling is involved. It becomes difficult, however, to capture the difference between (di)transitive and unergative verbs on the one hand and unaccusative and passive verbs on the other with respect to the possibility of subject stranding, since a trace of A-movement is contained within *v*P in both cases.

One of the solutions to this discrepancy pursued in the literature is that Japanese VP-scrambling involves control. In particular, Hasegawa (1990) and Ohkado (1991) independently suggest that the verb *su* 'do' in Japanese VP-scrambling is a control verb which selects its own agentive subject. Examples like (14) indicate that *su* 'do' can be used as an independent verb which takes an agentive subject.

(14) Su *'do' as a main verb*

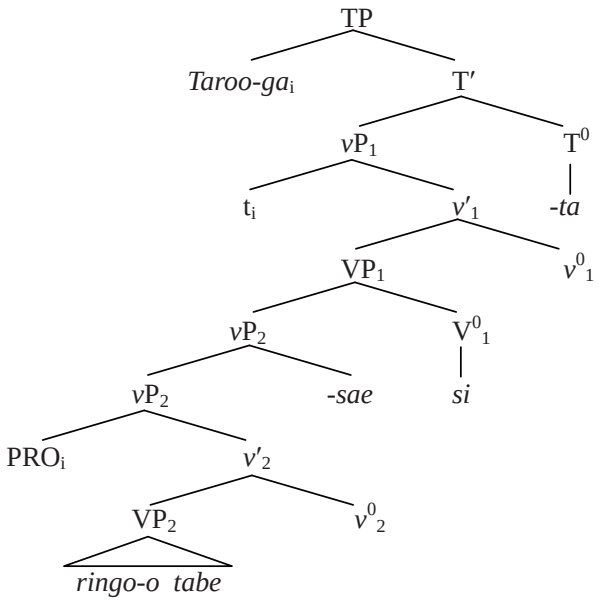
Taroo-ga anna koto-o si-ta (to-wa odoroki-da)
Taroo-NOM such thing-ACC do-PAST that-TOP surprise-COP
'(lit.) (It's surprising that) Taroo did such a thing'

Given this, the sentence in (2b), repeated here as (15a), is analyzed as having a structure like (15b) before VP-scrambling applies.

(15) *VP-scrambling with a transitive verb*

a. [Ringo-o tabe]-sae$_i$ Taroo-ga t_i si-ta (koto)
apple-ACC eat-even Taroo-NOM do-PAST fact
'(lit.) [Even eat an apple]$_i$, Taroo did t_i'

b.



Scrambling of vP$_2$ in (15b) gives rise to the surface linear order of (15a). This scrambling is without any problem since vP$_2$ contains no trace. In order to strand the object *ringo-o* 'apple' as in (2c-e) above, however, it must be moved out of vP$_2$, leaving a trace. Then, movement of vP$_2$ results in a violation of the PBC. According to this solution, a structure like (8b) is the only option for unaccusative and passive verbs, so that movement of vP results in a violation of the PBC, irrespective of whether A-movement or scrambling is involved. The control structure is not available for unaccusative and passive verbs, because the control *su* 'do' requires an agentive subject while unaccusative and passive verbs select non-agentive subjects. Note that this line of approach treats a trace left by A-movement and the one left by scrambling in the same way in that both of them are subject to the PBC.

A similar, but significantly different approach is taken by Hoshi (1994), Saito & Hoshi (2000), and Saito (2006). They share with Hasegawa (1990) and Ohkado (1991)

the idea that *su* 'do' in licit Japanese VP-scrambling is a main verb, selecting an agentive subject and an eventive complement.

Evidence for this idea comes from the behavior of stative verbs, independently observed by Ohkado (1991), Kubo (1992) and Hoshi (1994). The relevant examples are given in (16).

(16) *VP-scrambling with a stative verb*

a. Taroo-ga [eigo-ga wakari]-sae si-ta (koto)
Taroo-NOM English-NOM understand-even do-PAST fact
'Taroo [even understood English]'

b. *[Eigo-ga wakari]-sae$_i$ Taroo-ga t_i si-ta (koto)
English-NOM understand-even Taroo-NOM do-PAST fact
'[Even understand English]$_i$, Taroo did t_i'

The ungrammaticality of (16b) indicates that the subject of stative verbs like *wakar* 'understand' cannot be stranded, even though it is an external argument. Hoshi (1994) suggests that this fact follows from the assumption that *su* 'do' in VP-scrambling requires an eventive control complement, so that it cannot take the stative *v*P projected by verbs like *wakar* 'understand' as its complement.[5] Hence, the stative verbs pattern with unaccusative and passive verbs.

The approach advocated by Hoshi 1994, Saito & Hoshi 2000 and Saito 2006 differ from the one advocated by Hasegawa 1990 and Ohkado 1991 in their treatment of *su* 'do' in sentences without VP-scrambling, namely, *su* 'do' in (16a), (5a), and (6a) ((5a) and (6a) are repeated as (17a) and (17b) below).

(17) Su *'do' in unaccusative and passive sentences*

a. Fune-ga [sizumi]-sae si-ta (koto)
ship-NOM sink-even do-PAST fact
'(lit.) A ship [even sank]'

b. Ringo-ga [Taroo-niyotte tabe-rare]-sae si-ta (koto)
apple-NOM Taroo-by eat-PASS-even do-PAST fact
'An apple was [even eaten by Taroo]'

Su 'do' in these examples should be different from the control one, because the control one is incompatible with unaccusative and passive verbs.

Saito (2006), following Hoshi (1994) and Saito & Hoshi (2000), argues that *su* 'do'

in question is an expletive verb, which must be somehow replaced by a meaningful element at LF, on a par with the expletive *there* in the English existential construction (Chomsky 1986a). Based on the similarity between (18a) and (18b), Chomsky (1986a) suggests that *a man* in (18a) moves and replaces the expletive *there* at LF.

(18) *Existential construction in English*

a. There is a man in the room

b. A man$_i$ is t_i in the room

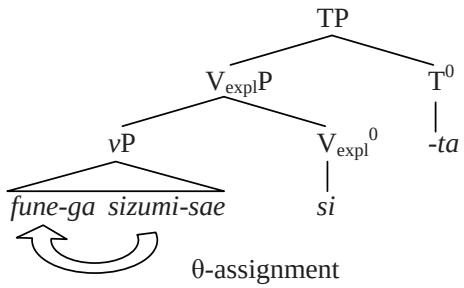
According to Chomsky (1986a), this expletive replacement is regulated by the two general principles: Full Interpretation, which requires every element receive interpretation at the interface levels (namely, PF and LF), and Last Resort, which bans operations from applying without any motivation.

The basic insight of Saito's (2006) analysis of sentences with the expletive *su* 'do' can be illustrated as follows.[6] For the sake of concreteness, I take (17a), repeated here as (19a), as a representative example. Assuming that the expletive *su* 'do' projects its own phrase, (19a) can in principle be analyzed as having structures like (19b) or (19c) below before the subject moves to Spec, TP. In order to distinguish the expletive *su* 'do' from the control one explicitly, the projection of the expletive one is labeled as $V_{expl}P$.

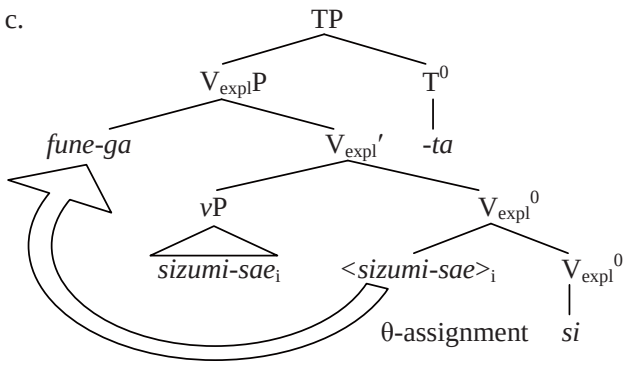
(19) *Structures of sentences with the expletive* su *'do'*

a. Fune-ga [sizumi]-sae si-ta (koto)
ship-NOM sink-even do-PAST fact
'(lit.) A ship [even sank]'

b.



c.



In (19b), the internal argument *fune-ga* 'ship' is base-generated within the projection of the verb *sizum* 'sink', and receives a θ-role there. On the other hand, *fune-ga* 'ship' is base-generated outside of the projection of *sizum* 'sink' in (19c). Then, the verb covertly adjoins to the expletive *su* 'do', and from the adjoined position it assigns a θ-role (elements surrounded by angled brackets do not have any phonological realization). According to Saito (2006), the expletive *su* 'do' becomes an interpretable LF-object by virtue of this covert adjunction of the main verb, so that the structure in (19c) counts as legitimate in terms of Full Interpretation. Furthermore, the adjunction is motivated by θ-assignment, so that it observes Last Resort. Thus, (19c) is fully legitimate. On the other hand, no adjunction takes place to the expletive *su* 'do' in (19b). Moreover, there is no reason for the main verb to adjoin, since all θ-roles can be discharged within its projection. Hence, the expletive *su* 'do' remains uninterpretable. Thus, adjunction of the main verb is barred by Last Resort. Consequently, structures like (19b) always result in a violation of Full Interpretation.

Then, what happens if *v*P in (19c) undergoes VP-scrambling? Since it is assumed in Hoshi 1994 that covert movement take place after overt movement, VP-scrambling, which is overt, blocks covert replacement of the expletive *su* 'do' by the verb at LF. Saito (2006) points out that such an account becomes insufficient, once it is assumed that covert movement can be interwoven with overt movement, as is advocated by Bobaljik (1995) and Nissenbaum (2000). Alternatively, he suggests that VP-scrambling of *v*P in (19c) is blocked by his (2003) derivational PBC, given in (20).

(20) *Derivational PBC* (Saito 2003:507-508)

a. α is subject to Merge only if α is a complete constituent.

b. α is a complete constituent $=_{df}$ (i) α is a term, and (ii) if a position within is a member of a chain γ, then every position of γ is contained within α.

Given the derivational PBC, the *v*P in (19c) cannot be moved, because it is not a complete constituent: Due to the covert adjunction of the main verb, the *v*P contains the tail but not the head of the chain. Therefore, it follows that VP-scrambling is impossible once the expletive *su* 'do' is involved. Combining this result with the fact that unaccusative, passive, and stative verbs are not compatible with the control *su* 'do', the illicitness of VP-scrambling stranding the subject of these verbs can be captured.[7]

Note that under Saito's (2006) analysis, the source of ungrammaticality in illicit VP-scrambling is the lower copy of the main verb left by covert adjunction. In this respect, it differs from the analyses put forth by Hoji, Miyagawa, & Tada (1989) and Hasegawa (1990), which attribute the ungrammaticality of illicit VP-scrambling to a trace left by A-movement. In fact, Saito (2006:268-269) suggests that the grammaticality of the sentences in (21) follows from the assumption that a trace of A-movement is somehow insensitive to the derivational PBC.[8]

(21) *English VP-fronting with unaccusative and passive sentences*

a. They said that the ball might fall into a ditch, and [fall t_i into a ditch]$_j$, it$_i$ did t_j
b. Mary said she would be praised by the clitics, and [praised t_i by the critics]$_j$, she$_i$ was t_j

Unlike Japanese, English VP-fronting is possible with unaccusative and passive sentences. Assuming that *su* 'do' in Japanese VP-scrambling but not *do* in do-support in English is an expletive, this difference between English and Japanese supports Saito's (2006) analysis.

4.2.2. Problems of the Previous Studies

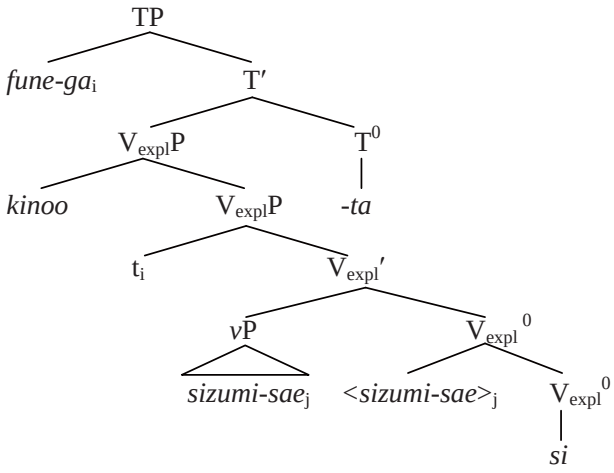
Although Saito's (2006) analysis has wide empirical coverage, it is not without problems. First, the derivational PBC, on which his analysis crucially depends, has been eliminated from the grammar, as extensively discussed in the preceding chapters. In addition to this theoretical problem, there is an empirical problem.

The crucial example is given in (22a) below, which involves an adjunct like *kinoo* 'yesterday'. In (22a), the adjunct appears between *-sae* 'even' and *su* 'do'.[9] Since the main verb is unaccusative, *su* 'do' cannot be the control one. Then, under Saito's (2006) analysis, (22a) would be analyzed as having a structure like (22b) as its pre-VP-scrambling structure.

(22) *VP-scrambling with adjuncts*

a. Fune-ga [sizumi]-sae kinoo(-wa) si-ta (koto)
ship-NOM sink-even yesterday-TOP do-PAST fact
'(lit.) A ship [even sank] yesterday'

b.



In (22b), *fune-ga* 'ship' is base-generated in Spec, $V_{expl}P$. Then, the main verb covertly adjoins to the expletive *su* 'do', discharging its θ-role. In order to derive the surface order of (22b), the *v*P must move across *kinoo* 'yesterday'. This movement, however, induces a violation of the derivational PBC, on a par with the case where the subject *fune-ga* 'ship' is intended to be stranded. Hence, (22a) is incorrectly ruled out under Saito's (2006) analysis.

Recall that one of the important assumptions of Saito's (2006) analysis is that the verb *su* 'do' in VP-scrambling is ambiguous between the control one and the expletive one. Ohkado (1991), however, points out that in addition to the transitive usage, *su* 'do' can be used as an unaccusative verb, as in (23).[10]

(23) Su '*do' as an unaccusative verb*

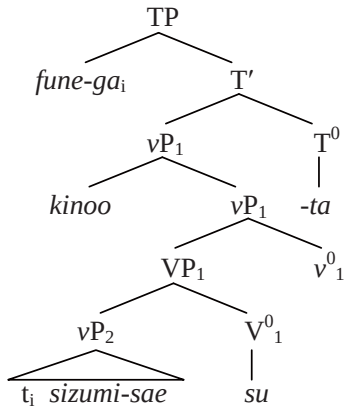
a. Ii nioi-ga (daidokoro-kara) su-ru (koto)
good smell-NOM kitchen-from do-PRES fact
'(lit.) A good smell does from kitchen (meaning: It smells good from the kitchen)'

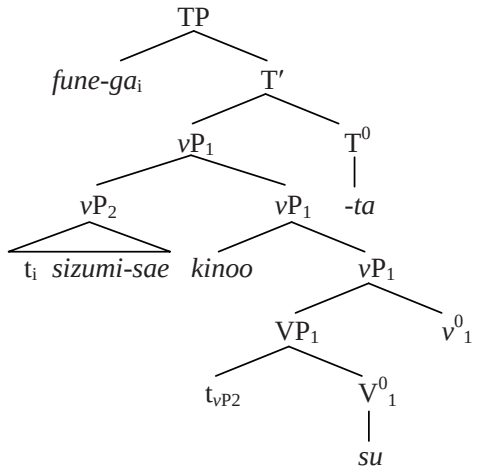
b. Henna oto-ga kinoo si-te-i-ta to omotta-ra,
strange sound-NOM yesterday do-ASP-be-PAST that thought-then
kyoo-mo *pro* si-te-i-ru (koto)
today-also do-ASP-be-PRES fact
'(lit.) I heard that a strange sound did yesterday, then it also did today (meaning: I heard a strange sound occurred yesterday, then it also occurs today)'

The subject *ii nioi* 'a good smell' in (23a) cannot be agentive. Thus, *su* 'do' in (23a) must have a different argument structure from the transitive one. It cannot be the expletive one, either, because nothing in (23a) seems to be able to replace it, assigning a θ-role to the subject. This point is confirmed by the fact that *pro* can be a subject of the verb, as in the second clause of (23b).

The problem raised by examples like (22a) can be solved once we admit that the unaccusative *su* 'do' can take a *v*P as its complement, as in (24a). In (24a), *su* 'do' takes vP_2 as its sole argument, and the subject receives a θ-role from the lower verb. Then the subject moves to Spec, TP. In other words, (24a) instantiates the raising structure. This structure is fully legitimate with respect to Full Interpretation, since no expletive element is involved to begin with. Furthermore, since the trace within vP_2 is created via A-movement, it is insensitive to the derivational PBC by assumption. Then, if vP_2 moves to the vP_1-adjoined position as in (24b), the surface order of (22a) results.

(24) *Possible underlying structure of (22a)*

a.


b.


This suggests that that scrambling of vP_2 is in principle possible even with the unaccusative verbs. Note at the same time scrambling of vP_2 in (24a) cannot cross the subject, since it yields a surface string similar to (5b). The question, then, boils down to what prohibits vP_2 from crossing the subject while allowing it from crossing the adjunct.

To sum up this section, I reviewed the previous analyses of Japanese VP-scrambling. It was revealed that although Saito's (2006) analysis has wide empirical coverage and theoretically interesting implications, it also has theoretical and empirical problems, namely appeal to the derivational PBC and illicit VP-scrambling with the raising structure. In the next section, I provide an alternative analysis, which is free from these problems.

4.3. A Solution in Terms of Cyclic Linearization

Let us recapitulate what we need to capture. The representative examples are given in (25).

(25) *The paradigm*

a. [Ringo-o tabe]-sae$_i$ Taroo-ga (kinoo-wa) t_i si-ta (koto)
apple-ACC eat-even Taroo-NOM yesterday-TOP do-PAST fact
'(lit.) [Even eat an apple]$_i$, Taroo did t_i (yesterday)'

b. *[Sizumi]-sae$_i$ fune-ga t_i si-ta (koto)
sink-even ship-NOM do-PAST fact
'(lit.) [Even sink]$_i$, a ship did t_i'

c. Fune-ga [sizumi]-sae$_i$ kinoo(-wa) t_i si-ta (koto)
ship-NOM sink-even yesterday-TOP do-PAST fact
'(lit.) A ship [even sank] yesterday'

d. *[Tabe]-sae$_i$ (Taroo-ga) ringo-o (Taroo-ga) t_i si-ta (koto)
eat-even Taroo-NOM apple-ACC Taroo-NOM do-PAST fact
'(lit.) [Even eat]$_i$, Taroo did t_i an apple'

(25a) involves a transitive verb, and VP-scrambling can strand a subject. Moreover, an adjunct is also allowed to be stranded. Ditransitive and unergative verbs belong to this class. On the other hand, VP-scrambling cannot strand a subject if the main verb is unaccusative, as in (25b). Nevertheless, VP-scrambling itself is possible with unaccusative verbs, as long as what follows the scrambled VP is an adjunct, as in (25c). Passive and stative verbs pattern with unaccusative verbs. Finally, the ungrammaticality of (25d) indicates that VP-scrambling cannot strand non-subject arguments.

Following the insights of the previous studies reviewed in the previous section that the raising-control distinction plays a crucial role, we can draw the following generalizations on Japanese VP-scrambling:

(26) *Generalizations on Japanese VP-scrambling*

a. If the raising structure is involved, VP-scrambling is not allowed when arguments are stranded.
b. If the control structure is involved, VP-scrambling is allowed when a subject but not other argument is stranded.
c. A scrambled VP can precede an adjunct regardless of the types of main verb.

Given that unaccusative, passive, and stative verbs are compatible only with the raising *su* 'do', the pattern in (25b) falls into the generalization in (26a). The patterns in (25a) and (25d), on the other hand, fall into the generalization in (26b). The patterns in (25a) and (25c) is covered by the generalization in (26c). In what follows, I provide an explanation of these generalizations, based on the theory of Cyclic Linearization developed in Chapter 2.

4.3.1. Analysis

Before moving to the explanation directly, I briefly re-introduce the effect of the theory of Cyclic Linearization, by considering the schematic derivation in (27).

(27) *Schematic derivation under Cyclic Linearization*

a. *Construction of D* → *Spell-out of D*
   $[_D$ X Y Z] Ordering Table: **X<Y<Z**
b. *Merge of α with D*
   α $[_D$ X Y Z] Ordering Table: X<Y<Z
c. *Movement of X across α* → *Spell-out of the next higher domain D′*
   $[_{D'}$ … X_i … α $[_D$ t_i Y Z] Ordering Table: X<Y<Z
   X<α<Y<Z
c'. *Movement of Y across α* → *Spell-out of the next higher domain D′*
   *$[_{D'}$ … Y_i … α $[_D$ X t_i Z] Ordering Table: X<Y<Z
   Y<α<X<Z

When Spell-out applies to the domain D in (27a), the linear order of the elements within D is established. In this case, the ordering statement X<Y<Z is sent to the Ordering

Table, and this newly added statement is indicated by boldface, following the notations introduced in Chapter 2. In (27b), the new constituent α is introduced to the derivation. Since no Spell-out applies at this point, no new ordering statement is sent to the Ordering Table. Suppose now that X undergoes movement across α, and the next higher domain D′ is Spelled-out, as in (27c). Then, the ordering statement X<α<Y<Z is sent to the Ordering Table (recall that by assumption traces are invisible for establishing ordering statements). At this point, the information stored on the Ordering Table, namely the ordering statements X<Y<Z and X<α<Y<Z, is totally consistent, inducing no problem. Suppose on the other hand that Y instead of X undergoes movement across α, and the next higher domain D′ is Spelled-out, as in (27c'). Then, the Ordering Table gets the ordering statement Y<α<X<Z, which contradicts the previously established one, namely X<Y<Z. In particular, X is required to linearly precede and follow Y at the same time. This contradiction ultimately leads the derivation to a PF-crash, since by assumption an element cannot precede and follow another element.

In Chapter 2, it was proposed that the size of the domain subject to linearization via Spell-out is parameterized. In particular, I proposed the Spell-out Domain Parameter given in (28), together with the assumption that languages like Japanese select the value (28a) while ones like English do the value (28b).

(28) *Spell-out Domain Parameter for* v*P*
When Spell-out applies to *v*P,
a. Linearize the whole *v*P, including the elements on its edge, or
b. Linearize the complement of v^0.

It was also illustrated there how VP-fronting with unaccusative and passive verbs are derived in languages like English, which selects the value (28b) (see also Section 4.4.3 below for a related discussion). Thus, the grammaticality of examples like (21) above has been already captured. In the rest of this subsection, I illustrate how the theory of Cyclic Linearization with the Spell-out Domain Parameter captures the Japanese paradigm in (25), by explaining the generalization in (26).

4.3.1.1. VP-scrambling in the Raising Structure

Let us start with the cases involving the raising structure. The representative examples, which involve an unaccusative verb, are given in (29).

(29) *VP-scrambling with an unaccusative verb*

a. Fune-ga [sizumi]-sae si-ta (koto)
ship-NOM sink-even do-PAST fact
'(lit.) A ship [even sank]'

b. *[Sizumi]-sae$_i$ fune-ga t_i si-ta (koto)
sink-even ship-NOM do-PAST fact
'(lit.) [Even sink]$_i$, a ship did t_i'

(29a) is derived in the manner depicted in (30).

(30) *Derivation of (29a)*

a. *Construction of* vP_2 → *Spell-out of* vP_2
[$_{vP2}$ [$_{VP2}$ fune-ga sizumi]]-sae Ordering Table: ***fune-ga<sizumi-sae***

b. *Construction of* vP_1 → *Spell-out of* vP_1
[$_{vP1}$ [$_{VP1}$ [$_{vP2}$ [$_{VP2}$ fune-ga sizumi]]-sae si]]
Ordering Table: *fune-ga<sizumi-sae*
fune-ga<sizumi-sae<si

c. *Construction of CP* → *Spell-out of CP*
[$_{CP}$ [$_{TP}$ fune-ga$_i$ [$_{vP1}$ [$_{VP1}$ [$_{vP2}$ [$_{VP2}$ t_i sizumi]]-sae si]] -ta]]
Ordering Table: *fune-ga<sizumi-sae*
fune-ga<sizumi-sae<si
fune-ga<sizumi-sae<si<ta

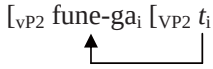
In (30a), *v*P$_2$ is constructed. As is extensively discussed in Chapter 2, the whole *v*P, including its edge, is subject to Spell-out in Japanese, due to the choice of the parametric value (28a). As a result, the ordering statement *fune-ga<sizumi-sae* is sent to the Ordering Table at this point.[11] Note that even if *fune-ga* 'ship' moves to the edge of *v*P$_2$ before Spell-out, essentially the same ordering information is established. In (30b), the raising *su* 'do' is introduced to the derivation. Finally, *fune-ga* 'ship', moves to Spec, TP in (30c). When Spell-out applies to the root CP in (30c), the ordering statement *fune-ga<sizumi-sae<si<ta* is established. Throughout the derivation, the ordering information stored on the Ordering Table is consistent. Thus, the derivation successfully converges, yielding the surface order of (29a).

In order to derive the surface linear order of (29b), however, it is necessary to establish the linear order *sizumi-sae<fune-ga* when Spell-out applies to *v*P$_2$. More

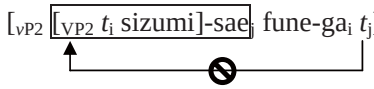
generally, the main verb should linearly precede its arguments base-generated within vP$_2$ to derive the desired surface linear order of sentences with VP-scrambling from the raising structure. However, this is not possible, given the discussions in Chapter 2. In particular, it has been assumed that Complement-to-Spec movement is not allowed. Thus, although *fune-ga* 'ship' can move out of VP$_2$ as in (31a) below, VP$_2$ itself is not allowed to move to the edge of vP$_2$, crossing *fune-ga* 'ship' as in (31b) (for the sake of discussion, the particle *-sae* 'even' is attached to the VP$_2$).

(31) *Complement-to-Spec movement of VP*

a. *Movement of an argument to the edge of* vP_2



b. *Movement of VP$_2$ to the edge of* vP_2



As a result, the ordering statements that can be established at the Spell-out of vP$_2$ are the ones where the main verb linearly follows everything within vP$_2$. In this case, *fune-ga<sizumi-sae* is the only possible ordering statement at the Spell-out of vP$_2$.

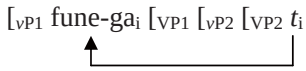
It then follows that any derivation that yields the surface linear order of (29b) always results in a ordering contradiction at PF. In particular, such a derivation crashes as follows (the position of *-sae* 'even' does not affect the point):

(32) *Derivation of (29a)*

a. *Construction of* vP_2 → *Spell-out of* vP_2

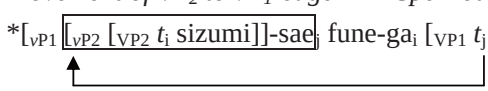
[$_{vP2}$ [$_{VP2}$ fune-ga sizumi]]-sae Ordering Table: ***fune-ga<sizumi-sae***

b. *Movement of* fune-ga *to vP$_1$-edge*



Ordering Table: *fune-ga<sizumi-sae*

c. *Movement of* vP_2 *to vP$_1$-edge* → *Spell-out of* vP_1



Ordering Table: *fune-ga<sizumi-sae*
sizumi-sae<fune-ga<si

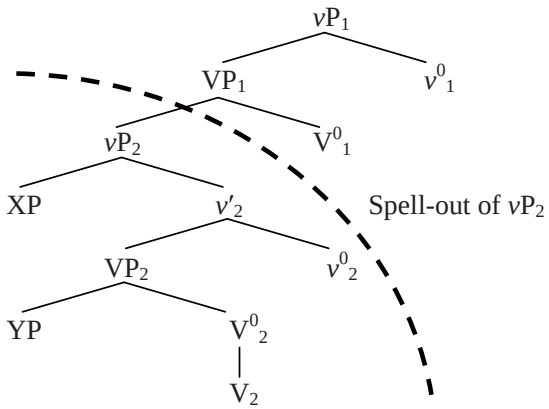
As discussed above, the ordering statement *fune-ga<sizumi-sae* is established at the

point in (32a). Suppose then that *fune-ga* 'ship' undergoes scrambling to the edge of vP$_1$ as in (32b). Suppose further that vP$_2$ also undergoes movement to the edge of vP$_1$, as in (32c). This movement itself is legitimate with respect to the ban on Complement-to-Spec movement. When Spell-out applies to vP$_1$, however, the ordering statement *sizumi-sae*<*fune-ga*<*si* is established. Then, a contradiction arise at PF; *fune-ga* 'ship' is required to precede and follow *sizumi-sae* 'sink-even' at the same time. As a result, linearization fails, leading the derivation to a PF-crash.

Note at this point that under the analysis advocated so far, the assumption that Spell-out also applies to unaccusative/passive *v*Ps (Ko 2005a, 2007; see also Chapter 2) plays a crucial role. Recall that vP$_2$ in the derivation (32) is headed by *sizum* 'sink', which is unaccusative. Then, if Spell-out does not apply to vP$_2$ at the step in (32a), it is not possible to establish the ordering statement *fune-ga*<*sizumi-sae*, which ultimately prohibits the subject *fune-ga* 'ship' from being preceded by the main verb *sizumi-sae* 'sink-even' at the surface. Thus, our analysis offers a direct support for the assumption.

The analysis advocated so far focuses on the case of unaccusative verbs. More generally, when the higher verb is a raising verb, all the arguments is Merged within vP$_2$, regardless of the types of the main verb. (33) schematizes this configuration (the particle *-sae* 'even' is omitted).

(33) *Schematic structure with a raising verb*



XP and YP are arguments of the main verb V_2. Since VP_2 in (33) cannot be moved to the edge of vP$_2$, Spell-out of vP$_2$ necessarily establishes an ordering statement in which V_2 linearly follows both of XP and YP. Then, if an ordering statement where V_2 precedes XP and/or YP is established at a later point, the derivation crashes at PF.

Therefore, the generalization (26a) follows: If the raising structure is involved, VP-scrambling is not allowed when arguments are stranded.

Given the discussion so far, a derivation with the raising structure can converge even if it involves VP-scrambling, as long as the ordering statement established at the Spell-out of vP$_2$ is not contradicted at any later application of Spell-out in the derivation. Specifically, the proposed system allows (22a), repeated as (34), to be derived in the manner depicted in (35).

(34) Fune-ga [sizumi]-sae kinoo(-wa) si-ta (koto)
ship-NOM sink-even yesterday-TOP do-PAST fact
'(lit.) A ship [even sank] yesterday'

(35) *Derivation of (34)*

a. *Construction of* vP_2 → *Spell-out of* vP_2
[$_{vP2}$ [$_{VP2}$ fune-ga sizumi]]-sae Ordering Table: ***fune-ga<sizumi-sae***

b. *Scrambling of* fune-ga *to VP$_1$-edge*
[$_{vP1}$ [$_{VP1}$ fune-ga$_i$ [$_{vP2}$ [$_{VP2}$ t_i sizumi]]-sae si]]
Ordering Table: *fune-ga<sizumi-sae*

c. *Merge of* kinoo *with* vP_1
[$_{vP1}$ kinoo [$_{VP1}$ fune-ga$_i$ [$_{vP2}$ [$_{VP2}$ t_i sizumi]]-sae si]]
Ordering Table: *fune-ga<sizumi-sae*

d. *Scrambling of* fune-ga *and* vP_2 *to* vP_1*-edge* → *Spell-out of* vP_1
[$_{vP1}$ fune-ga$_i$ [$_{vP2}$ [$_{VP2}$ t_i sizumi]]-sae kinoo [$_{VP1}$ t'_i t_{vP2} si]]
Ordering Table: *fune-ga<sizumi-sae*
fune-ga<sizumi-sae<kinoo<si

e. *Construction of CP* → *Spell-out of CP*
[$_{CP}$ [$_{TP}$ fune-ga$_i$ [$_{vP1}$ t''_i [$_{vP2}$ [$_{VP2}$ t_i sizumi]]-sae kinoo [$_{VP1}$ t'_i t_{vP2} si]] -ta]]
Ordering Table: *fune-ga<sizumi-sae*
fune-ga<sizumi-sae<kinoo<si
fune-ga<sizumi-sae<kinoo<si<ta

In (35a), Spell-out applies to vP$_2$, establishing the ordering statement *fune-ga<sizumi-sae*, on a par with the cases illustrated so far. Then, *fune-ga* 'ship' undergoes scrambling to VP$_1$, as in (35b). Recall that the VP-edge is a possible landing site for A-scrambling, as is discussed in Chapter 2. When the derivation proceeds to the

step in (35c), the adjunct *kinoo* 'yesterday' is Merged with vP$_1$. Then, as in (35d), *fune-ga* 'ship' and vP$_2$ undergo scrambling to the edge of vP$_1$. Scrambling of vP$_2$ is allowed, since it is not an instance of Complement-to-Spec movement. When Spell-out applies to vP$_2$ at this point, the ordering statement *fune-ga<sizumi-sae<kinoo<si* is established. Finally, when the derivation proceeds to the step in (35e), Spell-out applies to the root CP, establishing the ordering statement *fune-ga<sizumi-sae<kinoo<si<ta*. The derivation successfully converges since the established ordering statements are totally consistent, yielding the surface linear order of (34).[12]

Recall at this point that the question raised by an example like (34), which unambiguously involves raising, is why the scrambled VP can precede an adjunct but not a subject. Under the proposed analysis, the crucial difference between an adjunct and a subject is that the former can be base-generated outside of vP$_2$, while the latter must be inside of it. As a consequence, the linear order between the main verb and a subject is fixed at the point of the Spell-out of vP$_2$, while the linear order between the main verb and an adjunct can be fixed later, leaving a chance for changing it. Given that the raising structure is in principle compatible with any types of main verb, the generalization (26c) follows in the case of raising: A scrambled VP can precede an adjunct regardless of the types of main verb.

4.3.1.2. VP-scrambling in the Control Structure

Let us now turn to the control structure. The problem is why the surface linear order of (36b), in which the scrambled VP precedes the subject, is possible, as well as that of (36a), while that of (36c), where the scrambled VP precedes the object, is not possible.

(36) *VP-scrambling with a transitive verb*

a. Taroo-ga [ringo-o tabe]-sae si-ta (koto)
Taroo-NOM apple-ACC eat-even do-PAST fact
'Taroo [even ate an apple]'

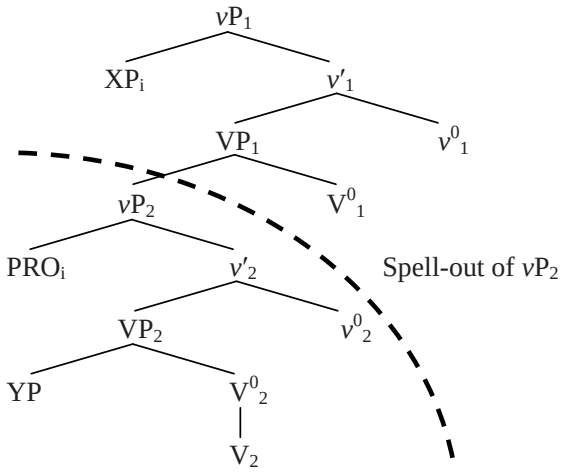
b. [Ringo-o tabe]-sae$_i$ Taroo-ga t_i si-ta (koto)
apple-ACC eat-even Taroo-NOM do-PAST fact
'(lit.) [Even eat an apple]$_i$, Taroo did t_i'

c. *[Tabe]-sae$_i$ (Taroo-ga) ringo-o (Taroo-ga) t_i si-ta (koto)
eat-even Taroo-NOM apple-ACC Taroo-NOM do-PAST fact
'(lit.) [Even eat]$_i$, Taroo did t_i an apple'

The theory of Cyclic Linearization provides a rather straightforward answer to the

problem. Let us consider the schematic structure in (37).[13]

(37) *Schematic structures with a control verb*



Unlike the raising structure, the controller XP can be base-generated outside of vP$_2$. Hence, the relative order between XP and the main verb V$_2$ is left unspecified when Spell-out applies to vP$_2$.

To see this, let us consider the derivation of (36a), depicted in (38).

(38) *Derivation of (36a)*

a. *Construction of* v*P*$_2$ → *Spell-out of* v*P*$_2$
[$_{vP2}$ PRO [$_{VP2}$ ringo-o tabe]]-sae Ordering Table: ***ringo-o<tabe-sae***

b. *Construction of* v*P*$_1$ → *Spell-out of* v*P*$_1$
[$_{vP1}$ Taroo-ga$_i$ [$_{VP1}$ [$_{vP2}$ PRO$_i$ [$_{VP2}$ ringo-o tabe]]-sae si]]
Ordering Table: *ringo-o<tabe-sae*
Taroo-ga<ringo-o<tabe-sae<si

c. *Construction of CP* → *Spell-out of CP*
[$_{CP}$ [$_{TP}$ Taroo-ga$_i$ [$_{vP1}$ t_i [$_{VP1}$ [$_{vP2}$ PRO$_i$ [$_{VP2}$ ringo-o tabe]]-sae si]] -ta]]
Ordering Table: *ringo-o<tabe-sae*
Taroo-ga<ringo-o<tabe-sae<si
Taroo-ga<ringo-o<tabe-sae<si<ta

In (38a), Spell-out applies to vP$_2$, establishing the ordering statement *ringo-o<tabe-sae*. At this step in (38b), the controller *Taroo-ga* and the control *su* 'do' are introduced to

the derivation. When Spell-out applies to vP$_1$, the ordering statement *Taroo-ga<ringo-o<tabe-sae<si* is established. Finally, the derivation proceeds to the step in (38c), where Spell-out applies to the root CP, establishing the ordering statement *Taroo-ga<ringo-o<tabe-sae<si<ta*. Since the Ordering Table contains no linear order contradiction, the derivation successfully converges.

The crucial difference between the derivation involving the raising *su* 'do' and the one in (38) is that the information about the subject is included in the ordering statement established at the Spell-out of vP$_2$ in the former but not in the latter. Then, the derivation in (39) below successfully converges, yielding the surface linear order of (36b).

(39) *Derivation of (36b)*

a. *Construction of* vP_2 → *Spell-out of* vP_2
[$_{vP2}$ PRO [$_{VP2}$ ringo-o tabe]]-sae Ordering Table: ***ringo-o<tabe-sae***

b. *Construction of* vP_2
[$_{vP1}$ Taroo-ga$_i$ [$_{VP1}$ [$_{vP2}$ PRO$_i$ [$_{VP2}$ ringo-o tabe]]-sae si]]
Ordering Table: *ringo-o<tabe-sae*

c. *Scrambling of* vP_2 *to* vP_1 → *Spell-out of* vP_1
[$_{vP1}$ [$_{vP2}$ PRO$_i$ [$_{VP2}$ ringo-o tabe]]-sae Taroo-ga$_i$ [$_{VP1}$ t_{vP2} si]]
Ordering Table: *ringo-o<tabe-sae*
ringo-o<tabe-sae<Taroo-ga<si

d. *Movement of* Taroo-ga *to Spec, TP and scrambling of* vP_2 → *Spell-out of CP*
[$_{CP}$ [$_{TP}$ [$_{vP2}$ PRO$_i$ [$_{VP2}$ ringo-o tabe]]-sae Taroo-ga$_i$ [$_{vP1}$ t'_{vP2} t_i [$_{VP1}$ t_{vP2} si]] -ta]]
Ordering Table: *ringo-o<tabe-sae*
ringo-o<tabe-sae<Taroo-ga<si
ringo-o<tabe-sae<Taroo-ga<si<ta

The step in (39a) is identical to (38a). After *Taroo-ga* and the control *su* 'do' are introduced to the derivation as in (39b), vP$_2$ undergoes scrambling to the vP$_1$-edge, as in (39c). When Spell-out applies to vP$_1$ at this step, the ordering statement *ringo-o<tabe-sae<Taroo-ga<si* is sent to the Ordering Table. Unlike the case of raising, in particular the step in (32c) above, the ordering statements stored on the Ordering Table are consistent with each other. In (32d), *Taroo-ga* moves to Spec, TP, and subsequently vP$_2$ undergoes further scrambling across *Taroo-ga*.[14] When the root CP is Spelled-out, the ordering statement *ringo-o<tabe-sae<Taroo-ga<si<ta* is established.

Since the Ordering Table contains no contradiction, the derivation converges. In this way, a sentence where the scrambled VP precedes the subject is allowed to be derived under the proposed system.

On the other hand, non-subject arguments, for instance the object *ringo-o* 'apple', must be base-generated within vP$_2$ even in the control structure, since they have to receive θ-roles there. Consequently, the relative linear order between the main verb and these non-subject arguments are fixed at the Spell-out of vP$_2$, prohibiting the scrambled VP from preceding them at the surface structure. Thus, the generalization (26b) follows: If the control structure is involved, VP-scrambling is allowed when a subject but not other argument is stranded. Since adjuncts can be base-generated outside of the vP$_2$ on a par with the case of raising as discussed in Section 4.3.1.1, they can follow the scrambled VP. Therefore, the generalization (26c) follows in the case of control as well: A scrambled VP can precede an adjunct regardless of the types of main verb.

4.3.2. Evidence for the Proposed Analysis

This subsection provides empirical evidence for the proposed analysis. The crucial point of the analysis advocated so far is that an element must be base-generated outside of the projection of the main verb in order to linearly follow the scrambled VP at the surface structure. Agentive subjects, which can serve as a subject of the control *su* 'do', and adjuncts like *kinoo* 'yesterday' meet this requirement, so that they are allowed to follow the main verb. Then, the analysis makes the following prediction:

(40) *Prediction*

If an adjunct is forced to modify the main verb so as to be base-generated within its projection, the adjunct fails to linearly follow the scrambled VP.

In what follows, I show that this prediction is borne out.

As in (41a), VP-scrambling with the temporal adjunct *kinoo* 'yesterday' is possible. A similar example, which involves *odorokubekikotoni* 'surprisingly', is given in (41b).

(41) *VP-scrambling with temporal and epistemic adjuncts*

a. Fune-ga [sizumi]-sae kinoo(-wa) si-ta (koto)
ship-NOM sink-even yesterday-TOP do-PAST fact
'(lit.) A ship [even sank] yesterday'

b. Fune-ga [sizumi]-sae odorokubekikotoni si-ta (koto)
ship-NOM sink-even surprisingly do-PAST fact
'(lit.) A ship [even sank] surprisingly'

Assuming that these adjuncts can be base-generated outside of the projection of the main verb, the grammaticality of (41a-b) follows.

The crucial examples are given in (42) and (43) below. (42) involves the locative adjunct *kaitei-made* 'onto the seafloor', and (43) involves the manner adjunct *ikinari* 'suddenly'. (42a) and (43a) are the baseline examples, where the adjuncts precede the main verb which they modify. When these adjuncts appear after the main verb, as in the b-examples, the sentences become ungrammatical.

(42) *VP-scrambling with locative adjuncts*
a. Fune-ga [kaitei-made sizumi]-sae si-ta (koto)
ship-NOM seafloor-to sink-even do-PAST fact
'(lit.) A ship [even sank onto the seafloor]'
b. *Fune-ga [sizumi]-sae kaitei-made si-ta (koto)
ship-NOM sink-even seafloor-to do-PAST fact
'(lit.) A ship [even sank] onto the seafloor'

(43) *VP-scrambling with manner adjuncts*
a. Fune-ga [ikinari sizumi]-sae si-ta (koto)
ship-NOM suddenly sink-even do-PAST fact
'(lit.) A ship [even sank suddenly]'
b. *Fune-ga [sizumi]-sae ikinari si-ta (koto)
ship-NOM sink-even suddenly do-PAST fact
'(lit.) A ship [even sank] suddenly'

Given that locative and manner adjuncts must be base-generated within the projection of the main verb they modify, the ungrammaticality of the relevant examples follows.

Sentences with passive and stative verbs exhibit the same pattern, as in (44)-(45) below. (44a) involves the locative adjunct *kooen-de* 'in the park', (45b) does the manner adjunct *sugoi hayasa-de* 'quicky', (45a) does the locative adjunct *kyoositu-de* 'in the classroom', and finally (45b) does the manner adjunct *suguni* 'easily'. In all the examples, these adjuncts can precede but cannot follow the main verb.

(44) *VP-scrambling with a passive verb*

a. Ringo-ga [Taroo-niyotte (kooen-de) tabe-rare]-sae (*kooen-de)
apple-NOM Taroo-by park-in eat-PASS-even park-in
si-ta (koto)
do-PAST fact
'An apple was eaten by Taroo in the park'

b. Ringo-ga [Taroo-niyotte (sugoi hayasa-de) tabe-rare]-sae
apple-NOM Taroo-by great speed-at eat-PASS-even
(*sugoi hayasa-de) si-ta (koto)
great speed-at do-PAST fact
'An apple was eaten by Taroo quickly'

(45) *VP-scrambling with a stative verb*

a. Taroo-ga [eigo-ga (kyoositu-de) wakari]-sae (*kyoositu-de)
Taroo-NOM English-NOM classroom-in understand-even classroom-in
si-ta (koto)
do-PAST fact
'Taroo even understood English in the classroom'

b. Taroo-ga [eigo-ga (suguni) wakari]-sae (*suguni) si-ta (koto)
Taroo-NOM English-NOM easily understand-even easily do-PAST fact
'Taroo even understood English easily'

Testing the prediction with (di)transitive and unergative verbs has a slight complication, because they are also compatible with the control *su* 'do', which locative and manner adjuncts can modify.[15] Thus, those adjuncts may be base-generated outside of the projection of the main verb. To avoid this potential problem, let us first consider the following examples, containing two adjuncts.

(46) *Sentences with two manner adjuncts*

a. *Isoide Taroo-ga yukkuri ringo-o tabe-ta (koto)
hastily Taroo-NOM slowly apple-ACC eat-PAST fact
'(lit) Hastily, Taroo ate an apple slowly'

b. Isoide Taroo-ga [yukkuri ringo-o tabe]-sae si-ta (koto)
hastily Taroo-NOM slowly apple-ACC eat-even do-PAST fact
'(lit) Hastily, Taroo [even ate an apple slowly]'

(46a) is ungrammatical presumably because it is not possible to eat an apple hastily and

slowly at the same time. On the other hand, (46b) is grammatical, if the sentence is interpreted as something like following; Taroo hastily did eating an apple slowly. That is, *isoide* 'hastily' modifies the control *su* 'do', and *yukkuri* 'slowly' modifies the main verb *tabe* 'eat'. In this way, we can force a manner adverb to modify the main verb in the control structure.

Taking (46b) as the baseline, let us compare the sentences in (47) with it. In (47a), the scrambled VP appears in the sentence-initial position, and in (47b), it is in the position right after the subject *Taroo-ga*. In either case, the scrambled VP precedes the adjunct *yukkuri* 'slowly', which is intended to modify the main verb.

(47) *VP-scrambling with two manner adjuncts*

a. *[Ringo-o tabe]-sae isoide Taroo-ga yukkuri si-ta (koto)
apple-ACC eat-even hastily Taroo-NOM slowly do-PAST fact
'(lit) [Even eat an apple], hastily, Taroo did slowly'

b. *Isoide Taroo-ga [ringo-o tabe]-sae yukkuri si-ta (koto)
hastily Taroo-NOM apple-ACC eat-even slowly do-PAST fact
'(lit) Hastily, Taroo [even ate an apple] slowly'

c. Taroo-ga [yukkuri ringo-o tabe]-sae isoide si-ta (koto)
Taroo-NOM slowly apple-ACC eat-even hastily do-PAST fact
'(lit) Hastily, Taroo [even ate an apple slowly]'

The ungrammaticality of (47a-b) confirms the prediction in (40). Note at the same time that VP-scrambling itself is possible, indicated by the grammaticality of (47c), where the adverb modifying the control *su* 'do', namely *isoide* 'hastily', follows the scrambled VP.

Therefore, the prediction in (40) is borne out, supporting the proposed explanation of the properties of VP-scrambling.

4.3.3. Summary

To sum up this section, I illustrated how the theory of Cyclic Linearization combined with the Spell-out Domain Parameter explains the generalizations on Japanese VP-scrambling. First, it was shown that in the case of raising, all the arguments are required to be base-generated within the projection of the main verb. As a result, their relative linear order with respect to the main verb is fixed so as not to follow it at any later point of Spell-out. On the other hand, in the case of control, the subject, namely the controller of PRO, is allowed to be base-generated outside of the

projection of the main verb, while non-subject arguments are not. Hence, it is allowed only for the subject to leave unspecified its relative order with respect to the main verb until a later point of the derivation. As a result, the derivation that yields the surface linear order where the subject follows the scrambled VP can converge, while the one that yields the surface linear order where non-subject arguments follow the scrambled VP always results in an ordering contradiction. Contrary to the cases of arguments, adjuncts do not have to be Merged within the projection of the main verb. Therefore, it follows that they can follow the scrambled VP regardless of the types of main verb. Finally, I provided a piece of evidence for the proposed analysis by confirming the prediction that VP-scrambling becomes impossible even with adjuncts if they are forced to be base-generated within the projection of the main verb.

4.4. Implications and Remaining Issues

In this section, I discuss certain implications of the proposed analysis and remaining issues raised by it.[16] In particular, I discuss the following three topics: (i) apparent counterexamples of the generalization in (26), (ii) the theoretical status of the expletive *su* 'do', and (iii) possible cross-linguistic variations regarding VP-scrambling.

4.4.1. On Strandable Non-subjects

Yatsushiro (1997, 1999) observes that in a sentence with a ditransitive verb, not only the subject but also the indirect object can linearly follow the scrambled VP. The relevant examples are given in (48). In (48a), which is repeated from (3b), the subject *Taroo-ga* is left behind.

(48) *VP-scrambling with a ditransitive verb*

a. [Hanako-ni hon-o age]-sae$_i$ Taroo-ga t_i si-ta (koto)
Hanako-DAT book-ACC give-even Taroo-NOM do-PAST fact
'(lit.) [Even gave a book to Hanako]$_i$, Taroo did t_i'

b. [Hon-o age]-sae$_i$ Taroo-ga Hanako-ni t_i si-ta (koto)
book-ACC give-even Taroo-NOM Hanako-DAT do-PAST fact
'(lit.) [Even gave a book to Hanako]$_i$, Taroo did t_i'

In addition to the subject, the indirect object *Hanako-ni* is preceded by the scrambled VP, as in (48b).[17] Thus, (48b) seems to constitute a counterexample to the generalizations in (26).

Based on this kind of observation, Yatsushiro (1997, 1999) argues that ditransitive

verbs have a schematic structure like in (49), where the dative argument is introduced as an argument of an independent head (see, among others, Marantz 1993, Ura 1996, Pylkkänen 2002, and Yatsushiro 2003).

(49) *Structure of ditransitive verbs*

$[_{vP}\ DP_{NOM}\ [_{VP1}\ DP_{DAT}\ [_{VP2}\ DP_{ACC}\ V_2]\ V_1]\ v]$

She then suggests that VP-scrambling can target the lowest VP, namely VP_2 in (49), leaving behind both the nominative and dative arguments. Her suggestion cannot accommodate the observation in (11), which suggests that VP-scrambling always targets a *v*P, however. Thus, we cannot appeal to this line of approach.

If the analysis of Japanese VP-scrambling advocated in this chapter is correct, the indirect object in (48b) cannot be the argument of the main verb. This is because, if it indeed receives a θ-role from the main verb, it must be base-generated within the projection of the main verb, being fixed their relative linear order. In fact, there is evidence that suggests that the indirect object is an argument of *su* 'do'. Recall first that *su* 'do' can be used as a main verb, as in (50a), which is repeated from (14).

(50) Su *'do' as a main verb*

a. Taroo-ga anna koto-o si-ta (to-wa odoroki-da)
Taroo-NOM such thing-ACC do-PAST that-TOP surprise-COP
'(lit.) (It's surprising that) Taroo did such a thing'

b. Taroo-ga Hanako-ni anna koto-o si-ta (to-wa odoroki-da)
Taroo-NOM Hanako-NI such thing-ACC do-PAST that-TOP surprise-COP
'(lit.) (It's surprising that) Taroo did such a thing to Hanako'

In addition to the pattern in (50a), *su* 'do' can optionally take a *ni*-marked argument, as in (50b).[18]

Given this fact, (48b) can be analyzed as having a structure like (51) as its underlying structure (irrelevant details are omitted).

(51) *Possible underlying structure of (48b)*

$[\ldots\ [_{vP1}$ Taroo-ga$_i$ $[_{VP1}$ Hanako-ni$_j$ $[_{vP2}$ PRO$_i$ $[_{VP2}$ *pro*$_j$ hon-o age]]-sae si]] -ta]

In (51), *Hanako-ni* is base-generated within the projection of *su* 'do', and from there it binds *pro*, which receives a θ-role from the main verb *age* 'give'. Then, the surface

linear order of (48b) results if vP$_2$ undergoes scrambling. No ordering contradiction arises, because *Hanako-ni* is base-generated outside of vP$_2$.

If *pro* is indeed involved in the relevant examples, we expect that it can be overtly realized. Furthermore, it is expected that *pro* can have a referent other than that of the overt *ni*-marked argument (in the case of (51), *Hanako*). The examples in (52) confirm these expectations.

(52) *Sentences with two* ni*-marked arguments*

a. ?Taroo-ga Hanako-ni$_i$ [kanozyo-ni$_i$ Ziroo-o syookaisi]-sae
Taroo-NOM Hanako-NI she-DAT Ziroo-ACC introduce-even
si-ta (koto)
do-PAST fact
'(lit.) Taroo did to Hanako even introducing Ziroo to her'

b. Taroo-ga Hanako-ni$_i$ [[*pro*$_i$ musume]-ni yakuza-o
Taroo-NOM Hanako-NI daughter-DAT gangster-ACC
syookaisi]-sae si-ta (koto)
introduce-even do-PAST fact
'(lit.) Taroo did to Hanako even introducing a gangster to her daughter'

Although (52a) is slightly awkward, it is grammatical.[19] In (52b), the higher *ni*-marked argument is *Hanako-ni*, and the lower one is *musume-ni* 'daughter', and the sentence is fairly acceptable.

As is expected from the structure in (51), the two *ni*-marked arguments behave differently in VP-scrambling, as shown in (53) below. In (53a), the genuine dative argument of the main verb, namely *musume-ni* 'daughter', is included within the scrambled VP, whereas it is left behind in (53b).

(53) *VP-scrambling in sentences with two* ni*-marked arguments*

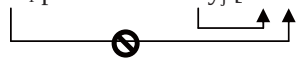
a. [[*pro*$_j$ musume]-ni yakuza-o syookaisi]-sae$_i$ Taroo-ga
daughter-DAT gangster-ACC introduce-even Taroo-NOM
Hanako-ni$_j$ t_i si-ta (koto)
Hanako-NI do-PAST fact
'(lit.) [Even introducing a gangster to her daughter]$_i$, Taroo did to Hanako t_i'

b. *[Yakuza-o syookaisi]-sae$_i$ Taroo-ga Hanako-ni$_j$ [*pro*$_j$
gangster-ACC introduce-even Taroo-NOM Hanako-NI
musume]-ni t_i si-ta (koto)
daughter-DAT do-PAST fact
'(lit.) [Even introducing a gangster]$_i$, Taroo did to Hanako t_i to her daughter'

This contrast is expected under the proposed analysis, further supporting the structure in (51).

One issue arising from the structure in (51) has to do with the Principle of Minimal Distance (PMD), originally proposed by Rosenbaum (1970). Its effect is exemplified by sentences like (54a) below, where the subject of the infinitival complement must be *Mary*, but not *John*.

(54) *The Principle of Minimal Distance effect*
a. John persuaded Mary to go to school
b. John$_i$ persuaded Mary$_j$ [PRO$_{*i/j}$ to go to school]



One well-known counterexample to the PMD is the so-called *promise*-type verbs. The relevant example is given in (55a), where the subject of the infinitival complement is construed as *John*, despite the presence of *Mary*.

(55) Promise-*type verbs and the null P analysis*
a. John promised Mary to go to school
b. John$_i$ promised [$_{PP}$ ø [$_{DP}$ Mary]] [PRO$_i$ to go to school]
c. John$_i$ vowed/committed [$_{PP}$ to [$_{DP}$ Mary]] [PRO$_i$ to go to school]

Hornstein (2001) and Boeckx & Hornstein (2003) suggest that *Mary* in (55a) is indeed a complement of a null P, as in (55b), so that *John* can control PRO.[20] They also note that the existence of the null P is not implausible because verbs like *vow* and *commit*, which are semantically similar to *promise*, can take an overt PP argument, as in (55c).

Bearing this in mind, let us consider the structure in (51), repeated as (56).

(56) [… [$_{vP1}$ Taroo-ga$_i$ [$_{VP2}$ Hanako-ni$_j$ [$_{vP2}$ PRO$_i$ [$_{VP2}$ *pro*$_j$ hon-o age]]-sae si]] -ta]

In this structure, *Hanako-ni* appears between *Taroo-ga* and PRO, though there is no

PMD effect. I suggest, following Hornstein (2001) and Boeckx & Hornstein's (2003) idea, that *Hanako-ni* in (56) is a PP.

It has been observed that the particle *-ni* in Japanese is ambiguous between a Case-marker and a post-position (Miyagawa 1989a, Sadakane & Koizumi 1995, among others). The examples in (57) (based on Sadakane & Koizumi 1995:7) indicate that the dative Case-marker *-ni* in (57a) can host a floating NQ while the post-position *-ni* in (57b) cannot.[21]

(57) *Case-maker vs. post-position*

a. Kanta-wa yuuenti-de uma-ni san-too not-ta
Kanta-TOP amusement.park-at horse-DAT 3-CL ride-PAST
'Kanta rode three horses at the amusement park'

b. *Kanta-no ronbun-wa riron-ni hutatu motozuitei-ru
Kanta-gen paper-TOP theory-on 2.CL based.on-PRES
'Kanta's paper is based on two theories'

Then, it is predicted that the dative argument of the control *su* 'do' fails to host a floating NQ, on a par with (57b).

This prediction is borne out, as in (58) below. (58a) is modified from (53a). The *ni*-marked argument *hahaoya-tati-ni* 'mothers' cannot host the NQ *san-nin* 'three'.

(58) *Association of floating NQs with* ni*-marked phrases*

*[[(Sorezore-no$_j$) musume]-ni yakuza-o syookaisi]-sae$_i$ Taroo-ga
each-GEN daughter-DAT gangster-ACC introduce-even Taroo-NOM
hahaoya-tati-ni$_j$ san-nin t_i si-ta (koto)
mother-PL-NI 3-CL do-PAST fact
'(lit.) [Even introducing a gangster to their own daughter]$_i$, Taroo did t_i to three mothers'

The contrast in (59) is more suggestive. In (59a), where no VP-scrambling takes place, the *ni*-marked argument *gakusei-ni* 'student' can be associated with the NQ *san-nin* 'three'. On the other hand, in (59b), in which VP-scrambling applies so as that the *ni*-marked phrase is left behind, the association is not possible.

(59) *Association of floating NQs with* ni*-marked phrases*

a. Taroo-ga gakusei-ni san-nin sensei-o syookaisi-sae si-ta (koto)
Taroo-NOM student-NI 3-CL teacher-ACC introduce-even do-PAST fact
'Taroo introduced a teacher to three students'

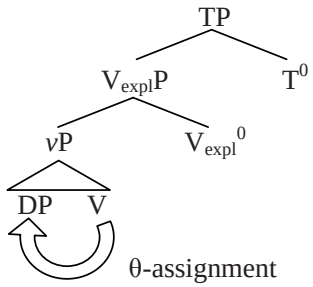
b. *[Sensei-o syookaisi]-sae Taroo-ga gakusei-ni san-nin si-ta (koto)
teacher-ACC introduce-even Taroo-NOM student-NI 3-CL do-PAST fact
'(lit.) [Even introduce a teacher], Taroo did three students'

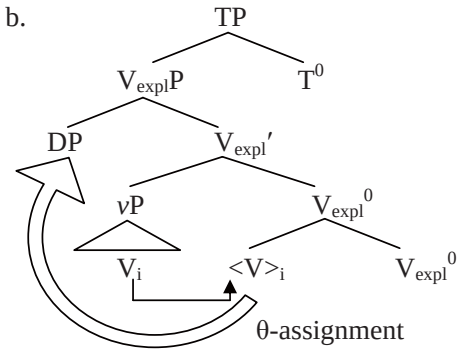
Given the discussion so far, this contrast can be captured as follows: In the former, *gakusei-ni* 'student' can be an argument of the main verb, so that *-ni* can be a Case-marker; in the latter, however, the *ni*-marked argument is unambiguously an argument of *su* 'do', so that *-ni* must be a post-position. Hence, the intended association is allowed only in the former case. In this way, the proposed analysis allows us to reveal some hitherto unnoticed fact concerning VP-scrambling in Japanese.

4.4.2. On the Expletive *Su* 'do'

Let us turn to the issue concerning the expletive *su* 'do'. Schematic structures involving it are given in (60) (cf. (19b-c)).

(60) *Structures with the expletive* su *'do'*

a.


b.


Recall that under Saito's (2006) analysis, at least one argument must be base-generated outside of the projection of the main verb as in (60b) but not (60a) so as that covert adjunction to the expletive *su* 'do' is forced.

Under the proposed analysis, elements Merged within the projection of the main verb cannot follow the scrambled VP because their relative linear order with respect to the main verb is fixed upon the completion of *v*P. Now, in (60b), the DP is

base-generated outside of the *v*P. Hence, the linear order between the DP and the main verb can be left unspecified at the Spell-out of *v*P. Then, scrambling of *v*P across the DP does not induce any ordering contradiction. Since the DP in question can be an internal argument of an unaccusative verb (see (19)), it is incorrectly predicted that the scrambled VP can precede the subject of an unaccusative verb.

Notice that the DP in (60a) is base-generated in a θ-position of the main verb, while the one in (60b) is not. Chomsky (2000:103) postulates the principle in (61), adopting Hale & Kayser's (1993) "conception of θ-roles as a relation between two syntactic objects, a configuration and an expression selected by its head".

(61) *Condition on External Merge of arguments*
[External] Merge in θ-position is required of (and restricted to) arguments

Given (61), the structure in (60a) is forced. Consequently, the structure with the expletive *su* 'do' always induces a violation of Full Interpretation.[22] If this is the case, the expletive *su* 'do' plays little role in explaining the properties of Japanese VP-scrambling.

The above discussion seems to lead us to the elimination of the expletive *su* 'do' from the grammar. On the other hand, the expletive *su* 'do' also plays a crucial role in Saito's (2006) analysis of the properties of the light verb construction discussed in Grimshaw & Mester (1988) (see also Miyagawa 1989b, Terada 1990, Tsujimura 1990, Hoshi 1994, Saito & Hoshi 2000, to name a few). Suppose now that we could restrict the distribution of the expletive *su* 'do' appropriately so that it can occur in the light verb construction but not in VP-scrambling. Then, we can maintain the explanation of the properties of VP-scrambling developed in this chapter without totally abandoning the expletive *su* 'do'.

In this regard, Mamoru Saito (p.c.) makes one promising suggestion. Recall that the presence of the expletive *su* 'do' has no syntactic function in the case of VP-scrambling. In particular, it never participates θ-role assignment nor Case-marking; both of these properties are taken care of by the main verb and functional heads associated with it. On the other hand, there is evidence that indicates that the expletive *su* 'do' does play a role in Case-checking/assignment in the case of the light verb construction. To see this, let us consider the examples in (62).

(62) *Case-assignment in the light verb construction*

a. Taroo-ga eigo-o [rikai] si-ta (koto)
Taroo-NOM English-ACC understanding do-PAST fact
'Taroo understands English'

b. *Taroo-ga [eigo-no rikai]-o si-ta (koto)
Taroo-NOM English-GEN understanding do-PAST fact
'(lit.) Taroo did understanding English'

c. [(Taroo-no) eigo{-no/*-o} rikai]
Taroo-GEN English-GEN/-ACC understanding
'(lit.) (Taroo's) understanding of English'

(62a) is an example of the light verb construction, where the verbal noun *rikai* 'understanding' appears in front of *su* 'do'. Notice that the object *eigo* 'English', which is the logical object of the verbal noun, is marked with the accusative Case-marker *-o*. If the relevant instance of *su* 'do' is the transitive one, the appearance of the accusative Case-marker is straightforward. Recall however that the transitive *su* 'do' is compatible only with event-denoting complements, although the verbal noun *rikai* 'understanding' describes a state. The ungrammaticality of (62b) confirms that the transitive *su* 'do' is not compatible with the complement headed by *rikai* 'understanding'. On the other hand, the verbal noun cannot assign the accusative Case-marker in its own right. If it could, it becomes mysterious why the object *eigo* 'English' in (62c) cannot be marked with the accusative Case-marker. Finally, it is not likely the case that *su* 'do' in (62a) is the unaccusative one, so that the accusative Case-marker is assigned by it. This is because unaccusative verbs cannot assign accusative Case by definition.

These considerations lead us to the idea that the accusative Case-marker is licensed by a combination of the verbal noun and the expletive *su* 'do', which is reminiscent of Grimshaw & Mester's (1988) original analysis of the light verb construction (although in their analysis *su* 'do' is the sole source of the Case-marker). In this sense, the expletive *su* 'do' does play a syntactic role in the light verb construction, whereas it does never in Japanese VP-scrambling. Then, if there is a kind of economy condition on representation that allows an expletive to appear just in case it plays a certain syntactic role, we can appropriately restrict the distribution of the expletive *su* 'do' in the way we want. I leave it as a remaining issue if and to what extent such a line of approach allows us to gain further insights on the properties of the constructions in question and the nature of expletive elements in general.

4.4.3. Possible Cross-linguistic Variations of Movement of Verbal Projections

This subsection discusses an implication of the proposed analysis of VP-scrambling from a broader perspective. Restricting ourselves to the cases where the fronted VP crosses the subject, Japanese differs from English in that only the former prohibits a VP containing unaccusative/passive/stative verbs from being moved. The contrast between (63a) repeated from (29b) and (63b) repeated from (21a) confirms this point.

(63) *Movement of VP containing an unaccusative verb in Japanese and English*

a. *[Sizumi]-sae$_i$ fune-ga t_i si-ta (koto)
sink-even ship-NOM do-PAST fact
'(lit.) [Even sink]$_i$, a ship did t_i'

b. They said that the ball might fall into a ditch, and [fall t_i into a ditch]$_j$, it$_i$ did t_j

Under the theory of Cyclic Linearization combined with the Spell-out Domain Parameter (28), the contrast is explained in the following way: Since English selects the value (28b), which specifies only the elements within the complement of v^0 to be subject to linearization, the linear order between the internal argument and the verb can be left unspecified at the Spell-out of *v*P once the internal argument is moved to the *v*P-edge, as schematically shown in (64a). Hence, the derivation that yields (63b) can eventually converge. On the other hand, since Japanese selects the value (28a), which specifies all the elements within v^0 to be linearized, the relative linear order of the verb and its arguments are fixed at the Spell-out of *v*P as in (64b), even if an internal argument moves to the edge of *v*P prior to Spell-out. Consequently, the derivation yielding (63a) necessarily results in an ordering contradiction.

(64) *Spell-out of* v*P and established ordering statements*

a. $[_{vP}\ DP_i\ v^0\ [_{VP}\ V^0\ t_i]]$
Ordering Table: V^0

b $[_{vP}\ DP_i\ [_{VP}\ t_i\ V^0]\ v^0]$
Ordering Table: $DP<V^0<v^0$

More generally, in English, elements on the edge of *v*P, either base-generated or moved, can escape from being fixed their relative ordering with respect to the verb, so that any type of verbs can participate VP-fronting. English is a head-initial language with the parametric value (28b). Suppose that a head-final language selects the value (28b). This language patterns with English with respect to the range of possible

VP-fronting, because the edge of *v*P functions as an escape hatch in the sense mentioned above. Therefore, a language with the parametric value (28b), be it head-initial or head-final, is predicted as imposing no restriction on VP-scrambling.

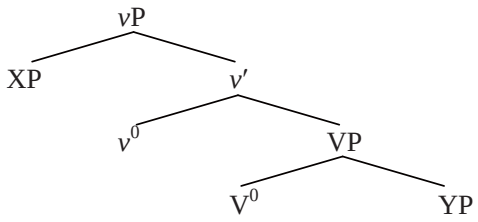
On the other hand, in Japanese, a head-final language with the parametric value (28a), all the arguments base-generated within the *v*P of the main verb are specified to precede the main verb. If an argument is intended to be left behind the scrambled VP, it must be base-generated outside of the scrambled VP. The control *su* 'do' provides a way of establishing this, by allowing the structure in (65).

(65) *Structure with the control* su *'do'*
$[_{vP1}\ DP_i\ [_{VP1}\ [_{vP2}\ PRO_i\ [_{VP2}\ \ldots\ V^0{}_2]]\ su]]$

Since the DP in (65) has not been introduced to the structure when Spell-out applies to vP_2, the linear order between the DP and the main verb $V^0{}_2$ can be specified at a significantly later point of the derivation. Furthermore, the structure (65) is allowed only when the subject is compatible with the control *su* 'do'. Therefore, the proposed analysis explains not only why VP-scrambling in Japanese is not possible with unaccusative/passive/stative verbs but also why licit VP-scrambling must recourse to the control structure.

Suppose then that a head-initial language selects the parametric value (28a). Given a schematic structure like (66), the external argument XP is always specified to precede the main verb at the Spell-out of *v*P in this type of languages. Thus, the English-type VP-fronting is predicted to be impossible not only with (di)transitive/unergative verbs but also with stative ones.

(66) *Schematic structure of* v*P*



As for the internal arguments, YP in (66), some discussion seems necessary. First, suppose that an internal argument, which eventually moves to Spec, TP as a surface subject, must be moved to the *v*P-edge when the main verb is unaccusative or passive.

Then, Spell-out of *v*P always establishes the ordering statement where the unaccusative/passive verb linearly follows its surface subject. As a result, the English-type VP-fronting is barred for unaccusative/passive verbs, on a par with the cases involving (di)transitive/unergative/stative verbs. If the language in question has a counterpart of the control *su* 'do', we predict that the language patterns with Japanese: A fronted VP can linearly precede the subject only when the VP involves (di)transitive/unergative verbs, which can make use of the control structure.

On the other hand, suppose that a head-initial language selecting the parametric value (28a) allows an internal argument of unaccusative/passive verbs to stay in the VP-internal position, as in (67a). Then, the ordering statement where the verb is specified to precede its complement is established. Then, the derivation depicted in (67) eventually converges, without inducing any ordering contradiction.

(67) *A possible derivation*

a. *Construction of* v*P* → *Spell-out of* v*P*
   $[_{vP}\ v^0\ [_{VP}\ V^0\ DP]]$ Ordering Table: $\boldsymbol{v^0<V^0<DP}$

b. *Construction of TP*
   $[_{TP}\ DP_i\ T^0\ [_{vP}\ v^0\ [_{VP}\ V^0\ t_i]]]$
   Ordering Table: $v^0<V^0<DP$

c. *Movement of* v*P* → *Spell-out of CP*
   $[_{CP}\ \boxed{[_{vP}\ v^0\ [_{VP}\ V^0\ t_i]]}\ C_0\ [_{TP}\ DP_i\ T^0\ t_{vP}]]$
   Ordering Table: $v^0<V^0<DP$
   $\boldsymbol{v^0<V^0<C^0<DP<T^0}$

That is, the English-type VP-fronting with unaccusative/passive verbs is allowed in this case. Therefore, when VP-fronting takes place, the language is predicted to exhibit the following three patterns: If the main verb is (di)transitive/unergative, the control structure is employed; if the main verb is unaccusative/passive, the English-type VP-fronting is employed; if the main verb is stative, the VP cannot be fronted.

To summarize the discussion so far, the theory of Cyclic Linearization combined with the Spell-out Domain Parameter predicts the following cross-linguistic variations on fronting of VP crossing the subject:

(68) *Possible cross-linguistic variations on VP-fronting*

a. The English-type: No restriction is imposed on the type of verbs involved.

b. The Japanese-type: VP-fronting is possible only if the stranded subject is compatible with a control verb.
c. The third type: For unaccusative/passive verbs, the language patterns with English; for (di)transitive/unergative verbs, it patterns with Japanese; and for stative verbs, VP-fronting is simply impossible.

Note that whether the third type (68c) is indeed attested or not depends on the validity of the assumption that the surface subject of unaccusative/passive verbs has an option of staying within VP at the Spell-out of *v*P. Hence, the third type is presumably a marked one. If so, it is expected that a large part of languages falls into either (68a) or (68b). Verifying this cross-linguistic prediction is no small task and beyond this dissertation, so I leave it as a remaining issue. However, it is worth pointing out that the analysis proposed in this chapter not only explains the restrictions on VP-scrambling in Japanese, but also makes a novel prediction concerning cross-linguistic distributions of fronting of VP, which has not been attested in the previous studies on Japanese VP-scrambling.

4.5. Conclusion

To summarize this chapter, I examined the properties of Japanese VP-scrambling in light of the theory of Cyclic Linearization. I argued that although Japanese VP-scrambling appears to be a counterexample of the analysis of the Proper Binding Condition effect on scrambling based on the theory of Cyclic Linearization, it does provide support for the analysis advocated in the previous chapters.

Following the insights of the previous studies, I drew the following generalizations:

(69) *Generalizations on Japanese VP-scrambling*
a. If the raising structure is involved, VP-scrambling is not allowed when arguments are stranded.
b. If the control structure is involved, VP-scrambling is allowed when a subject but not other argument is stranded.
c. A scrambled VP can precede an adjunct regardless of the types of main verb.

I then offered an explanation of these generalizations in terms of the theory of Cyclic Linearization and the Spell-out Domain Parameter. In particular, I argued that in the raising structure, all the arguments are base-generated inside of the projection of the main verb, while in the control structure, the controller argument which qualifies an agentive argument of the control verb *su* ‘do’ can be Merged outside of it. As a result,

the relative linear order between the main verb and the controller can be fixed at a later point of the derivation, allowing linear order flexibility. As for adjuncts, they are allowed to be base-generated outside of the relevant projection because they do not receive a θ-role. Hence, they pattern alike the controller arguments. I provided a piece of evidence for the proposed analysis, by illustrating that even an adjunct fails to linearly follow the scrambled VP, if it is forced to modify the main verb.

Finally, I discussed some implications and remaining issues. First, it was shown that a certain exception of the generalization in (69) is in fact not an exception but rather provides a supporting argument for the proposed analysis. Second, I pointed out that the proposed analysis calls for future research on the theoretical status of the expletive *su* 'do' and on possible cross-linguistic variations of fronting of VP.

Therefore, the proposed analysis based on the theory of Cyclic Linearization and the Spell-out Domain Parameter allows us not only to explain the basic properties of Japanese VP-scrambling, discovering some novel empirical facts, but also to stimulate further inquiry from a broader perspective through a detailed analysis of the relevant phenomena.

Notes to Chapter 4

[1] The term VP-scrambling is intended to refer to the construction in which an XP containing a predicate such as a verb undergoes scrambling. Hence, it is neutral with respect to the categorical status of the XP, although I show in Section 4.2.1 that it is indeed *v*P. See, among many others, Hoji, Miyagawa & Tada 1989, Hasegawa 1990, Ohkado 1991, Tateishi 1991, Kubo 1992, Hoshi 1994, Yatsushiro 1997, 1999, Saito & Hoshi 2000, and Saito 2006 for previous discussions on VP-scrambling in Japanese, though some of them are reviewed later in the text.

[2] Following Aoyagi (1998), I assume that *-sae* 'even' is attached to the projection of a predicate (see also Sohn 1995:223, fn.163 for a remark on similar elements in Korean), rather than a verb itself (see, for instance, Kishimoto 2001; see also Choi & Sells 1995, Sells 1995 for Korean), although nothing hinges on this assumption in the following discussions, as far as I can tell. In addition to *-sae* 'even', particles like *-mo* 'also', *-dake* 'only', and the topic marker *-wa* also appear in Japanese VP-scrambling. It is not possible for VP to appear in the sentence-initial position if there is no such particle attached to the verb, as shown in (i) below (see, for instance, Kuno 1978 and Saito 1985).

(i) a. Taroo-ga [ringo-o tabe]-ta (koto)
Taroo-NOM apple-ACC eat-PAST fact
'Taroo ate an apple'

b.* [Ringo-o tabe]$_i$ Taroo-ga t_i (si)-ta (koto)
apple-ACC eat Taroo-NOM do-PAST fact
'(lit.) [Eat an apple]$_i$, Taroo did t_i'

Note that the presence of *su* 'do' does not affect the grammatical status of (ib).

[3] The nature of the verb *su* 'do' has been subject to much debate in the history of Japanese syntax. See, among many others, Kuroda (1965), Inoue (1976), Kageyama (1976-77, 1982, 1993), Grimshaw & Mester (1988), Miyagawa (1989b), Terada (1990), Tsujimura (1990), Ohkado (1991), Hoshi (1994), Saito & Hoshi (2000), and Saito (2006).

[4] Although Japanese has several types of passives (see Hoshi 1999 for an overview), I restrict myself to the so-called *niyotte*-passives (Kuroda 1979), in order to avoid unnecessary complications concerning VP-scrambling with passives.

[5] Hoshi's (1994) suggestion is supported by the contrast between (ia) and (ib), which involve a genuine control verb like *try* (cited from Lasnik & Fiengo 1974:553). According to Lasnik & Fiengo (1974), *get*-passives can denote a controllable action while *be*-passives cannot, so that only the former can be a complement of *try*, which requires a complement denoting an event.

(i) a. *John tried to be arrested by the police
b. John tried to get (himself) arrested by the police

[6] Since Saito (2006) seems to assume that VP-scrambling moves a VP, I adjust his explanation so as to make it compatible with the idea that VP-scrambling moves a *v*P.

[7] Nothing prevents the expletive *su* 'do' from appearing in sentences with (di)transitive and unergative verbs. Thus, those sentences without VP-scrambling can be structurally ambiguous. For instance, a sentence with a transitive verb like (ia), repeated from (1a), would be analyzed as having a structure like (ib), which contains the expletive *su* 'do'.

(i) a. Taroo-ga [ringo-o tabe]-sae si-ta (koto)
Taroo-NOM apple-ACC eat-even do-PAST fact
'Taroo [even ate an apple]'
b. [$_{TP}$ Taroo-ga$_i$ [$_{VexplP}$ t_i [$_{vP}$ ringo-o tabe-sae$_j$] [$_{Vexpl}{}^0$ <tabe-sae>$_j$ si]] -ta]

In (ib), the main verb undergoes convert adjunction to the expletive *su* 'do', assigning a θ-role to the external argument *Taroo-ga*, base-generated in Spec, V_{expl}P. Then, scrambling of *v*P results in a violation of the derivational PBC, on a par with the cases with unaccusative, passive and stative verbs. Recall however that (di)transitive and unergative verbs are also compatible with the control *su* 'do'. Hence, VP-scrambling is licit for these verbs.

[8] In his formulation of the derivational PBC, Saito (2003), following Lasnik (1999a) and Kuno (2001), assumes that A-movement does not have to leave a trace. See also Chapter 2 for a relevant discussion.

[9] A similar example can be constructed with passive and stative verbs, as in (i).

(i) a. Hooseki-ga [doroboo-niyotte nusum-are]-sae kinoo(-wa) si-ta (koto)
jewel-NOM thief-by steal-PASS-even yesterday-TOP do-PAST fact
'The jewels were [even stolen by the thief] yesterday'
b. Taroo-ga [numuko-no kimoti-ga wakari]-sae sono koro(-wa) si-ta (koto)
Taroo-NOM son-GEN feeling-NOM understand-even that time-TOP do-PAST fact
'Taroo [even understood his son's feeling] at that time'

I thank Masatake Arimoto (p.c.) for his help in constructing the relevant examples.

[10] In addition to the nouns used in the text, the unaccusative *su* 'do' seems to take nouns like *kaori* 'smell', *hibiki* 'peal', *azi* 'taste', which are related to the Speaker's senses, as its subject. Moreover, it also takes nouns like *ki* 'atomosphere', *kanzi* 'feeling', *yokan* 'premonition', which

denote the Speaker's mental attitude, as its subject.

[11] Recall from the discussion in Chapter 2, that we are assuming that not only transitive/unergative *v*Ps but also unaccusative/passive ones are subject to Spell-out, following Ko (2005a, 2007). As is discussed soon in the text, our analysis provides a further argument for this assumption.

[12] The proposed system does not exclude the following alternative derivation for (34a) depicted in (i), as pointed out by Mamoru Saito (p.c.).

(i) a. *Construction of* vP_2 → *Spell-out of* vP_2
[$_{vP2}$ [$_{VP2}$ fune-ga sizumi]]-sae Ordering Table: ***fune-ga<sizumi-sae***

b. *Merge of* kinoo *with* vP_1
[$_{vP1}$ kinoo [$_{VP1}$ [$_{vP2}$ [$_{VP2}$ fune-ga sizumi]]-sae si]]
Ordering Table: *fune-ga<sizumi-sae*

c. *Scrambling of* vP_2 to vP_1*-edge* → *Spell-out of* vP_1
[$_{vP1}$ [$_{vP2}$ [$_{VP2}$ fune-ga sizumi]]-sae kinoo [$_{VP1}$ t_{vP2} si]]
Ordering Table: *fune-ga<sizumi-sae*
fune-ga<sizumi-sae<kinoo<si

d. *Construction of CP* → *Spell-out of CP*
[$_{CP}$ [$_{TP}$ fune-ga$_i$ [$_{vP1}$ [$_{vP2}$ [$_{VP2}$ t_i sizumi]]-sae kinoo [$_{VP1}$ t_{vP2} si]] -ta]]
Ordering Table: *fune-ga<sizumi-sae*
fune-ga<sizumi-sae<kinoo<si
fune-ga<sizumi-sae<kinoo<si<ta

The derivation in (i) crucially differs from the one in (35) in that the subject *fune-ga* 'ship' moves to Spec, TP after *v*P_2 undergoes scrambling to the *v*P_1-edge. This movement is legitimate because it has been noticed that scrambling out of a scrambled phrase is possible (see, for instance, Takahashi 1994, Saito & Fukui 1998, among others). Moreover, no contradicting orderings statements are established. Thus, the derivation successfully converges, yielding the intended surface linear order.

[13] In this dissertation, I assume the PRO-based theory of control (Chomsky 1981, Chomsky & Lasnik 1993, Martin 1996, 2001, Landau 2000, 2003, 2004, to name a few). For recent discussions on the nature of control, see Hornstein 1999, 2001, 2003, Manzini & Roussou 2000, Culicover & Jackendoff 2001, 2005, 2006, Boeckx & Hornstein 2003, 2004, 2006a, b, Jackendoff & Culicover 2003, Polinsky & Potsdam 2006, and Runner 2006. See also footnote 16.

[14] Nothing hinges upon whether this scrambling targets TP or CP.

[15] Tateishi (1991:100) discusses examples like (i), judging it ungrammatical.

(i) *[Eigo-o benkyoosi]-wa$_i$ Taroo-ga isshookenmei t_i si-ta
English-ACC study-TOP Taroo-NOM hard do-PAST
'(lit.) [Study English]$_i$, Taroo did t_i hard'

Because the adverb *isshookenmei* 'hard' can also modify *su* 'do', the status of (i) is not quite clear. I provide clearer examples in the subsequent text.

[16] One issue I do not discuss in this dissertation is the interaction between the proposed analysis and the movement theory of control put forth by Hornstein (1999), which reduces control to movement (see also Bowers 1973, 2008, O'Neil 1997 and references mentioned in footnote 13; see Fujii 2006 and Takano 2008 for evidence from Japanese). Under the movement theory of control, the controller is Merged in a θ-position of the control complement, and then raises to the higher θ-position. Given the movement theory of control, every argument must be Merged within the projection of the main verb, irrespective of whether the control or the raising *su* 'do' appears. As a result, the account of the generalizations in (26) is lost. See Takita (to appear d) for a possible solution to this problem and some pieces of evidence.

[17] In fact, there seem to be variations among speakers with respect to the status of (48b). For instance, Tateishi (1991) judges a similar example as ungrammatical. If the stranded dative argument is indeed an argument of *su* 'do' but not that of the main verb, as is claimed in the subsequent text, it might be possible to attribute the source of the variations to the difference regarding the argument structure of *su* 'do'.

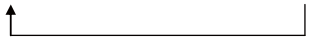
[18] Anticipating the suggestion below in the text that the *ni*-marked argument of *su* 'do' is a PP, I use NI as the gloss for the relevant instances of *-ni*.

[19] (52a) is awkward presumably because the overt pronoun *kanozyo-ni* 'her' is adjacent to *Hanako-ni*. As in (i) below, a similar effect is observed even when no clausal complement is involved.

(i) Taroo-ga Hanako-ni$_i$ [(?kanozyo-e-no$_i$) hon-no okurimono]-o si-ta (koto)
Taroo-NOM Hanako-DAT her-to-GEN book-GEN present-ACC do-PAST fact
'Taroo did to Hanako [a present of a book for her]'

[20] Hornstein (2001) and Boeckx & Hornstein (2003) assume the movement theory of control. According to the movement theory of control, the effect of the PMD is subsumed under the locality constraints on movement, for instance, the Minimal Link Condition. Hence, by postulating the null P, (55a) is analyzed as having a structure like (ia).

(i) a. John$_i$ promised [$_{PP}$ ø [$_{DP}$ Mary]] [t_i to go to school]



b. John$_i$ seems [$_{PP}$ to [$_{DP}$ Mary]] [t_i to go to school]

In (ia), John is base-generated within the embedded clause, receiving a θ-role from *go*, and then it raises to the matrix clause, receiving another θ-role from *promise*. Since *Mary* in (ia) is the complement of the null P, the movement of *John* across *Mary* does not induce a locality violation, on a par with the case in (ib), where the experience PP *to Mary* does not block the raising of *John*.

Although the analysis advocated in this chapter assumes the rather traditional PRO-based theory, the null P analysis does not seem to be inconsistent with the PRO-based theory. Hence, I believe that the choice of this particular analysis of control does not affect the point being made in the text.

[21] Following the notation in Chapter 2, NQs and their host NPs are underlined.

[22] Mamoru Saito (p.c.) points out that the structure in (60b) might be allowed even under the principle (61) if the adjunction of the main verb to the expletive *su* 'do' takes place first so that base-generation of an argument to $V_{expl}P$ counts an application of External Merge into a θ-position. One possible solution is to assume that the expletive *su* 'do' is a subtype of *v*, so that it is subject to Spell-out. Then, the main verb and the expletive *su* 'do', to which it adjoins, are specified to follow all the other elements within the $V_{expl}P$.

Chapter 5
Sluicing in Japanese and Cyclic Linearization

5.1. Introduction

This chapter principally concerns with the so-called sluicing construction, exemplified by the English examples in (1) below (see, among many others, Ross 1969a and Merchant 2001).[1] In sluicing, the embedded interrogative clauses of the second conjuncts are reduced to containing only a *wh*-phrase (in these cases, *what* and *which magazine*), which is called a *remnant*.[2]

(1) *Sluicing in English*
   a. John bought something, but I don't know [what Δ]
   b. John knows [which book Mary bought], and Bill knows [which magazine Δ]

In (1a), the remnant has the indefinite noun *something* as its *correlate* in the antecedent clause, whereas in (1b) the *wh*-phrase *which book* in the antecedent clause serves as a correlate (remnants and correlates are boxed throughout this chapter).

A similar construction is found in Japanese, as shown in (2) below.[3] Although they are quite similar to the examples in (1), there is an interesting difference between the ones in (2) and the ones in (1): The copula *da* may appear in the clause to which ellipsis has applied (let us call it the *target* clause).

(2) *Sluicing-like construction in Japanese*
   a. Taroo-ga nanika-o katta rasii ga,
      Taroo-NOM something-ACC bought seem but
      boku-wa [nani-o Δ (da) ka] sir-anai
      I-TOP what-ACC COP Q know-NEG
      '(lit.) Taroo seems to have bought something, but I don't know [what Δ]'
   b. Taroo-wa [Hanako-ga dono hon-o katta ka] sitteiru si,
      Taroo-TOP Hanako-NOM which book-ACC bought Q know and
      Ziroo-wa [dono zassi-o Δ (da) ka] sitteiru
      Ziroo-TOP which-ACC COP Q know
      '(lit.) Taroo knows which book Hanako bought, and Bill knows [which magazine Δ]'

Thus, this construction is referred to as the sluicing-like construction (SLC).

There has been some controversy as to how to analyze the SLC. Takahashi (1994) proposes that the SLC has essentially the same structure as the sluicing construction in English. That is, it results from TP-deletion preceded by *wh*-movement.[4] On the other hand, it has been argued that the SLC has a different structure from sluicing (see Shimoyama 1995, Nishiyama, Whitman & Yi. 1996, Kuwabara 1997, Kizu 1997, 2005, Fukaya & Hoji 1999, Sakai 2000, Hiraiwa & Ishihara 2002, Fukaya 2003, Saito 2004, and Nakao & Yoshida 2005, among many others). According to this view, the relevant part of (2a) is analyzed either as a copula construction with a null pronominal subject, namely *pro*, or as a cleft construction with ellipsis of the presupposition CP (details are reviewed in Section 5.2).

I illustrate in this chapter that Japanese does have a construction comparable to sluicing in English, which is derived by by TP-deletion and concomitant *wh*-movement, based on a novel set of data involving non-finite complements. Meanwhile, I argue that examples like (2), which contain finite complements, are best analyzed as having the copula/cleft constructions as their underlying sources. Furthermore, I argue that TP-deletion and concomitant *wh*-movement in finite clauses yields a hitherto unattested type of sluicing, which we call V(erb)-stranding sluicing. Finally, I point out that the pattern of sluicing found in Japanese constitutes a clear counterexample to Merchant's (2001) Sluicing-COMP generalization, which informally states that no elements other than *wh*-phrases can survive deletion under sluicing. Then, I posit an alternative generalization that incorporates the Japanese pattern.

After establishing the existence of sluicing in Japanese and its implication for the study of sluicing in general, I argue that the theory of Cyclic Linearization developed in the previous chapters can provide a way of deriving the effect of the alternative generalization. In particular, I argue that the effect is derived once we implement under the theory of Cyclic Linearization Fox & Lasnik's (2003) approach to island-repair (see also Ross 1969a, Chomsky 1972, Chung, Ladusaw, & McCloskey 1995, Lasnik 2001, 2006, 2008, and Merchant 2001, 2004, 2008, to name a few, for various approaches to island-repair), which is introduced there. Thus, the theory of Cyclic Linearization receives further support to the extent that the account is successful.

This chapter is organized as follows: Section 5.2 is devoted to show that Japanese has sluicing. It is also shown that the Japanese pattern of sluicing requires a reconsideration of Merchant's (2001) Sluicing-COMP generalization. Section 5.3 aims at deriving the effect of the alternative generalization in terms of Cyclic Linearization.

In Section 5.4, I discuss some remaining issues and suggest a direction of future study by making some speculations. Section 5.5 is the conclusion.

5.2. Sluicing in Japanese Revisited

As mentioned in Section 5.1, previous studies on sluicing in Japanese have been focusing on the construction which is referred to as the sluicing-like construction (SLC). The relevant examples are given in (3), repeated from (2).

(3) *Sluicing-like construction in Japanese*

a. Taroo-ga nanika-o katta rasii ga,
Taroo-NOM something-ACC bought seem but
boku-wa [nani-o Δ (da) ka] sir-anai
I-TOP what-ACC COP Q know-NEG
'(lit.) Taroo seems to have bought something, but I don't know [what Δ]'

b. Taroo-wa [Hanako-ga dono hon-o katta ka] sitteiru si,
Taroo-TOP Hanako-NOM which book-ACC bought Q know and
Ziroo-wa [dono zassi-o Δ (da) ka] sitteiru
Ziroo-TOP which-ACC COP Q know
'(lit.) Taroo knows which book Hanako bought, and Bill knows [which magazine Δ]'

Takahashi (1994) proposes that the SLC results from TP-deletion and concomitant *wh*-movement, on a par with sluicing in English. Under this view, the target clause of (3a) has a structure like (4), where the *wh*-phrase *nani-o* 'what' undergoes *wh*-movement to the Spec of CP, whose head is the Q-morpheme *ka*, and the complement TP gets deleted. I call this view the *genuine sluicing* analysis of the SLC.

(4) *Genuine sluicing analysis of (3a)*

… boku-wa [$_{CP}$ nani-o$_i$ ~~[$_{TP}$ Taroo-ga t_i katta]~~ [$_C{}^0$ ka]] sir-anai

On the other hand, many works cited in Section 5.1 have argued that the SLC has the copula/cleft constructions as its underlying source. According to this view, the relevant part of (3a) is analyzed either as a copula construction with a null pronominal subject, namely *pro*, as in (5a), or as a cleft construction with ellipsis of the presupposition CP as in (5b).[5]

(5) *Pseudo-sluicing analysis of (3a)*

a. … boku-wa [*pro* nani-o (da) ka] sir-nai
I-TOP what-ACC COP Q know-NEG
'(lit.) … I don't know [what it is]'

b. … boku-wa [[$_{CP}$ Taroo-ga katta no]-ga nani-o (da) ka] sir-anai
I-TOP Taroo-NOM bought C-NOM what-ACC COP Q know-NEG
'(lit.) … I don't know [what it is [that Taroo bought]]'

Adopting Merchant's (1998, 2001) terminology, I call this type of analysis the *pseudo-sluicing* analysis of the SLC.

As reviewed in Section 5.2.1 below, one of the major sources of controversy regarding the SLC is the optional presence of the copula *da*. As far as I can tell, all the previous studies on the SLC in Japanese mentioned above have examined sentences containing predicates like 'know', which take finite clausal complements.[6] These predicates can also take the copula and cleft constructions as their complements. Thus, it is far from clear whether Japanese allows genuine sluicing. This state of affairs undermines the basis of the theoretical implications of Takahashi's (1994) work: Evidence for *wh*-movement and for the functional category that licenses TP-deletion (namely, C^0) in Japanese, contrary to the view that argues for the non-existence of such functional categories in languages like Japanese (see, for instance, Fukui 1986).

Observe at this point that the copula and cleft constructions are never allowed as complements of control predicates like *mayotteiru* 'hesitate', as shown in (6) below.

(6) *Copula in control complements*

a. Taroo-wa [PRO doko-e ik-oo (*da) ka] mayotteiru / kimekaneteiru
Taroo-TOP where-to go-INF COP Q hesitate cannot.decide
'(lit.) Taroo hesitates/cannot decide [where to go]'

b. *Taroo-wa [(sore-ga) doko-e da ka] mayotteiru / kimekaneteiru
Taroo-TOP it-NOM where-to COP Q hesitate cannot.decide
'(lit.) Taroo hesitates/cannot decide [where it is]'

c. *Taroo-wa [[$_{CP}$ iku no]-ga doko-e da ka] mayotteiru / kimekaneteiru
Taroo-TOP go C-NOM where-to COP Q hesitate cannot.decide
'(lit.) Taroo hesitates/cannot decide [where it is [to go]]'

In (6a), the verb *ik* 'go' is accompanied with the infinitive marker *-(y)oo*.[7] It is not

possible for the copula *da* to appear between the verb and the Q-morpheme in this kind of syntactic context. In (6b), the embedded clause is the copula construction, and the sentence is ungrammatical irrespective of the presence of the pronominal subject *sore-ga* 'it'. Finally, the ungrammaticality of (6c) indicates that the cleft construction cannot appear as a complement of these predicates.[8]

Hence, this kind of predicates allows us to examine whether Japanese has genuine sluicing without the interference of pseudo-sluicing. In this section, it is shown that Japanese indeed has genuine sluicing, based on a novel set of data regarding the SLC with non-finite (namely, control) complements (hereafter SLC_{NFC}). Meanwhile, it is also shown that the SLC with finite complements (hereafter SLC_{FC}) exemplified by (3) is best analyzed as pseudo-sluicing, contrasting it with the SLC_{NFC}. Therefore, our results support Takahashi's (1994) idea and consequently its aforementioned theoretical implications from a slightly different angle, simultaneously maintaining the pseudo-sluicing analysis of the "standard" examples, that is, of the SLC_{FC}.

In Section 5.2.1, I provide a brief background on the genuine sluicing and pseudo-sluicing analyses. In Section 5.2.2, I argue that the SLC_{NFC} instantiates the genuine sluicing structure, while the SLC_{FC} unambiguously has the pseudo-sluicing structure, based on several diagnostic tests. In Section 5.2.3, I return to the question of why the SLC_{FC} does not allow the genuine sluicing structure. Section 5.2.4 discusses the implications of the findings of this section for the study of sluicing.

5.2.1. Background on the SLC_{FC}

Let us start with one of Takahashi's (1994) arguments for the genuine sluicing analysis. He observes that, as shown in (7) below, the SLC_{FC} allows the sloppy reading given in (7b-ii) (see Ross 1969a for sluicing; see Sag 1976, Williams 1977 and Fiengo & May 1994 for VP-ellipsis; see also Chapter 3 for argument ellipsis), in addition to the strict reading given in (7b-i).[9]

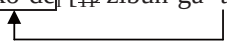
(7) *Sloppy reading in the SLC_{FC}*

a. Taroo-wa [zibun-ga doko-de sikarareru ka] sitteiru ga,
Taroo-TOP self-NOM where-at is.scolded Q know but
'(lit.) Though Taroo knows [where he will be scolded],'

b. Hanako-wa [doko-de Δ (da) ka] sir-anai
Hanako-TOP where-at COP Q know-NEG
'(lit.) Hanako doesn't know [where Δ]'
(i) Hanako doesn't know [where he (= Taroo) will be scolded]
(ii) Hanako doesn't know [where she (= Hanako) will be scolded]

That is, (7b) allows the missing embedded subject of the target clause to refer either to *Taroo* or to *Hanako*. Taking the availability of the sloppy reading as a hallmark of ellipsis, Takahashi (1994) argues that sentences like (7b) results from *wh*-movement of *doko-de* 'where' followed by deletion of the TP, which contains the anaphor *zibun* 'self', as in (8) (cf. (4)).

(8) *Genuine sluicing analysis of (7b)*
Hanako-wa [$_{CP}$ doko-de$_i$ ~~[$_{TP}$ zibun-ga t_i sikarareru]~~ ka] sir-anai



The genuine sluicing analysis, however, cannot deal with the presence of the copula, as Takahashi (1994) himself notes. If the alleged TP-deletion has not applied, (7b) would be like (9), in which the copula *da* cannot appear.

(9) *(7b) without ellipsis*
Hanako-wa [$_{CP}$ doko-de [$_{TP}$ zibun-ga sikarareru] (*da) ka] sir-anai
Hanako-TOP where-at self-NOM is.scolded COP Q know-NEG
'(lit.) Though Taroo knows [where he will be scolded],'

Thus, the copula should be disallowed in (7b) if (9) is the underlying source of it.

Takahashi (1994) then discusses one version of the pseudo-sluicing analysis, which treats the SLC_{FC} as an instance of the copula construction with the null pronominal subject (cf. (5a)). Under this analysis, (7b) would be analyzed as having a structure like (10a). Given that *pro* is a phonologically null counterpart of pronouns, (10a) would look like (10b) if *pro* is replaced with the overt pronoun *sore* 'it'.

(10) *SLC_{FC} as copula construction*
a. Hanako-wa [*pro* doko-de (da) ka] sir-anai

b. Hanako-wa [sore-ga doko-de (da) ka] sir-anai
Hanako-TOP it-NOM where-at COP Q know-NEG
'(lit.) Hanako doesn't know [where it is]'

As seen in (10b), the copula is optional in this construction. Thus, if (10b) is the underlying source of (7b), the optional presence of the copula in the SLC_{FC} can be captured.

This analysis is rejected by Takahashi (1994), however. This is because it fails to capture the observation that the SLC_{FC} allows the sloppy reading. Suppose that (7a), repeated as (11a), is followed by (10b), repeated as (11b).

(11) *Absence of sloppy reading in the copula construction*

a. Taroo-wa [zibun-ga doko-de sikarareru ka] sitteiru ga,
Taroo-TOP self-NOM where-at is.scolded Q know but
'(lit.) Though Taroo knows [where he will be scolded],'

b. Hanako-wa [sore-ga doko-de (da) ka] sir-anai
Hanako-TOP it-NOM where-at COP Q know-NEG
'(lit.) Hanako doesn't know [where it is]'
(i) Hanako doesn't know [where he (= Taroo) will be scolded]
(ii) *Hanako doesn't know [where she (= Hanako) will be scolded]

Crucially, (11b) does not allow the sloppy reading in (11b-ii), which is indeed available for (7b). Hence, it is not likely the case that something like (10a-b) is the underlying source for (7b). The puzzle then boils down to how we can capture the two properties exhibited by the SLC_{FC}; the availability of the sloppy reading and the (optional) presence of the copula.

To solve this problem, Saito (2004) proposes the other version of the pseudo-sluicing analysis mentioned in Section 5.2.1 (cf. (5b)). In particular, he argues, following Nishiyama, Whitman & Yi (1996), that the cleft construction underlies the SLC_{FC}. According to Saito (2004), (7b) would be analyzed as having a structure like (12) as its underlying source, whose embedded clause is a cleft construction.

(12) *SLC_{FC} as cleft construction*

Hanako-wa [[$_{CP}$ zibun-ga sikarareru no]-ga doko-de (da) ka] sir-anai
Hanako-TOP self-NOM is.scolded C-NOM where-at COP Q know-NEG
'(lit.) Hanako doesn't know [where self will be scolded]'

In the cleft construction, the copula appears optionally. Moreover, the presupposition CP in this construction qualifies as a subject: For instance, it can be marked by the nominative Case-marker *-ga*, as in (12).

Recall at this point that Japanese allows arguments, including subjects, to be directly deleted via argument ellipsis, as is extensively discussed in Chapter 3. (13) exemplifies one concrete case of argument ellipsis involving clausal subjects. (13a) sets up the context for (13b-c), and the clausal subject of the embedded clause contains *zibun* 'self'. In (13b), the clausal subject is missing, while in (13c) the overt pronoun *sore-ga* 'it' occupies the embedded subject position.

(13) *Argument ellipsis of clausal subjects*

a. Taroo-wa [[$_{CP}$ zibun-ga iku no]-ga taisetuda to] omotteiru
   Taroo-wa self-NOM go C-NOM important that think
   '(lit.) Taroo thinks [that [that he would go] is important]'

b. Hanako-wa [Δ taisetude-nai to] omotteiru
   Hanako-TOP important-NEG that think
   '(lit.) Hanako thinks [that Δ is not important]'
   (i) Hanako thinks [that [that he (= Taroo) would go] is not important]
   (ii) Hanako thinks [that [that she (= Hanako) would go] is not important]

c. Hanako-wa [sore-ga taisetude-nai to] omotteiru
   Hanako-TOP it-NOM important-NEG that think
   '(lit.) Hanako thinks [that it is not so important]'
   (i) Hanako thinks [that [that he (= Taroo) would go] is not important]
   (ii) *Hanako thinks [that [that she (= Hanako) would go] is not important]

Crucially, (13b) has the sloppy reading where the subject of the clausal subject refers to *Hanako*, namely the reading in (13b-ii), whereas (13c) does not have such a reading. This fact can be explained if the missing clausal subject in (13b) results from argument ellipsis.

Given argument ellipsis, Saito (2004) argues that the surface string of the SLC_{FC} derives from ellipsis of the presupposition CP subject and omission of the copula. Taking (7b) as a concrete example, it is derived from (12) by applying argument ellipsis to the presupposition CP subject, as in (14) (following the conclusion reached in Chapter 3, I assume that argument ellipsis is an instance of LF-copying, where copied elements are indicated by angled brackets).

(14) *SLC_{FC} as cleft construction with ellipsis of the presupposition CP subject*

Hanako-wa [<[$_{CP}$ zibun-ga sikarareru no]-ga> doko-de (da) ka] sir-anai
Hanako-TOP self-NOM is.scolded C-NOM where-at COP Q know-NEG
'(lit.) Hanako doesn't know [where self will be scolded]'

Thus, this analysis can explain not only the optional presence of the copula but also the availability of the sloppy reading in the SLC_{FC}, since it involves ellipsis.[10]

To sum up, the pseudo-sluicing analysis seems to be promising, as far as the SLC_{FC} is concerned. However, this state of affairs does not necessarily exclude the possibility of genuine sluicing in Japanese. In the next subsection, I examine the SLC_{NFC}, to explore whether genuine sluicing is available in Japanese.

5.2.2. SLC_{NFC} vs. SLC_{FC}

As we have seen in the previous section, the predicates of the SLC_{FC} examined in the previous studies can take the copula and cleft constructions as their complements, as well as the normal interrogative complements. Thus, to see whether Japanese allows genuine sluicing, it is necessary to find a syntactic context where the copula and cleft constructions cannot appear. We can satisfy this requirement by using control predicates that unambiguously select interrogative non-finite complements such as *mayotteiru* 'hesitate' and *kimekaneteiru* 'cannot decide', as pointed out in Section 5.2.1. The relevant examples are repeated from (6) as (15).

(15) *Copula in control complements*

a. Taroo-wa [PRO doko-e ik-oo (*da) ka] mayotteiru / kimekaneteiru
Taroo-TOP where-to go-INF COP Q hesitate cannot.decide
'(lit.) Taroo hesitates/cannot decide [where to go]'

b. *Taroo-wa [(sore-ga) doko-e da ka] mayotteiru / kimekaneteiru
Taroo-TOP it-NOM where-to COP Q hesitate cannot.decide
'(lit.) Taroo hesitates/cannot decide [where it is]'

c. *Taroo-wa [[$_{CP}$ iku no]-ga doko-e da ka] mayotteiru / kimekaneteiru
Taroo-TOP go C-NOM where-to COP Q hesitate cannot.decide
'(lit.) Taroo hesitates/cannot decide [where it is [to go]]'

Now, let us consider (16). (16a) serves as the antecedent for (16b), in which only the *wh*-phrase *dono zyaanaru-ni* 'to which journal' and the Q-marker *ka* appear in the

embedded clause.

(16) *Initial observation on SLC_{NFC}*

a. Taroo-wa [PRO dono zyaanaru-ni ronbun-o das-oo ka] kimeta ga,
Taroo-TOP which journal-to paper-ACC submit-INF Q decided but
'(lit.) Though Taroo has decided [to which journal to submit a paper],'

b. Hanako-wa [doko-ni Δ (*da) ka] mayotteiru / kimekaneteiru
Hanako-TOP where-to COP Q hesitate cannot.decide
'(lit.) Hanako hesitates/cannot decide [to where Δ]'

It is independently known that obligatory control PRO is always interpreted as a bound variable (see, for instance, Fodor 1975, Chomsky 1981, Reinhart 1983, Lebeaux 1984, and Higginbotham 1992), so that it cannot assume the strict reading under ellipsis (Bouchard 1984, Higginbotham 1992, Hornstein 1999; see Fujii 2006 for Japanese). The fact that (16b) allows only the sloppy reading for the subject of the embedded clause suggests that ellipsis is indeed involved in (16b). Finally, the copula *da* cannot appear in this construction. This observation already suggests that Japanese does have genuine sluicing. In the rest of this subsection, I illustrate that the SLC_{NFC}, instantiated by (16), exhibits the characteristic properties of genuine sluicing, while the SLC_{FC} unambiguously exhibits those of pseudo-sluicing.[11]

5.2.2.1. SLC_{NFC} vs. SLC_{FC} (I): Clause-types

The first property has to do with the types of clauses. We have already seen that the SLCs are possible with *wh*-remnants, irrespective of whether the complements are finite or not (see (7) and (16)). It is well-known since Ross 1969a that sluicing is compatible only with *wh*-questions in many languages (see also Lobeck 1990, 1995 and Saito & Murasugi 1990), as shown by the English examples in (17).[12]

(17) *English sluicing and clause types*

a. They say that John loves someone, but I don't know [who Δ]
b. *They say that John will leave, but I don't know [whether Δ]
c. *They say that John loves Mary, but I don't know [that Δ]

Let us examine how the SLC_{NFC} and SLC_{FC} behave when the remnant is non-*wh*-phrase.

I start the discussion by examining the SLC_{NFC} examples whose remnant is a non-*wh*-phrase. The relevant examples are given in (18) and (19) below. The examples

in (18) contain a yes/no-question complement, while those in (19) contain a declarative one. The sentences in (18a) and (19a) serve as the antecedent for (18b-c) and (19b-c), respectively. The b-examples are the baseline, which does not involve ellipsis. In the c-examples, everything other than the remnant and the complementizer is elided.

(18) *SLC_{NFC} with yes/no-question complements*

a. Taroo-wa [PRO LI-ni ronbun-o das-oo to] kimeta ga,
Taroo-TOP LI-to paper-ACC submit-INF that decided but
'(lit.) Though Taroo has decided [to submit a paper to LI],'

b. Hanako-wa [PRO LI-ni ronbun-o das-oo kadooka] kimekaneteiru
Hanako-TOP LI-to paper-ACC submit-INF whether cannot.decide
'(lit.) Hanako cannot decide [whether to submit a paper to LI]'

c. *Hanako-wa [LI-ni Δ kadooka] kimekaneteiru
Hanako-TOP LI-to whether cannot.decide
'(lit.) Hanako cannot decide [to LI whether Δ]'

(19) *SLC_{NFC} with declarative complements*

a. Taroo-wa [PRO LI-ni ronbun-o das-oo to] kimeta ga,
Taroo-TOP LI-to paper-ACC submit-INF that decided but
'(lit.) Though Taroo has decided [to submit a paper to LI],'

b. Hanako-wa [PRO NLLT-ni ronbun-o das-oo to] kimeta
Hanako-TOP NLLT-to paper-ACC submit-INF that decided
'(lit.) Hanako has decided [whether to submit a paper to NLLT]'

c. *Hanako-wa [NLLT-ni Δ to] kimeta
Hanako-TOP NLLT-to that decided
'(lit.) Hanako has decided [to NLLT Δ]'

The ungrammaticality of (18c) and (19c) indicates that the SLC_{NFC} does not allow non-*wh*-remnants. Hence, the pattern found in (18) and (19) suggests that the SLC_{NFC} does have the genuine sluicing structure.

On the other hand, it has been observed that the SLC_{FC} freely allows non-*wh*-remnants (see, for instance, Nishiyama, Whitman, & Yi 1996 and Kuwabara 1997). Relevant examples are given in (20) and (21). (20a) and (21a) are the antecedent for (20b) and (21b), and the former involves a yes/no-question complement and the latter does a declarative complement.

(20) *SLC_{FC} with yes/no-question complements*

a. Taroo-wa [Ziroo-ga LI-ni ronbun-o dasita to] itteita ga,
Taroo-TOP Ziroo-NOM LI-to paper-ACC submitted that itteita but
'(lit.) Though Taroo said [that Ziroo submitted a paper to LI],'

b. Hanako-wa [LI-ni Δ (da) kadooka] sir-anai
Hanako-TOP LI-to COP whether know-NEG
' (lit.) Hanako doesn't know [to LI whether Δ]'

(21) *SLC_{FC} with declarative complements*

a. Taroo-wa [Ziroo-ga LI-ni ronbun-o dasita to] itteita ga,
Taroo-TOP Ziroo-NOM LI-to paper-ACC submitted that said but
'(lit.) Though Taroo said that Ziroo submitted a paper to LI,'

b. Hanako-wa [NLLT-ni Δ (da) to] itteita
Hanako-TOP NLLT-to COP that said
'(lit.) Hanako said [to NLLT that Δ]'

The grammaticality of (20b) and (21b) readily follows under the pseudo-sluicing analysis of the SLC_{FC}, because their cleft counterparts are also grammatical, as in (22).

(22) *Cleft counterparts of (20b) and (21b)*

a. Hanako-wa [[$_{CP}$ Ziroo-ga ronbun-o dasita no]-ga LI-ni (da)
Hanako-TOP Ziroo-NOM paper-ACC submitted C-NOM LI-to COP
kadooka] sitteiru
whether know
'(lit.) Hanako knows [whether it is to LI [that Ziroo submitted a paper]]'

b. Hanako-wa [[$_{CP}$ Ziroo-ga ronbun-o dasita no]-ga NLLT-ni (da)
Hanako-TOP Ziroo-NOM paper-ACC submitted C-NOM NLLT-to COP
to] itteita
that said
'(lit.) Hanako said [that it is to NLLT [that Ziroo submitted a paper]]'

(22a) corresponds to (20b) and (22b) does to (21b). If the presupposition CP subjects in (22) are elided, the surface strings of the relevant target clauses are obtained.

Thus, the patterns found in (18) and (19) support the claim that the SLC_{NFC} has the genuine sluicing structure. On the other hand, the patterns found in (20) and (21) show that the SLC_{FC} may have the pseudo-sluicing structure.

5.2.2.2. SLC_{NFC} vs. SLC_{FC} (II): "Mention-some" modification

Discussing the possibility of the pseudo-sluicing analysis of English sluicing, Merchant (1998, 2001) observes that modifiers like *for example*, which induces the "mention-some" interpretation, cannot appear in the cleft construction, while it can appear in sluicing, as in (23) (based on Merchant 2001:122).

(23) *"Mention-some" modification in sluicing and cleft*
A: You should talk to somebody in the legal department for help with that.
B: Could you tell me who (*it is), for example?

He relates this difference to the exhaustivity entailed by the pivot of the cleft construction (see Kiss 1998). That is, a *wh*-phrase in the pivot is compatible only with a "mention-all" interpretation (Groenendijk & Stokhof 1997), so that the cleft version of B's utterance in (23b) is ungrammatical; on the other hand, sluicing does not impose such a restriction on the remnants, so that the sluicing version is grammatical.

Let us apply this test to the SLCs. The case of the SLC_{NFC} is given in (24).

(24) *SLC_{NFC} with "mention-some"-modification*
a. Taroo-wa [PRO aru zyaanaru-ni ronbun-o das-oo to] kimeta ga,
Taroo-TOP some journal-to paper-ACC submit-INF that decided but
'(lit.) Though Taroo has decided [to submit a paper to some journal],'
b. Hanako-wa [PRO tatoeba doko-ni ronbun-o das-oo ka]
Taroo-TOP for.example where-to paper-ACC submit-INF Q
kimekaneteiru
cannot.decide
'(lit.) Hanako cannot decide [to where, for example, to submit a paper]'
c. Hanako-wa [tatoeba doko-ni Δ ka] kimekaneteiru
Hanako-TOP for.example where-to Q cannot.decide
'(lit.) Hanako cannot decide [to where, for example Δ]'

The modifier *tatoeba* 'for example' can modify the *wh*-phrase *doko-ni* 'to where' irrespective of whether ellipsis has applied or not, suggesting that (24c) does instantiate genuine sluicing.

On the other hand, the SLC_{FC} exhibits a different pattern, as shown in (25) below. The contrast between (25b) and (25c) indicates that the "mention-some" interpretation is not compatible with the SLC_{FC}.

(25) *SLC_{NFC} with "mention-some"-modification*

a. Taroo-wa [Ziroo-ga aru zyaanaru-ni ronbun-o dasita to] itteita ga,
Taroo-TOP Ziroo-NOM some journal-to paper-ACC submitted that said but
'(lit.) Though Taroo said [that Ziroo had submitted a paper to some journal],'

b. Hanako-wa [kare-ga tatoeba doko-ni ronbun-o dasita ka]
Hanako-TOP he-NOM for.example where-to paper-ACC submitted Q
siritagatteiru
want.to.know
'(lit.) Hanako wants to know [to where, for example, he submitted a paper]'

c. *Hanako-wa [tatoeba doko-ni Δ (da) ka] siritagatteiru
Hanako-TOP for.example where-to COP Q want.to.know
'(lit.) Hanako wants to know [to where, for example Δ]'

As shown in (26), *tatoeba* 'for example' is not compatible with the pivot of the cleft constructions, either.

(26) *"Mention-some" modification in cleft constructions*

*Hanako-wa [[$_{CP}$ kare-ga ronbun-o dasu-tumorina no]-ga tatoeba doko-ni
Hanako-TOP he-NOM paper-ACC submit-intend C-NOM for.example where-to
(da) ka] siritagatteiru
COP Q want.to.know
'(lit.) Hanako wants to know [to where, for example, it was [that he intends to submit a paper]]'

Thus, the ungrammaticality of (25c) follows if (26) is the underlying source. Meanwhile, the ungrammaticality of (25c) indicates that the genuine sluicing structure is not available for the SLC_{FC}, otherwise it should pattern with (24c).[13]

5.2.2.3. SLC_{NFC} vs. SLC_{FC} (III): *Else*-modification

Similarly to the case of "mention-some" modification, sluicing remnants can be modified by expressions like *else*, as in (27a), whereas pivots of the cleft constructions cannot be, as in (27b) (based on Merchant 2001:122).

(27) Else-*modification in sluicing and cleft*

a. Harry was there, but I don't know who else (was there)

b. *Harry was there, but I don't know [who else it was]

Let us apply this diagnostic test to the SLCs. The examples in (28) are those of the SLC_{NFC}.

(28) *SLC_{NFC} with* else*-modification*

a. Taroo-wa [PRO LI-ni ronbun-o das-oo to] kimeta ga,
Taroo-TOP LI-to paper-ACC submit-INF that decided but
'(lit.) Though Taroo has decided [to submit a paper to LI],'

b. Hanako-wa [PRO hokani doko-ni ronbun-o das-oo ka] kimekaneteiru
Hanako-TOP else where-to paper-ACC submit-INF Q cannot.decide
'(lit.) Hanako cannot decide [to where else to submit a paper]'

c. Hanako-wa [hokani doko-ni Δ ka] kimekaneteiru
Hanako-TOP else where-to Q cannot.decide
'(lit.) Hanako cannot decide [to where else Δ]'

(28b) is the baseline example, which does not involve ellipsis. The *wh*-phrase *doko-ni* 'to where' is modified by the modifier *hokani* 'else'. The grammaticality of (28c), which does involve ellipsis, indicates that *else*-modification is possible in the case of SLC_{NFC}.

The examples in (29) illustrate the case of SLC_{FC}.

(29) *SLC_{FC} with* else*-modification*

a. Taroo-wa [Ziroo-ga LI-ni ronbun-o dasita to] itteita ga,
Taroo-TOP Ziroo-NOM LI-to paper-ACC submitted that said but
'(lit.) Though Taroo said [that Ziroo submitted a paper to LI],'

b. Hanako-wa [kare-ga hokani doko-ni ronbun-o dasita ka]
Hanako-TOP he-NOM else where-to paper-ACC submitted Q
siritagatteiru
want.to.know
'(lit.) Hanako wants to know [to where else he submitted a paper]'

c. *Hanako-wa [hokani doko-ni Δ (da) ka] siritagatteiru
Hanako-TOP else where-to COP Q want.to.know
'(lit.) Hanako wants to know [to where else Δ]'

Unlike the case of SLC_{NFC} in (28) above, there is a contrast between (29b) and (29c) ((29c) is grammatical if *hokani* 'else' is removed). Indeed, *else*-modification is not

possible in the cleft constructions, as shown in (30) (again, the sentence is grammatical if *hokani* 'for example' is removed).

(30) Else-*modification in cleft*

*Hanako-wa [[$_{CP}$ kare-ga ronbun-o dasita no]-ga hokani doko-ni
Hanako-TOP he-NOM paper-ACC submitted C-NOM else where-to
(da) ka] siritagatteiru
COP Q want.to.know
'(lit.) Hanako wants to know [to where else it was [that he submitted a paper]]'

Therefore, the claim that SLC_{NFC} is genuine sluicing whereas SLC_{FC} is not is supported in terms of *else*-modification.

5.2.2.4. SLC_{NFC} vs. SLC_{FC} (IV): Aggressively non-D-linked *wh*-phrases

Aggressively non-D-linked *wh*-phrases (Pesetsky 1987) are not allowed as sluicing remnants, as is observed by Merchant (1998, 2001). The relevant examples are given in (31) (based on Merchant 2001:122).

(31) *Aggressively non-D-linked* wh-*phrases in English sluicing*

a. Someone dented my car last night ---
b. I wish I knew who (*the hell)!
c. I wish I knew who the hell it was!

(31a) serves as the antecedent for (31b-c). As in (31b), sluicing is possible if the remnant is a simple *wh*-phrase like *who*, while the sentence becomes ungrammatical if it is an aggressively non-D-lined *wh*-phrase such as *who the hell*, which can appear as a pivot of the cleft construction, as in (31c).

As shown in (32), aggressively non-D-linked *wh*-phrases like *ittai doko-ni* 'to where the hell' (Pesetsky 1987, Huang & Ochi 2004) are possible if no ellipsis is involved, whereas they cannot appear in the SLC_{NFC}, as the contrast between (32b) and (32c) indicates ((32c) is grammatical if *ittai* is removed).

(32) *SLC_{NFC} with aggressively non-D-linked* wh-*phrases*

a. Taroo-wa [PRO dono zyaanaru-ni ronbun-o das-oo ka] kimeta ga,
Taroo-TOP which journal-to paper-ACC submit-INF Q decided but
'(lit.) Though Taroo has decided [to which journal to submit a paper],'

b. Hanako-wa [PRO ittai doko-ni ronbun-o das-oo ka] kimekaneteiru
Hanako-TOP the.hell where-to paper-ACC submit-INF Q cannot.decide
'(lit.) Hanako cannot decide [to where the hell to submit a paper]'

c. *Hanako-wa [ittai doko-ni Δ ka] kimekaneteiru
Hanako-TOP the.hell where-to Q cannot.decide
'(lit.) Hanako cannot decide [to where the hell Δ]'

On the other hand, there is no such a contrast between (33b) and (33c), which instantiates the SLC_{FC}.

(33) *SLC_{FC} with aggressively non-D-linked* wh*-phrases*

a. Taroo-wa [Ziroo-ga dono zyaanaru-ni ronbun-o dasita ka] sitteiru ga,
Taroo-TOP Ziroo-NOM which journal-to paper-ACC submitted Q know but
'(lit.) Though Taroo knows [to which journal Ziroo submitted a paper],'

b. Hanako-wa [kare-ga ittai doko-ni ronbun-o dasita ka]
Hanako-TOP he-NOM the.hell where-to paper-ACC submitted Q
siritagatteiru
want.to.know
'(lit.) Hanako wants to know [to where the hell he submitted a paper]'

c. Hanako-wa [ittai doko-ni Δ (da) ka] siritagatteiru
Hanako-TOP the.hell where-to COP Q want.to.know
'(lit.) Hanako wants to know [to where the hell Δ]'

As shown in (34), aggressively non-D-linked *wh*-phrases can be a pivot of the cleft construction.

(34) *Aggressively non-D-linked* wh*-phrases in cleft*

Hanako-wa [[$_{CP}$ kare-ga ronbun-o dasita no]-ga ittai doko-ni
Hanako-TOP he-NOM paper-ACC submitted C-NOM the.hell where-to
(da) ka] siritagatteiru
COP Q want.to.know
'(lit.) Hanako wants to know [to where the hell it was [that he submitted a paper]]'

Therefore, the contrast between (32c) and (33c) indicates that the pseudo-sluicing structure is available for the SLC_{FC} but not for the SLC_{NFC}.

5.2.2.5. SLC_{NFC} vs. SLC_{FC} (V): Case-marker/postposition drop

Merchant (2001) posits the so-called P(reposition)-stranding generalization, which roughly states that P-stranding is allowed under sluicing in a language iff it allows P-stranding under regular movement.[14] In languages like English, P-stranding is allowed under sluicing and regular *wh*-movement, as shown in (35) (based on Merchant 2001:92).

(35) *P-stranding in English*

a. Peter was talking with someone, but I don't know (with) who

b. Who_i was he talking with t_i?

In languages like German, which does not allow P-stranding under regular *wh*-movement, on the other hand, it is not allowed under sluicing, as shown in (36) (based on Merchant 2001:94).

(36) *P-stranding in German*

a. Anna hat mit jemandem gesprochen, aber ich weiß nicht, *(mit) wem
Anna has with someone spoken but I know not with someone

b. *Wem_i hat sie mit t_i gesprochen?
who has she with spoken

As shown in (37), Case-markers/postpositions cannot be stranded under movement in Japanese. In (37a), the accusative Case-marker *-o* is left behind, and in (37b) the postposition *to* 'with' is stranded.

(37) *Case-marker/postposition drop in Japanese*

a. *Taroo-wa [$nani_i$ Hanako-ga t_i-o katta ka] sitteiru
Taroo-TOP what Hanako-NOM -ACC bought Q know
'(lit.) Taroo knows [$what_i$ Hanako bought t_i]'

b. *Taroo-wa [$dare_i$ Hanako-ga t_i-to hanasita ka] sitteiru
Taroo-TOP who Hanako-NOM -with talked Q know
'(lit.) Taroo knows [who_i Hanako talked with t_i]'

They cannot be dropped from the remnants in the SLC_{NFC}, as in (38) below.

(38) *SLC_{NFC} with Case-marker/postposition drop*

a. Taroo-wa [PRO nanika-o kaw-oo to] kimeta ga,
Taroo-TOP something-ACC buy-INF that decided but
Hanako-wa [nani*(-o) Δ ka] kimekaneteiru
Hanako-TOP what-ACC Q cannot.decide
'(lit.) Though Taroo has decided [to buy something], Hanako cannot decide [what Δ]'

b. Taroo-wa [PRO dareka-to hanas-oo to] kimeta ga,
Taroo-TOP someone-with talk-INF that decided but
Hanako-wa [dare*(-to) Δ ka] kimekaneteiru
Hanako-TOP who-with Q cannot.decide
'(lit.) Though Taroo has decided [to talk with someone], Hanako cannot decide [who Δ]'

As shown in (39), however, they can be dropped from the remnants in the SLC_{FC} (see, for instance, Nishiyama, Whitman, & Yi 1996 and Fukaya & Hoji 1999).

(39) *SLC_{FC} with Case-marker/postposition drop*

a. Taroo-wa [Ziroo-ga nanika-o katta to] itteita ga,
Taroo-TOP Ziroo-NOM something-ACC bought that said but
Hanako-wa [nani(-o) Δ (da) ka] sir-anai
Hanako-TOP what-ACC COP Q know-NEG
'(lit.) Though Taroo said [that Ziroo bought something], Hanako doesn't know [what Δ]'

b. Taroo-wa [Ziroo-ga dareka-to hanasita ka] itteita ga,
Taroo-TOP Ziroo-NOM someone-with talked Q said but
Hanako-wa [dare(-to) Δ (da) ka] sir-anai
Hanako-TOP who-with COP Q know-NEG
'(lit.) Though Taroo said [that Ziroo talked with someone], Hanako doesn't know [who Δ]'

Meanwhile, Case-markers/postpositions can be dropped from the pivot of the cleft in Japanese (Hoji 1990), as in (40).[15]

(40) *Case-marker/postposition drop in cleft*

a. Hanako-wa [[$_{CP}$ kare-ga katta no]-ga nani(-o) Δ (da) ka] sir-anai
Hanako-TOP he-NOM bought C-NOM what-ACC COP Q know-NEG
'(lit.) Hanako doesn't know [what it is [that Ziroo bought]]'

b. Hanako-wa [[$_{CP}$ kare-ga hanasita no]-ga dare(-to) Δ (da) ka] sir-anai
Hanako-TOP he-NOM talked C-NOM what-ACC COP Q know-NEG
'(lit.) Hanako doesn't know [who it is [that Ziroo talked]]'

Hence, the difference between the SLC_{NFC} and the SLC_{FC} regarding Case-marker/postposition drop provides further support for the claim that only the latter can have the pseudo-sluicing structure.

5.2.2.6. SLC_{NFC} vs. SLC_{FC} (VI): Island-repair

The final property to be examined has to do with the observation, originally due to Ross (1969a), that island violations can be repaired by sluicing. Some representative examples are given in (41), based on Merchant (2001:87). (41a) serves as the antecedent for (41b-c), and the correlate *a Balkan language* is contained within a relative clause.

(41) *Island-repair under sluicing*

a. They want to hire someone who speaks a Balkan language,

b. *but I don't remember [which (Balkan language) they want to hire someone who speaks]

c. but I don't remember [which (Balkan language) Δ]

The ungrammaticality of (41b), which does not involve sluicing, indicates that extraction of *which (Balkan language)* out of a relative clause induces an island violation. On the other hand, the grammaticality of (41c), which does involve sluicing, suggests that island violations can be repaired by ellipsis (see also Section 5.3.1 below for more detail).

In what follows, I show that although island violations cannot be repaired in the SLC_{FC} as pointed out by Takahashi (1994), Nishigauchi (1998), and Fukaya & Hoji (1999) among others, they can indeed be repaired in the SLC_{NFC}.[16]

Let us start with the SLC_{NFC}. The relevant examples are given in (42) below. (42a) is the antecedent, which contains *zibun* 'self' in the relative clause (RC stands for relative clause). In (42b), the *wh*-phrase *nani-o* 'what' is extracted from the relative clause, so the sentence is ungrammatical. The crucial example is (42c), which allows the sloppy

reading (42c-ii) in addition to the strict reading (42c-i).

(42) *Island-repair in SLC$_{NFC}$*

a. Taroo-wa [PRO mazu [$_{NP}$ [$_{RC}$ zibun-no mise-de nanika-o kowasita]
Taroo-TOP first self-GEN store-in something-ACC broke
otoko]-o sirabe-yoo to] kimeta ga,
man-ACC check-INF that decided but
'(lit.) Though Taroo decided [to check first [the man [who has broken t_i in his store]]],'

b. *Hanako-wa [nani-o$_i$ PRO mazu [$_{NP}$ [$_{RC}$ zibun-no mise-de t_i kowasita]
Hanako-TOP what-ACC first self-GEN store-in broke
otoko]-o sirabe-yoo ka] kimekaneteiru
man-ACC check-INF Q cannot.decide
'(lit.) Hanako cannot decide [what$_i$ to check first [the man [who has broken t_i in her store]]],'

c. Hanako-wa [nani-o Δ ka] kimekaneteiru
Hanako-TOP what-ACC Q cannot.decide
'(lit.) Hanako cannot decide [what Δ]
(i) Hanako cannot decide [what$_i$ to check first [the man [who has broken t_i in his (= Taroo's) store]]]'
(ii) Hanako cannot decide [what$_i$ to check first [the man [who has broken t_i in her (= Hanako's) store]]]'

Recall at this point that the SLC$_{NFC}$ cannot have the copula/cleft construction as its underlying source. Hence, the only available source for (42c) with the sloppy reading is (42b). Thus, the fact that (42c) allows the sloppy reading suggests that the island violation in (42b) can indeed be repaired in the SLC$_{NFC}$.

Turning now to the SLC$_{FC}$, let us consider the examples in (43) below. (43a) is the antecedent, and (43b) exhibits an island violation. (43c) is an instance of the SLC$_{FC}$. Although the sentence itself is grammatical, it does not have the sloppy reading (43c-ii).[17]

(43) *(Failure of) island-repair in SLC_{FC}*

a. Taroo-wa [keisatu-ga mazu [$_{NP}$ [$_{RC}$ zibun-no mise-de nanika-o
Taroo-TOP police-NOM first self-GEN store-in something-ACC
kowasita] otoko]-o sirabeta to] omotteiru ga,
broke man-ACC checked that think but
'(lit.) Though Taroo thinks [that the police checked first [the man [who had broken something in his store]]],'

b. *Hanako-wa [nani-o$_i$ keisatu-ga mazu [$_{NP}$ [$_{RC}$ zibun-no mise-de t_i
Hanako-TOP what-ACC police-NOM first self-GEN store-in
kowasita] otoko]-o sirabeta ka] sir-anai
broke man-ACC checked Q know-NEG
'(lit.) Hanako doesn't know [what$_i$ the police checked first [the man [who had broken t_i in her store]]]'

c. Hanako-wa [nani-o Δ (da) ka] sir-anai
Hanako-TOP what-ACC COP Q know-NEG
'(lit.) Hanako doen't know [what Δ]
(i) Hanako doesn't know [what$_i$ the police checked first [the man [who had broken t_i in his (= Taroo's) store]]]'
(ii) *Hanako doesn't know [what$_i$ the police checked first [the man [who had broken t_i in her (= Hanako's) store]]]'

Note that the copula sentence in (44a), which has the overt pronominal subject *sore-ga* 'it', patterns with (43c) in its range of the available readings.

(44) *Copula counterpart of (43c)*

a. Hanako-wa [sore-ga nani-o (da) ka] sir-anai
Hanako-TOP it-NOM what-ACC COP Q know-NEG
'(lit.) Hanako doen't know [what it is]'
(i) Hanako doesn't know [what$_i$ the police checked first [the man [who had broken t_i in his (= Taroo's) store]]]'
(ii) *Hanako doesn't know [what$_i$ the police checked first [the man [who had broken t_i in her (= Hanako's) store]]]'

b. Hanako-wa [*pro* nani-o (da) ka] sir-anai

It is then plausible to assume that (43c) with the strict reading has *pro* as its embedded subject, as in (44b), so that there is no island violation to begin with.

Comparing to the case of the SLC_{NFC} in (42), the absence of the sloppy reading in the SLC_{FC} then suggests that the SLC_{FC} unambiguously has the pseudo-sluicing structure. If the SLC_{FC} were structurally ambiguous between genuine sluicing and pseudo-sluicing, it would be unclear why the sloppy reading is not available for the SLC_{FC} with the genuine sluicing structure on a par with the case of the SLC_{NFC}.[18]

Before leaving this topic, one remark is in order. Suppose that a cleft sentence like (45) is the underlying source of (43c).

(45) *Cleft source of (43c)*

*Hanako-wa [[$_{CP}$ keisatu-ga mazu [$_{NP}$ [$_{RC}$ zibun-no mise-de t_i kowasita]
Hanako-TOP police-NOM first self-GEN store-in broke
otoko]-o sirabeta no]-ga nani-o$_i$ (da) ka] sir-anai
man-ACC checked C-NOM what-ACC COP Q know-NEG
'(lit.) Hanako doesn't know [what$_i$ it is [that the police will check first [the man [who stole t_i from her room]]]]'

The ungrammaticality of (45) suggests that the cleft construction in Japanese exhibits island effects, as observed by Hoji (1990). Suppose now that argument ellipsis of the presupposition CP subject of (45), which contains the island, could ameliorate such island violations. Then, the sloppy reading is predicted to be available for (43c), contrary to fact. Thus, the lack of sloppy reading for (43c) indicates that argument ellipsis cannot repair island violations. I return to this issue in Section 5.4.2.

5.2.2.7. Interim Summary

The results of the diagnostic tests examined so far are summarized in (46).

(46) *Summary of results*

	Sluicing	SLC_{NFC}	SLC_{FC}	Cleft
Clause-types	only *wh*	only *wh*	all	all
"Mention-some"-modification	√	√	*	*
Else-modification	√	√	*	*
Aggressively non-D-linked *wh*	*	*	√	√
Case-marker/postposition drop	* (in non-P-stranding lgs)	*	√	√
Island-repair	√	√	*	N/A

The SLC_{NFC} exhibits the characteristic properties of sluicing. Thus, I conclude that the SLC_{NFC} is indeed an instantiation of genuine sluicing, namely, of *wh*-movement followed by TP-deletion. In contrast, the SLC_{FC} exhibits a quite different pattern: It always patterns with the copula/cleft constructions. Note that if the SLC_{FC} is structurally ambiguous between genuine sluicing and pseudo-sluicing, it should pass all the tests, contrary to fact. Thus, we can conclude that the underlying source of the SLC_{FC} is unambiguously the copula/cleft constructions, further supporting the pseudo-sluicing analysis of it.

5.2.3. Genuine Sluicing in Finite Clauses As V-stranding Sluicing

In the previous subsection, I illustrated that the SLC_{NFC} has the genuine sluicing structure. Thus, (47b) would be analyzed as having a structure like (47c).

(47) *SLC_{NFC} as genuine sluicing*

a. Taroo-wa [PRO nani-o yom-oo ka] kimeta ga,
Taroo-TOP what-ACC read-INF Q decided but
'(lit.) Though Taroo has decided [what to read],'

b. Hanako-wa [nani-o Δ ka] kimekaneteiru
Hanako-TOP what-ACC Q cannot.decide
'(lit.) Hanako cannot decided [what Δ]'

c. … Hanako-wa [$_{CP}$ nani-o$_i$ ~~[$_{TP}$ PRO t_i yom-oo]~~ [$_{C}{}^{0}$ ka]] kimekaneteiru

One question which arises at this point is why the genuine sluicing structure is not available for the SLC_{FC}. If Japanese allows (at least superficially optional) *wh*-movement and C^0 can license deletion of TP in non-finite clauses as in (47c), why is it not the case that *wh*-movement followed by TP-deletion is also licensed in finite clauses as in (48c) below, giving rise to the surface string of (48b)?

(48) *SLC_{FC} as genuine sluicing?*

a. Taroo-wa [Ziroo-ga nani-o katta ka] sitteiru ga,
Taroo-TOP Ziroo-NOM what-ACC bought Q know but
'(lit.) Though Taroo knows [what Ziroo bought],'

b. Hanako-wa [nani-o Δ ka] sir-anai
Hanako-TOP what-ACC Q know-NEG
'(lit.) Hanako doesn't know [what Δ]'

c. … Hanako-wa [$_{CP}$ nani-o$_i$ [$_{TP}$ ~~Ziroo-ga t_i katta~~] [$_C{}^0$ ka]] sir-anai

In this subsection, I provide an answer to this question by proposing that the genuine sluicing is indeed available in finite clauses, but the resultant surface string of the target clause differs from that of the SLC_{FC} because of verb-movement.

Specifically, I propose that in Japanese, finite verbs move to C^0 (via T^0) (see Koizumi 1995, 2000, among others), while non-finite verbs do not.[19] That is, I claim that a sentence like (49a) has a structure like (49b) before TP-deletion applies.[20]

(49) *Verb-movement in a finite clause*

a. Hanako-wa [$_{CP}$ nani-o Ziroo-ga katta ka] sir-anai
Hanako-TOP what-ACC Ziroo-NOM bought Q know-NEG
'Hanako doesn't know [what Ziroo bought]'

b. Hanako-wa [$_{CP}$ nani-o$_i$ [$_{TP}$ Ziroo-ga [$_{VP}$ t_i t_j] t_k] [$_C{}^0$ [$_T{}^0$ [$_V{}^0$ kat]$_i$-ta]$_j$-ka]] sir-anai

Since the verb has evacuated the TP, deletion of TP cannot yield the surface string of the SLC_{FC}, where only *wh*-phrases and the Q-morpheme are retained (cf. (48b)). Therefore, the pseudo-sluicing structure is the only way to derive the surface string of the SLC_{FC}.

The next question is whether ellipsis can target the TP in (49b) or not. In the rest of this subsection, I illustrate that it can indeed do so. Thus, I argue that in Japanese, genuine sluicing results in two different surface structures, depending on the finiteness of verb, as schematically shown in (50).[21]

(50) *Genuine sluicing with and without verb-movement to C^0*

a. … [$_{CP}$ *wh*$_i$ [$_{TP}$ ~~… t_i … t_V … t_T~~] [$_C{}^0$ V-T-C]] … (= finite clauses)

b. … [$_{CP}$ *wh*$_i$ [$_{TP}$ ~~… t_i … V … T~~] [$_C{}^0$ C]] … (= non-finite clauses)

For ease of reference, let us call the structure in (50a) *V(erb)-stranding sluicing*.

5.2.3.1. Initial Evidence for V-stranding Sluicing

In order to show that V-stranding sluicing is indeed available, I take recourse to the fact that adjuncts cannot be elided by themselves, discussed in Section 3.2.2 of Chapter

3 (see Oku 1998 and Saito 2007). Let us consider the examples in (51).

(51) *Adjunct ellipsis not possible*

a. Taroo-wa [zibun-no yarikata-de] ano mondai-o toita ga,
Taroo-TOP self-GEN way-in that problem-ACC solved but
'(lit.) Though Taroo solved that problem [in his way]'

b. Hanako-wa Δ kore-o tok-anakat-ta
Hanako-TOP this-ACC solve-NEG-PAST
'(intended) Hanako didn't solve this one Δ'
(i) Hanako didn't solve this problem in any way
(ii) *Hanako didn't solve this problem in her way

In (51a), which serves as the antecedent for (51b), *zibun* 'self' is contained in the adjunct. (51b) does not have the reading (51b-ii), which would be available if adjuncts can be elided freely.

Those adjuncts can be missing only if they are contained in a larger constituent which undergoes ellipsis. The relevant examples are given in (52) below, which involves the SLC_{NFC}.[22]

(52) *Adjunct ellipsis in SLC_{NFC}*

a. Taroo-wa [PRO dono mondai-o [zibun-no yarikata-de] tok-oo
Taroo-TOP which problem-ACC self-GEN way-in solve-INF
ka] kimeta ga,
Q decided but
'(lit.) Though Taroo has decided [which problem to solve in his way],'

b. *Hanako-wa [dore-o Δ tok-oo ka] kimekaneteiru
Hanako-TOP which-ACC solve-INF Q cannot.decide
'(intended) Hanako cannot decide [which one to solve in her way]'

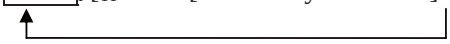
c. Hanako-wa [dore-o Δ ka] kimekaneteiru
Hanako-TOP which-ACC Q cannot.decide
'(intended) Hanako cannot decide [which one to solve in her way]'

In (52a), *zibun* 'self' is contained in the adjunct, on a par with (51a). (52b) minimally differs from (52c) in that the former retains the verb *tok-oo* 'to solve' while the latter does not. The intended reading, which includes the adjunct, is available for (52c) but not for (52b). Given the conclusion reached in the previous subsection, this observation

indicates that (52c) has a structure like (53).

(53) *Structure of (52c)*

Hanako-wa [$_{CP}$ dore-o$_i$ [$_{TP}$ ~~PRO [zibun-no yarikata-de] t_i tok-oo]~~ ka] kimekeneteiru



Since the adjunct is contained in the ellipsis site, the availability of the relevant reading readily follows.

Then, given the proposal that finite verbs move to C^0, it is predicted that the adjuncts can be missing only when a *wh*-phrase and the verbal complex (namely a verb, tense and C^0) are retained, giving rise to the V-stranding sluicing structure. This prediction is borne out, as in (54).

(54) *Adjunct ellipsis in V-stranding sluicing*

a. Taroo-wa [Ziroo-ga dono mondai-o [zibun-no yarikata-de] izen
Taroo-TOP Ziroo-NOM which problem-ACC self-GEN way-in once
toita ka] sitteiru ga,
solved Q know but
'(lit.) Though Taroo knows [which problem Ziroo once solved in his (= Taroo's) way]'

b. *Hanako-wa [dore-o kare-ga Δ toita ka] sir-anai
Hanako-TOP which-ACC he-NOM solved Q know-NEG
'(intended) Hanako doesn't know [which one he once solved in her (= Hanako's) way]'

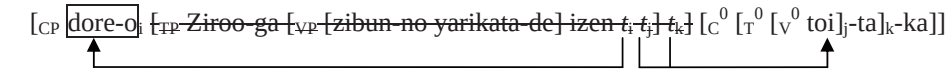
c. *Hanako-wa [dore-o izen Δ toita ka] sir-anai
Hanako-TOP which-ACC once solved Q know-NEG
'(intended) Hanako doesn't know [which one he once solved in her (= Hanako's) way]'

d. Hanako-wa [dore-o Δ toita ka] sir-anai
Hanako-TOP which-ACC solved Q know-NEG
'(intended) Hanako doesn't know [which one he once solved in her (= Hanako's) way]'

In (54b-d), the *wh*-phrase *dore-o* 'which' appears in the left-edge of the embedded clause. The presence of the subject *kare-ga* 'he' in (54b) and that of *izen* 'once' in (54c) suggest that the TP is not elided. The intended reading is not available for these

examples, though their surface strings are fine with irrelevant readings. On the other hand, it is available for (54d), which retains only the *wh*-phrase and the verbal complex. This observation follows if the embedded clause of (54d) has the V-stranding sluicing structure, as in (55).

(55) *Structure of the embedded clause of (54d)*



Recall from Section 5.2.2.1 above that sluicing is compatible only with *wh*-questions. It is then predicted that V-stranding sluicing is not licensed when the embedded clause is either yes/no-question or declarative. Specifically, it is predicted that the contrast found between (54b-c) and (54d) disappears in the relevant configurations. This prediction is also borne out, as shown in (56) and (57) below.

(56) *Adjunct ellipsis in V-stranding sluicing with yes/no-question complements*

a. Taroo-wa [Ziroo-ga ano mondai-o [zibun-no yarikata-de] izen
Taroo-TOP Ziroo-NOM that problem-ACC self-GEN way-in once
toita to] itteita ga,
solved that said but
'(lit.) Though Taroo said [that Ziroo once solved that problem in his (= Taroo's) way]'

b. *Hanako-wa [kore-o kare-ga Δ toita kadooka] sir-anai
Hanako-TOP this-ACC he-NOM solved whether know-NEG
'(intended) Hanako doesn't know [whether he once solved this one in her (= Hanako's) way]'

c. *Hanako-wa [kore-o izen Δ toita kadooka] sir-anai
Hanako-TOP this-ACC once solved whether know-NEG
'(intended) Hanako doesn't know [whether he once solved this one in her (= Hanako's) way]'

d. *Hanako-wa [kore-o Δ toita kadooka] sir-anai
Hanako-TOP this-ACC solved whether know-NEG
'(intended) Hanako doesn't know [whether he once solved this one in her (= Hanako's) way]'

(57) *Adjunct ellipsis in V-stranding sluicing with declarative complements*

a. Taroo-wa [Ziroo-ga ano mondai-o [zibun-no yarikata-de] izen
Taroo-TOP Ziroo-NOM that problem-ACC self-GEN way-in once
toita to] itteita ga,
solved that said but
'(lit.) Though Taroo said [that Ziroo once solved that problem in his (= Taroo's) way]'

b. *Hanako-wa [kore-o kare-ga Δ toita to] iw-anaka-ta
Hanako-TOP this-ACC he-NOM solved that say-NEG-PAST
'(intended) Hanako didn't say [that he once solved this one in her (= Hanako's) way]'

c. *Hanako-wa [kore-o izen Δ toita to] iw-anaka-ta
Hanako-TOP this-ACC once solved that say-NEG-PAST
'(intended) Hanako didn't say [that he once solved this one in her (= Hanako's) way]'

d. *Hanako-wa [kore-o Δ toita to] iw-anaka-ta
Hanako-TOP this-ACC solved that say-NEG-PAST
'(intended) Hanako didn't say [that he once solved this one in her (= Hanako's) way]'

Unlike the case of (54d), the intended reading is not available for either (56d) or (57d), suggesting that TP-deletion fails to be licensed.

V-stranding sluicing also exhibits the properties of genuine sluicing with respect to the other tests examined in Section 5.2.2.[23] The remnant in (58b) is modified by *tatoeba* 'for example' (Section 5.2.2.2), and the one in (59b) is by *hokani* 'else' (Section 5.2.2.3). In either case, the sentence allows the intended reading, on a par with (54d). On the other hand, if the remnant is changed into an aggressively non-D-linked *wh*-phrase (Section 5.2.2.4) as in (60d), the intended reading is lost. The same holds if the accusative Case-maker *-o* is dropped from the remnant (Section 5.2.2.4), as in (61b).

(58) *V-stranding sluicing and the "mention-some" modification*

a. Taroo-wa [Ziroo-ga aru mondai-o [zibun-no yarikata-de] izen
Taroo-TOP Ziroo-NOM some problem-ACC self-GEN way-in once
toita to] itteita ga,
solved that said but
'(lit.) Though Taroo said [that Ziroo had once solved a problem in his (= Taroo's) way]'

b. Hanako-wa [tatoeba dore-o Δ toita ka] sir-anai
Hanako-TOP for.example which-ACC solved Q know-NEG
'(intended) Hanako doesn't know [which problem for example he had once solved in her (= Hanako's) way]'

(59) *V-stranding sluicing and* else*-modification*

a. Taroo-wa [Ziroo-ga mondai san-o [zibun-no yarikata-de] izen
Taroo-TOP Ziroo-NOM problem three-ACC self-GEN way-in once
toita to] itteita ga,
solved that said but
'(lit.) Though Taroo said [that Ziroo had once solved Question #3 in his (= Taroo's) way]'

b. Hanako-wa [hokani dore-o Δ toita ka] sir-anai
Hanako-TOP else which-ACC solved Q know-NEG
'(intended) Hanako doesn't know [which problem else he had once solved in her (= Hanako's) way]'

(60) *V-stranding sluicing and aggressively-non-D-linked* wh*-phrases*

a. Taroo-wa [Ziroo-ga dono mondai-o [zibun-no yarikata-de] izen
Taroo-TOP Ziroo-NOM which problem-ACC self-GEN way-in once
toita ka] sitteiru ga,
solved Q know but
'(lit.) Though Taroo knows [which problem Ziroo once solved in his (= Taroo's) way]'

b. *Hanako-wa [ittai dore-o Δ toita ka] sir-anai
Hanako-TOP the.hell which-ACC solved Q know-NEG
'(intended) Hanako doesn't know [which problem the hell he once solved in her (= Hanako's) way]'

(61) *V-stranding sluicing and Case-marker/post-positon drop*

a. Taroo-wa [Ziroo-ga dono mondai-o [zibun-no yarikata-de] izen
Taroo-TOP Ziroo-NOM which problem-ACC self-GEN way-in once
toita ka] sitteiru ga,
solved Q know but
'(lit.) Though Taroo knows [which problem Ziroo once solved in his (= Taroo's) way]'

b. *Hanako-wa [dono mondai Δ toita ka] sir-anai
Hanako-TOP which problem-ACC solved Q know-NEG
'(intended) Hanako doesn't know [which problem he once solved in her (= Hanako's) way]'

Therefore, these observations constitute initial evidence for the existence of V-stranding sluicing schematized in (50a).

5.2.3.2. Further Evidence: A Comparison with V-stranding VP-ellipsis

Further evidence comes from a comparison with the so-called *V(erb)-stranding VP-ellipsis* extensively studied by Goldberg (2005) (see also McCloskey 1991 and Doron 1999 for earlier discussion). V-stranding VP-ellipsis is a construction where VP-ellipsis targets a VP whose head has evacuated the VP by head-movement. One concrete example of V-stranding VP-ellipsis is given as (62a) from Irish (based on McCloskey 1991:273).

(62) *V-stranding VP-ellipsis in Irish*

a. Dúirt mé go gceannóinn é agus [cheannaigh Δ]
said I C buy it and bought
'I said that I would buy it and I did'

b. Dúirt mé go [$_{IP}$ gceannóinn$_i$ [$_{VP}$ *pro* t_i é]] agus [$_{IP}$ cheannaigh$_j$ ~~[$_{VP}$ *pro* t_j é]~~]

(62a) is analyzed as having a structure like (62b), where the verbs undergo movement to I^0 and the complement VP in the second conjunct is deleted.

One important property of V-stranding VP-ellipsis extensively discussed in Goldberg (2005) is that the stranded verb of the target clause must be identical to the one of the antecedent clause to some extent. In (62a), the two verbs are identical in their root, so the sentence is grammatical. On the other hand, as in (63) (based on Goldberg

2005:168), the sentence becomes ungrammatical if the two verbs are not identical in their root.

(63) *V-stranding VP-ellipsis in Irish with different verbs*

a. *Léigh mé an dán ach níor [thuig Δ]
read I the poem but not understand
'(intended) I read the poem, but I didn't understand it'

b. [$_{IP}$ Léigh$_i$ [$_{VP}$ mé t_i an dán]] ach níor [$_{IP}$ thuig$_j$ ~~[$_{VP}$ mé t_j an dán]~~]

Assuming that (63a) has a structure like (63b) (omitting irrelevant details), Goldberg (2005) argues that the two VPs are not identical, so that deletion of the second VP is not licensed.

V-stranding sluicing exhibits the same behavior, as in (64). (64a) and (64b) are structurally quite similar to (54a) and (54d), respectively, but they crucially differ in that the embedded verb of the target clause (64b) is not identical to the one of the antecedent clause (64a).

(64) *V-stranding sluicing with different verbs*

a. Taroo-wa [Ziroo-ga nani-o [zibun-no yarikata-de] katta ka] sitteiru ga,
Taroo-TOP Ziroo-NOM what-ACC self-GEN way-in bought Q know but
'(lit.) Though Taroo knows [what Ziroo bought in his (= Taroo's) way]'

b. *Hanako-wa [nani-o Δ utta ka] sir-anai
Hanako-TOP what-ACC sold Q know-NEG
'(intended) Hanako doesn't know [what Ziroo sold in her (= Hanako's) way]'

The fact that (64b) lacks the intended reading, unlike (54d), suggests that deletion of TP fails to be licensed, just like deletion of VP does in (63).

Although V-stranding sluicing shares the verb-identity requirement with V-stranding VP-ellipsis, there is an important difference between them.[24] Notice that the grammaticality of (62a) already suggests that verbs in the antecedent and the target does not have to be totally identical. Examining more examples from Hebrew, another language that allows V-stranding VP-ellipsis, Goldberg (2005) points out that the stranded verb in the target clause does not have to be identical to the one in the antecedent in their inflectional properties, namely tense and agreement, as shown in (65) (based on Goldberg 2005:163).

(65) *V-stranding VP-ellipsis in Hebrew with different inflections*

A:	Tazmini	et	Dvora	la-mesiba?	B:	Kvar	[hizmanti Δ].
	invite.FUT.2FSG	ACC	Dvora	to.the-party		already	invite.PAST.1SG
	'Will you invite Dvora to the party?'					'(intended) I already did.'	

In (65), the verbs in the antecedent and the target are identical in their root, but not in their inflectional morphology. Nonetheless, the sentence is grammatical, suggesting that V-stranding VP-ellipsis is indeed licensed. Assuming that the information regarding inflections are located outside of the VP, Goldberg (2005) argues that this observation can be captured by the idea that V-stranding VP-ellipsis is an instance of *VP*-ellipsis, where identity of antecedent and target VPs is crucial to license ellipsis.

Although Goldberg (2005) primarily focuses on the inflectional properties of verbs, a similar point can be made for negation. Let us consider the examples given in (66) from Irish (based on McCloskey 1991:274).

(66) *V-stranding VP-ellipsis in Irish and negation*

A:	Cheannaigh	siad	teach.		B:	Nior	[cheannaigh Δ].
	bought	they	house			not	bought
	'They bought a house'					'(intended) They did not'	

In (66), only the target clause contains negation. The grammaticality of B's utterance indicates that V-stranding VP-ellipsis is allowed. This observation supports Goldberg's (2005) argument if the information regarding negation is also located outside of VP.[25]

Let us now turn to V-stranding sluicing. The claim being made in this subsection is that V-standing sluicing is an instance of sluicing, namely, ellipsis of *TP*. Thus, identity of the antecedent and the target is calculated at the level of TP. Then, we expect that V-stranding sluicing requires not only the roots of verbs but also their properties concerning inflections and negation to be identical. This expectation is indeed met. Let us first consider the examples in (67) and (68) (cf. (54a) and (54d)).

(67) *V-standing sluicing and negation only in the target*

a. Taroo-wa [Ziroo-ga dono mondai-o [zibun-no yarikata-de] izen
Taroo-TOP Ziroo-NOM which problem-ACC self-GEN way-in once
toita ka] sitteiru ga,
solved Q know but
'(lit.) Though Taroo knows [which problem Ziroo once solved in his (= Taroo's) way]'

b. *Hanako-wa [dore-o Δ tok-anakat-ta ka] siritagatteiru
Hanako-TOP which-ACC solve-NEG-PAST Q want.to.know
'(intended) Hanako wants to know [which one he didn't solved once in her (= Hanako's) way]'

(68) *V-standing sluicing and negation both in the antecedent and the target*

a. Taroo-wa [Ziroo-ga dono mondai-o [zibun-no yarikata-de] izen
Taroo-TOP Ziroo-NOM which problem-ACC self-GEN way-in once
tok-anakat-ta ka] sitteiru ga,
solve-NEG-PAST Q know but
'(lit.) Though Taroo knows [which problem Ziroo didn't solve once in his (= Taroo's) way]'

b. Hanako-wa [dore-o Δ tok-anakat-ta ka] siritagatteiru
Hanako-TOP which-ACC solve-NEG-PAST Q want.to.know
'(intended) Hanako wants to know [which one he didn't solve once in her (= Hanako's) way]'

In (67), only the target contains negation, and the intended reading is not available for (67b). Once negation is added to the antecedent clause as in (68), however, the intended reading becomes available. Thus, this contrast suggests that V-stranding sluicing requires the properties concerning polarity to be identical.

Furthermore, tense properties are also required to be identical, as shown in (69). (69a) is repeated from (54a), whose embedded verb bears past tense.

(69) *V-standing sluicing with different tense*

a. Taroo-wa [Ziroo-ga dono mondai-o [zibun-no yarikata-de]
Taroo-TOP Ziroo-NOM which problem-ACC self-GEN way-in
toi-ta ka] sitteiru ga,
solve-PAST Q know but
'(lit.) Though Taroo knows [which problem Ziroo solved in his (= Taroo's) way]'

b. *Hanako-wa [dore-o Δ toku(-daroo) ka] siritagatteiru
Hanako-TOP which-ACC solve-will Q want.to.know
'(intended) Hanako wants to know [which one he {solves/will solve} in her (= Hanako's) way]'

The intended reading is not available if the stranded embedded verb bears either present or future tense, as in (69b). Therefore, this observation indicates that V-stranding sluicing is not licensed in this example.

Note that the observations in (67)-(69) confirm Goldberg's (2005) conclusion that V-stranding VP-ellipsis is not allowed in Japanese: Otherwise, the intended readings should be available for (67b) and (69b), because the antecedent and target VPs can be identical to each other, just like Irish and Hebrew cases. This consideration further corroborates the arguments in Section 3.2.2 of Chapter 3 that Japanese lacks the English-type VP-ellipsis. That is, neither the English-type (verb-contained) nor the Irish/Hebrew-type (verb-stranding) VP-ellipsis is licensed in Japanese.[26]

Based on the facts observed so far, then, I conclude that *wh*-movement followed by TP-deletion is indeed available for finite clauses, although it yields what we are calling V-stranding sluicing due to verb-movement to C^0.

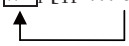
5.2.4. Summary and Implication

Summarizing the discussion so far, I argued in Sections 5.2.2 that Japanese does have genuine sluicing, namely TP-deletion and concomitant *wh*-movement, based on a novel set of data regarding the SLC_{NFC}. On the other hand, I proposed in Section 5.2.3 that finite verbs in Japanese, unlike non-finite ones, move to C^0, so that genuine sluicing in finite clauses giving rise to the structure what we are calling V-stranding sluicing. As a result, genuine sluicing in Japanese yields the following two schematic structures, repeated from (50), depending on the finiteness of verb.

(70) *Two outcomes of genuine sluicing in Japanese*

a. … [$_{CP}$ *wh*$_i$ [~~$_{TP}$ … t_i … t_V … t_T~~] [$_C{}^0$ V-T-C]] … (= finite clauses)

b. … [$_{CP}$ *wh*$_i$ [~~$_{TP}$ … t_i … V … T~~] [$_C{}^0$ C]] … (= non-finite clauses)



In this subsection, I discuss the implication of the pattern found in (70) for the study of sluicing in general.

Specifically, I focus on Merchant's (2001:62) Sluicing-COMP generalization, given in (71). The term COMP refers to the area that includes Spec, CP and C^0.

(71) *Sluicing-COMP generalization*

In sluicing, no non-operator material may appear in COMP.

Merchant (2001) posits this generalization by examining various languages. As shown in (72), otherwise obligatory head-movement to C^0 is prohibited under sluicing in the Germanic languages (based on Merchant 2001:63).

(72) *Sluicing and head-movement in the Germanic languages*

a.	A: Max has invited someone.	B: Who (*has) Δ?	[English]
b.	A: Max hat jemand eingeladen.	B: Wen (*hat) Δ?	[German]
c.	A: Max heeft iemand uitgenodigd.	B: Wie (*heeft) Δ?	[Dutch]
d.	A: Max har inviteret en eller anden.	B: Hvem (*har) Δ?	[Danish]

Similarly, the so-called "Wackernagel" clitics found in the South Slavic languages like Slovene, Bulgarian, Serbo-Croatian, and Macedonian cannot appear under sluicing, although they must occur in the second position otherwise. The relevant example is given in (73) from Slovene, where the aspectual auxiliary *je* is the relevant clitic (based on Merchant 2001:66).

(73) *Sluicing and the "Wackernagel" clitics*

Špela	je	popravila	nekako,	a	nisem	vprašal,	kako	(*je) Δ
Spela	AUX	fixed	something	but	NEG.AUX	asked	what	AUX

'Spela fixed something, but I didn't ask what'

In the above cases, the offending elements (namely auxiliaries and clitics) are

moved from the ellipsis site. Merchant (2001) provides another set of facts that has to do with the base-generated complementizers. He observes that even in languages where a *wh*-phrase and a complementizer can co-occur (namely, the Doubly-filled COMP effect is absent), sluicing fails to retain a complementizer. One example from Irish is given in (74) (based on Merchant 2001:76).

(74) *Sluicing and base-generated complementizers in Irish*
Cheannaigh sé leabhar inteacht ach níl fhios agam céacu ceann (*a/*ar) Δ
bought he book some but not.is knowledge at.me which one C C
'He bought a book, but I don't know which'

Neither of the complementizers *a* or *ar* is allowed to appear under sluicing.

The Japanese pattern in (70) constitutes a clear counterexample to the Sluicing-COMP generalization. In particular, (70a) corresponds to (72) and (73), and (70b) does to (74). Thus, the Japanese pattern requires a reconsideration of the Sluicing-COMP generalization.

Meanwhile, Merchant (2001:81-82) himself notes a potential counterexample from Hungarian, given in (75a). In Hungarian, the complementizer *hogy* can be retained under sluicing. Merchant (2001) suggests that wh-movement is Hungarian does not target Spec, CP (cf. Puskás 1999), so that it is immune from the Sluicing-COMP effect, namely the ban on non-operator element in COMP. Furthermore, Mahajan (2005:7) observes, contrary to Merchant (2001:82), that Hindi patterns with Hungarian in that the complementizer *ki* is allowed to appear under sluicing, as in (75b) (see also Chandra & Ince 2008, Malhotra 2009, and Bhattacharya & Simpson to appear for similar judgments).

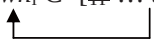
(75) *Sluicing and base-generated complementizers in Hungarian and Hindi*
a. A gyerekek találkoztak valakivel de nem emlékszem, (hogy) kivel Δ
the children met someone.with but not I.remember that who.with
'The kids met someone, but I don't remember who'
b. Salmaa-ne ek ciiz khariidii par mujhe nahii pataa [(ki) kyaa Δ]
Salma-ERG a thing bought but I.DAT NEG know that what
'Salma bought something but I don't know [what Δ]'

The Japanese pattern given in (70), taken together with the potential counterexamples in (75) provides a way to draw a new generalization. As a first step, let

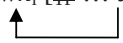
us schematically summarize the observed patterns as in (76).

(76) *Possible and impossible configurations*

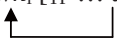
a. *[$_{CP}$ *wh*$_i$ C^0 [$_{TP}$ … t_i …]] (= Germanic (72)/Slavic (73)/Irish (74))



b. √ [$_{CP}$ *wh*$_i$ [$_{TP}$ … t_i …] C^0] (= Japanese (70)))



c. √ [$_{CP}$ C^0 *wh*$_i$ [$_{TP}$ … t_i …]] (= Hungarian (75a)/Hindi (75b)))



Now, I posit the generalization in (77) as an alternative to the Sluicing-COMP generalization.

(77) *New generalization on the Sluicing-COMP effect*

The Sluicing-COMP effect emerges only when the remnant *wh*-phrase linearly crosses the overt elements in C^0.

In the next section, I try to explain why a generalization like (77) holds, by employing the theory of Cyclic Linearization.

5.3. Island-repair, Cyclic Linearization and the Sluicing-COMP Effect

This section aims at showing that the theory of Cyclic Linearization provides a way of deriving the effect of the new generalization in (77). Specifically, I argue that the effect of (77) is derived once Fox & Lasnik's (2003) approach to a difference between sluicing and VP-ellipsis regarding island-repair is implemented under the theory of Cyclic Linearization. In Section 5.3.1, I first review the background on island-repair, and then propose a specific implementation of Fox & Lasnik's (2003) idea under Cyclic Linearization. Then, Section 5.3.2 illustrates how the proposed system derives the effect of (77).

5.3.1. Island-repair in Sluicing and VP-ellipsis

Among the phenomena where ellipsis ameliorates certain grammatical violations, island-repair may be the most explored one since its discovery by Ross (1969a).[27] One representative example of island-repair is given in (78), repeated from (41).

(78) *Island-repair under sluicing*

a. They want to hire someone who speaks a Balkan language,

b. *but I don't remember [which (Balkan language)$_i$ they want to hire someone who speaks t_i]

c. but I don't remember [which (Balkan language) Δ]

Meanwhile, it has been also noticed that VP-ellipsis fails to repair island violations in certain syntactic environments, as the contrast between (79b) and (79c) indicates (based on Merchant 2001:5) (see, among many others, Chung, Ladusaw, & McCloskey 1995, Lasnik 2001, 2006, 2008, Merchant 2001, 2008, Fox & Lasnik 2003).

(79) *Sluicing vs. VP-ellipsis with respect to island-repair*

a. They want to hire someone who speaks a Balkan language,

b. but I don't remember [which (Balkan language) Δ]

c. *but I don't remember [which (Balkan language) they do Δ]

(79a) and (79b) are repeated from (78a) and (78c), respectively. The ungrammaticality of (79c), which involves VP-ellipsis, indicates that the island violation cannot be remedied.

Recall at this point that in Chapter 3 we reached the conclusion that both sluicing and VP-ellipsis involve PF-deletion, based on the possibility of subextraction from ellipsis sites. Then, (79b) and (79c) would be analyzed as having a structure in (80a) and (80b), respectively.

(80) *Structures of (79b-c) under the PF-deletion analysis*

a. but I don't remember [$_{CP}$ which (Balkan language)$_i$ ~~[$_{TP}$ they want to hire someone who speaks t_i]~~]

b. *but I don't remember [$_{CP}$ which (Balkan language)$_i$ [$_{TP}$ they do ~~[$_{VP}$ want to hire someone who speaks t_i]~~]]

Then, it is not immediately clear why there is a difference between sluicing and VP-ellipsis with respect to island-repair as shown in (79) above. Indeed, Chung, Ladusaw & McCloskey (1995) argue that although VP-ellipsis is a case of PF-deletion, sluicing is an instance of LF-copying. As I review in Section 5.3.1.1 below, however, Fox & Lasnik (2003) offer an explanation of the difference maintaining that both sluicing and VP-ellipsis involve PF-deletion. Thus, the proposal to be made in Section

5.3.1.2 that implements Fox & Lasnik's (2003) analysis to the theory of Cyclic Linearization also allows us to maintain the conclusion of Chapter 3 that both sluicing and VP-ellipsis involve PF-deletion.[28]

5.3.1.1. Previous Approaches to the Difference between Sluicing and VP-ellipsis

Let us start the discussion by reviewing some previous approaches to the difference between sluicing and VP-ellipsis. Originally, Ross (1969a) appealed to some global constraints to explain island-repair observed for sluicing: In order to apply *wh*-movement out of an island under Ross' system, the island has to be deleted by sluicing prior to the application of the *wh*-movement. However, the information whether sluicing applies so as to remove the node containing the island becomes available after the *wh*-movement, since the applicability of sluicing depends on whether the *wh*-movement has applied. To solve this puzzle, it is claimed that at the step where a *wh*-phrase is moved out of the island, the computational system can have access to the information whether sluicing can delete the island.

Rejecting such a global constraint, Chomsky (1972) proposes that when an island is crossed by a movement operation, a marker * (# in his notation) is assigned to it. For instance, the relevant part of (78b) is represented as (81).

(81) **-marking on islands*

… [$_{CP}$ which (Balkan language)$_i$ [$_{TP}$ they want to hire [$_{NP}$* someone who speaks t_i]]]

Assuming that there is a condition that prohibits *-marked elements on the surface structure, the structure in (81) counts illegitimate if nothing more happens: On the other hand, if sluicing deletes the TP, which contains the *-marked island, the structure counts legitimate, yielding (79b).

However, this approach does not extend to the case of VP-ellipsis, as pointed out by Fox & Lasnik (2003) (see also Lasnik 2001 and Merchant 2001), since the *-marked island is also contained within the VP. Hence, if the VP is deleted, the resultant structure, namely (79c), should be as legitimate as (79b), contrary to fact.

Fox & Lasnik (2003) point out that the difference between sluicing and VP-ellipsis found in (79) is not limited to the cases where islands are involved. Let us consider the examples in (82) (based on Fox & Lasnik 2003:148; see also Lasnik 2001).

(82) *Sluicing vs. VP-ellipsis where islands are not at issue*

a. They said they heard about a Balkan language,

b. but I don't know [which Balkan language$_i$ they said they heard about t_i]

c. but I don't know [which Balkan language Δ]

d. *but I don't know [which Balkan language they did Δ]

As in (82b), the movement of *which Balkan language* from the embedded clause does not induce any problem. Sluicing is possible in this configuration, as in (82b). On the other hand, as in (82d), VP-ellipsis renders a sentence ungrammatical which is otherwise grammatical. Based on this observation, they argue that the difference between sluicing and VP-ellipsis is not directly linked to their ability of island-repair.

To explain the difference between sluicing and VP-ellipsis, Fox & Lasnik (2003) first propose that certain parallelism conditions on deletion, which they call Parallelism, are at work (see also Fiengo & May 1994 and Fox 2000 for parallelism conditions). In effect, Parallelism demands the target clause to be identical to its antecedent in the positions of their respective operators and variables. Let us take (83a) as a concrete example, which is formally identical to the case in (82) in that the correlate is an indefinite and that no island is involved. The semantic representation of the antecedent clause is something like (83b), where the indefinite noun *a certain girl* is bound by an existential quantifier over choice functions (Reinhart 1997).

(83) *Sluicing with an indefinite correlate*

a. Fred said that I talked to a certain girl, but I don't know [which girl Δ]

b. ∃f λf′ [Fred said that I talked to f′(girl)]

Suppose then that *wh*-movement of *which girl* in the target clause of (83a) proceed either in one-fell-swoop fashion as in (84a), or in a successive cyclic way as in (84b).[29]

(84) Wh-*movement in the target clause*

a. [$_{CP}$ which girl$_i$ [$_{TP}$ Fred [$_{VP}$ said [$_{CP}$ that [$_{TP}$ I [$_{VP}$ talked to t_i]]]]]]

b. [$_{CP}$ which girl$_i$ [$_{TP}$ Fred [$_{VP}$ t_i' said [$_{CP}$ t_i'' that [$_{TP}$ I [$_{VP}$ talked to t_i''']]]]]]

Assuming that the word *which* is an existential quantifier over choice functions and pied-piped materials are reconstructed into their original position, Fox & Lasnik (2003)

argue that the syntactic structures in (84a) and (84b) are converted into the semantic representations in (85a) and (85b), respectively.

(85) *Semantic representations of (84a-b)*

a. which g λg′ [Fred said that I talked to g′(girl)]

b. which g λg′ [Fred g′ λg″ said g″ λg‴ that I talked to g‴(girl)]

In (85a), the variable *g′(girl)* is bound by the operator in the position parallel to the one in which the variable in the antecedent clause, namely *f′(girl)*, is bound. Thus, (85a) is parallel to (83b). On the other hand, the variable in (85b) fails to be bound in the parallel manner to that of the antecedent clause because of the intermediate traces created by successive-cyclic movement. Hence, Parallelism is not satisfied in this case. As a consequence, deletion is licensed only when *wh*-movement proceeds in a one-fell-swoop fashion, avoiding all the possible intermediate landing-sites.

Then, if sluicing applies to (84a), repeated as (86a) below, the structure in (86b) results, and if VP-ellipsis applies to it, the one in (86c) results.

(86) *Sluicing vs. VP-ellipsis*

a. $[_{CP}$ which girl$_i$ $[_{TP}$ Fred $[_{VP}$ said $[_{CP}$ that $[_{TP}$ I $[_{VP}$ talked to $t_i]]]]]]$

b. $[_{CP}$ which girl$_i$ ~~$[_{TP}$ Fred $[_{VP}$ said $[_{CP}$ that $[_{TP}$ I $[_{VP}$ talked to $t_i]]]]]$~~$]$

c. $[_{CP}$ which girl$_i$ $[_{TP}$ Fred T $[_{AspP}$ did ~~$[_{VP}$ say $[_{CP}$ that $[_{TP}$ I $[_{VP}$ talked to $t_i]]]]$~~$]]]$

Assuming that all maximal projections are barriers for movement (cf. Chomsky 1986b), Fox & Lasnik (2003) argue that the one-fell-swoop movement in (86a) crosses a bunch of barriers. In the case of sluicing, however, the all the maximal projections traversed by the *wh*-phrase are deleted as in (86b). As a result, all the barriers are removed, yielding a legitimate structure. On the other hand, not all the maximal projections are deleted under VP-ellipsis as in (86c). Specifically, Fox & Lasnik (2003) suggest that VP-ellipsis leaves Tense and Aspect pronounced. They assume, following Fox (2000) and Nissenbaum (2000), that there is an intermediate landing site between the subject and VP, and argue that at least one of TP and AspP counts as a barrier, which must be circumvented by successive-cyclic movement or deletion. Since VP-ellipsis fails to delete them, a locality violation is inevitable. Thus, one-fell-swoop movement is not possible in this case. Given that one-fell-swoop movement is a prerequisite for deletion when a correlate is an indefinite, it follows that VP-ellipsis is not licensed in this

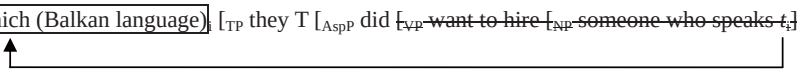
configuration.

Under Fox and Lasnik's (2003) analysis, the relevant parts of (79b) and (79c) above, which involve an island, are analyzed as having a structure like (87a) and (87b), respectively. Since the correlate is an indefinite, the remnant should undergo one-fell-swoop movement.

(87) *Sluicing vs. VP-ellipsis*

a. [$_{CP}$ which (Balkan language)$_i$ ~~[$_{TP}$ they want to hire [$_{NP}$ someone who speaks t_i]]~~]

b. [$_{CP}$ which (Balkan language)$_i$ [$_{TP}$ they T [$_{AspP}$ did ~~[$_{VP}$ want to hire [$_{NP}$ someone who speaks t_i]]~~]]]

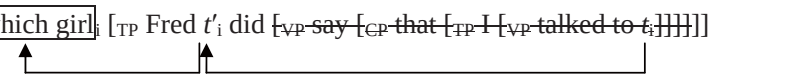


In both cases, the complex NP is deleted so that its barrier-hood is nullified. However, just like (86), only sluicing succeeds to delete all the barriers crossed by the one-fell-swoop movement. Therefore, only (87a) counts legitimate.

Suppose then that the remnant *which girl* undergoes "partial" one-fell-swoop movement to an intermediate position and then further undergoes successive-cyclic movement to the final landing site, as in (88a). Since VP-ellipsis can delete all the maximal projections traversed by the one-fell-movement, and the later successive-cyclic movement can circumvent all the potential barriers, the structure in (88a) appears to be legitimate. However, as noted by Fox & Lasnik (2003), the semantic representation of (88a), given as (88b), is not parallel to that of the antecedent, namely (83b).

(88) *Partial one-fell-swoop movement followed by successive-cyclic movement*

a. [$_{CP}$ which girl$_i$ [$_{TP}$ Fred t'_i did ~~[$_{VP}$ say [$_{CP}$ that [$_{TP}$ I [$_{VP}$ talked to t_i]]]]~~]]



b. which g λg′ [Fred g′ λg″ did say that I talked to g″(girl)]

In particular, the intermediate trace in (88a) breaks Parallelism. Thus, VP-ellipsis fails to be licensed, rendering the structure in (88a) illegitimate.

Then, Fox & Lasnik (2003) argue that their analysis predicts that the difference between sluicing and VP-ellipsis disappears if successive-cyclic movement takes place in the antecedent so that Parallelism requires successive-cyclic movement in the second clause. This prediction is confirmed by the examples in (89) and (90) (based on Fox & Lasnik 2003:151). In (89a), the correlate is an indefinite noun, just like (79), (82) and (83a) above. Thus, there is a contrast between sluicing and VP-ellipsis, as found in

(89b) and (89c). In (90a), on the other hand, the correlate is the *wh*-phrase *which book*. Then, the contrast in question disappears.[30]

(89) *Sluicing vs. VP-ellipsis with an indefinite correlate*
  a. I know that John said that Mary read a certain book,
  b. but I don't know [which one Δ]
  c. *but I don't know [which one he did Δ]

(90) *Sluicing vs. VP-ellipsis with a* wh-*correlate*
  a. I know which book John said that Mary read,
  b. but YOU don't know [which one Δ]
  c. ??but YOU don't know [which one he did Δ]

Since the correlate *which book* in (90a) moves successive-cyclically, circumventing all the potential barriers, the remnant *which one* does so, given Parallelism. Thus, there is no offending maximal projection in (90b) and (90c) to begin with, allowing either sluicing or VP-ellipsis to apply. In this way, Fox & Lasnik (2003) explain the difference between sluicing and VP-ellipsis, maintaining the idea that those two ellipsis processes share the same character, namely PF-deletion.

5.3.1.2. Cyclic Linearization and the Difference between Sluicing and VP-ellipsis

In this subsection, I propose to implement Fox & Lasnik's (2003) barrier-based analysis in term of the theory of Cyclic Linearization. In a nutshell, I argue that one-fell-swoop movement, which is required by Parallelism if a correlate is an indefinite, results in creating contradictory ordering statements. Such an ordering contradiction can be ameliorated by applying deletion in the case of sluicing, but not in the case of VP-ellipsis. In other words, I claim that the nature of what Fox & Lasnik (2003) call barriers for movement is an ordering contradiction at PF.[31]

To recall how the system works under the theory of Cyclic Linearization, let us consider how a sentence like (91a) is derived. Omitting the *v*P domain for a while, *what* in (91a) can be moved successive-cyclically as in (91b) or one-fell-swoop as in (91c).

(91) *Long-distance* wh-*movement*
  a. What do you think that John bought?
  b. [$_{CP1}$ what$_i$ do you think [$_{CP2}$ t'_i that John bought t_i]]

c. [$_{CP1}$ what$_i$ do you think [$_{CP2}$ that John bought t_i]]

Given that CP is a Spell-out Domain, the successive-cyclic derivation in (91b) proceeds as follows:

(92) *Long-distance* wh-*movement with successive-cyclic movement*

a. *Movement of* what → *Spell-out of CP$_2$*
[$_{CP2}$ what$_i$ that John bought t_i] Ordering Table: ***what*<*that*<*John*<*bought***

b. *Movement of* what → *Spell-out of CP$_1$*
[$_{CP1}$ what$_i$ do you think [$_{CP2}$ t'_i that John bought t_i]]

Ordering Table: *what<that<John<bought*
what*<*do*<*you*<*think*<*that*<*John*<*bought

At the step in (92a), *what* undergoes successive-cyclic movement to the edge of CP$_2$. As a result, Spell-out of CP$_2$ establishes the ordering statement *what<that<John<bought*. At the step in (92b), *what* undergoes further movement to Spec, CP$_1$. Spell-out of CP$_1$ then establishes the ordering statement *what<do<you<think<that<John<bought*, which is consistent with the one established previously. Since there is no ordering contradiction, the derivation successfully converges.

On the other hand, the one-fell-swoop derivation in (91c) proceeds as in (93).

(93) *Long-distance* wh-*movement without successive-cyclic movement*

a. *Construction of CP$_2$* → *Spell-out of CP$_2$*
[$_{CP2}$ that John bought what] Ordering Table: ***that*<*John*<*bought*<*what***

b. *Movement of* what → *Spell-out of CP$_1$*
*[$_{CP1}$ what$_i$ do you think [$_{CP2}$ that John bought t_i]]

Ordering Table: *that<John<bought<what*
what*<*do*<*you*<*think*<*that*<*John*<*bought

When CP$_2$ is Spelled-out as in (93a), the ordering statement *that<John<bought<what* is established. When the derivation proceeds to the step in (93b), *what* moves to Spec, CP$_1$. As a result of Spell-out of CP$_1$, the Ordering Table receives the ordering statement

what<*do*<*you*<*think*<*that*<*John*<*bought*. Since *what* is specified to precede and follow *that*, *John*, and *bought* at the same time, the derivation crashes at PF. This is the reason why one-fell-swoop movement is blocked in normal environments.

Note that under the theory of Cyclic Linearization, one-fell-swoop movement itself does not create any problem in narrow syntax: At PF, an ordering contradiction arises. Then, if such an ordering contradiction in question can be circumvented somehow, the one-fell-swoop derivation is allowed. Ellipsis, taken as PF-deletion, does have this effect by rendering the offending materials that induce the contradiction unpronounced.

Taking (83a), repeated as (94a), as a concrete example, the antecedent clause has the semantic representation in (94b).

(94) *Sluicing with an indefinite correlate*

a. Fred said that I talked to a certain girl, but I don't know [which girl Δ]

b. ∃f λf′ [Fred said that I talked to f′(girl)]

To observe Parallelism, the remnant *which girl* must move in a one-fell-swoop fashion. Hence, the relevant part of the target clause of (94a) is derived in the manner depicted in (95) below (the *v*P domain is still omitted). At the step in (95a), the remnant stays in-situ, and Spell-out applies to CP_2.

(95) *Derivation of the target clause*

a. *Construction of CP_2* → *Spell-out of CP_2*

$[_{CP2}$ that $[_{TP2}$ I_i $[_{vP2}$ t_i $[_{VP2}$ talked to which girl$]]]]$

Ordering Table: ***that*<*I*<*talked*<*to*<*which*<*girl***

b. *Movement of* which girl → *Spell-out of CP_1*

*$[_{CP1}$ which girl$_k$ $[_{TP1}$ Fred$_j$ $[_{vP1}$ t_j $[_{VP1}$ said $[_{CP2}$ that $[_{TP2}$ I_i $[_{vP2}$ t_i $[_{VP2}$ talked to $t_k]]]]]]]$

Ordering Table: *that*<*I*<*talked*<*to*<*which*<*girl*

which*<*girl*<*Fred*<*said*<*that*<*I*<*talked*<*to

c. *Deletion of TP_1*

$[_{CP1}$ which girl$_k$ ~~$[_{TP1}$ Fred$_j$ $[_{vP1}$ t_j $[_{VP1}$ said $[_{CP2}$ that $[_{TP2}$ I_i $[_{vP2}$ t_i $[_{VP2}$ talked to $t_k]]]]]]]$~~

Ordering Table: ~~*talked*<*to*~~<*which*<*girl*

~~*that*<*I*<*talked*<*to*~~<*which*<*girl*

~~*said*<*that*<*I*<*talked*<*to*~~<*which*<*girl*

which<*girl*<~~*Fred*<*said*<*that*<*I*<*talked*<*to*~~

At the step in (95b), *which girl* undergoes one-fell-swoop movement to Spec, CP_1. When Spell-out applies to CP_1, the Ordering Table receives the ordering statement *which<girl<Fred<said<that<I<talked<to*, which contradicts the previously established ordering statement. Specifically, *which girl* is specified to simultaneously precede and follow the materials contained in CP_2. However, deletion of TP_1 renders the materials contained in it unpronounced, as in (95c). As a result, the ordering contradiction is circumvented.[32] In this way, one-fell-swoop movement, which is required to satisfy Parallelism, is indeed allowed in the sluicing context. The final syntactic representation of (95) can be mapped to the semantic representation which is parallel to that of the antecedent (namely (94b)) in the positions of the operator and the variable.[33]

Let us now turn to the case of VP-ellipsis. To deal with VP-ellipsis, I make the following claims:

(96) *Claims*

a. All auxiliaries, including *do* in *do*-support, project their own VP and *v*P, and their *v*P is subject to Spell-out.
b. T^0, together with an appropriate Spec, licenses deletion of any *v*P in its complement domain, which is identical to the one in the antecedent.
c. Spell-out of *v*P linearizes the whole *v*P, including the elements on its edge, even in languages like English.

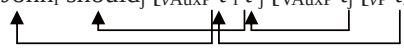
As for (96a), the idea that an auxiliary is a head of a verbal projection goes back at least to Ross (1969b). This assumption plays an important role in the proposed analysis, as we see later. The claim in (96b) slightly relaxes a strict local relation between the ellipsis site and its licensor (see Aelbrecht 2009 for a similar idea). Finally, I claim (96c), though it is not consistent with the claim about the Spell-out Domain Parameter made in Chapter 2, for the sake of discussion (I return to this point in Section 5.4.1).

Let us start the discussion by considering the example in (97a) below. (97b) illustrates the structure of the relevant part of the antecedent and (97c) illustrates that of the target clause where VP-ellipsis has not applied yet. Projections of the auxiliaries are labeled as v_{Aux}P and V_{Aux}P for ease of exposition. Furthermore, head-movement of lexical verbs to v^0 is omitted for simplicity. Given the assumption in (96a), the subject *John* in (96b) must move through Spec, v_{Aux}P: Otherwise, Spell-out of v_{Aux}P establishes the ordering statement *should<John*, which clearly contradicts with the intended surface word order of (97a). Similary, the subject *he* in (96c) must move through Spec, v_{Aux}P.[34]

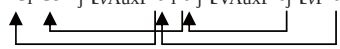
(97) *Simple VP-ellipsis*

a. I know John should swim, but I don't know he can [~~swim~~]

b. … [$_{TP}$ John$_i$ should$_j$ [$_{vAuxP}$ t'_i t'_j [$_{VAuxP}$ t_j [$_{vP}$ t_i [$_{VP}$ swim]]]]]



c. … [$_{TP}$ he$_i$ can$_j$ [$_{vAuxP}$ t'_i t'_j [$_{VAuxP}$ t_j [$_{vP}$ t_i [$_{VP}$ swim]]]]]



It has been assumed in the literature that VP-ellipsis targets a complement of T^0, and it is licensed by T^0 in the presence of an appropriate Spec (Lobeck 1990, 1995 and Saito & Murasugi 1990). Under the assumption that an auxiliary is base-generated under T^0, the difference of auxiliaries in the antecedent and the target clauses is not a problem. However, once we assume (96a), it is not clear if the difference can be ignored. Concretely speaking, the v_{Aux}P in (97b) might not be identical to the one in (97c).

Notice now that if the v_{Aux}P of (97c) is deleted, it results in a configuration of V-stranding VP-ellipsis discussed in Section 5.2.3.2. As emphasized there, one important property of V-stranding VP-ellipsis is that the stranded verbs in the antecedent and target clauses must be identical (at least in their root and derivational morphology). However, it is not likely the case that the two v_{Aux}Ps in (97b-c) above count to be identical to each other. Then, what is deleted in (97a)?

At this point, the assumption in (96b) comes in. It allows the T^0 in (97c) to license the deletion of the *v*P under identity with the one in (97b), although the *v*P is not a complement of the T^0.[35] However, there is a piece of evidence for such a relaxation. Let us consider the examples in (98) (based on Lobeck 1995:149). In these examples, a VP which is not a complement of T^0 is subject to VP-ellipsis.

(98) *VP-ellipsis targeting a non-complement of T^0*

a. Mary might have been writing, and John might have been [$_{VP}$ ~~writing~~] too

b. Mary might have written and John might have [$_{VP}$ ~~written~~] too

Under the current assumptions, the relevant part of (98a) is represented as in (99) (irrelevant details are omitted).

(99) *Structure of (98a)*

… [$_{TP}$ John might$_i$ [$_{vAuxP1}$ [$_{VAuxP1}$ t_i [$_{vAuxP2}$ [$_{VAuxP2}$ have [$_{vAuxP3}$ [$_{VAuxP3}$ been [~~$_{vP}$~~ [~~$_{VP}$ writing~~]]]]]]]]

Thus, if the deletion of *v*P in (99) is licensed by virtue of being in the complement

domain of the licensing T^0, the deletion of the *v*P in (97) should be licensed in the same way.[36]

Let us now consider how the proposed analysis works. The VP-ellipsis version of (94a) is given in (100a). Since the correlate is an indefinite, the antecedent clause has the semantic representation in (100b).

(100) *VP-ellipsis with an indefinite correlate*

a. *Fred said that I talked to a certain girl, but I don't know [which girl he did Δ]

b. ∃f λf′ [Fred said that I talked to f′(girl)]

Then, the derivation of the target clause proceeds in the manner depicted in (101) below. Let us start with the step where the matrix *v*P, namely vP_1, gets Spelled-out, illustrated in (101a) (ordering statements established before (101a) are omitted). At the step in (101b), v_{Aux}P is constructed, and Spell-out applies to it, establishing the ordering statement where *he* and *did* precedes the remnant *which girl*. When TP_1 is constructed, *he* and *did* further undergo movement to the appropriate positions, as in (101c). At the step in (101d), the remnant undergoes one-fell-swoop movement to Spec, CP_1, on a par with the case of sluicing. Finally, Spell-out applies to CP_1 as in (101e), sending the ordering statement and information that vP_1 is licensed to be deleted.

(101) *Derivation of the target clause*

a. *Construction of* vP_1 → *Spell-out of* vP_1

$[_{vP1}$ he $[_{VP1}$ say $[_{CP2}$ that $[_{TP2}$ I_i $[_{vP2}$ t_i $[_{VP2}$ talked to which girl$]]]]]$

Ordering Table: ***he<say<that<I<talked<to<which<girl***

b. *Construction of* $v_{Aux}P$ → *Spell-out of* $v_{Aux}P$

$[_{vAuxP}$ he_j did_k $[_{VAuxP}$ t_k $[_{vP1}$ t_j $[_{VP1}$ say $[_{CP2}$ that $[_{TP2}$ I_i $[_{vP2}$ t_i $[_{VP2}$ talked to which girl$]]]]]]]$

Ordering Table: *he<say<that<I<talked<to<which<girl*

he<did<say<that<I<talked<to<which<girl

c. *Construction of* TP_1

$[_{TP1}$ he_j did_k $[_{vAuxP}$ t'_j t'_k $[_{VAuxP}$ t_k $[_{vP1}$ t_j $[_{VP1}$ say $[_{CP2}$ that $[_{TP2}$ I_i $[_{vP2}$ t_i $[_{VP2}$ talked to which girl$]]]]]]]]$

Ordering Table: *he<say<that<I<talked<to<which<girl*

he<did<say<that<I<talked<to<which<girl

d. *Construction of CP_1* → *Movement of* which girl

[$_{CP1}$ which girl$_i$ [$_{TP1}$ he$_j$ did$_k$ [$_{vAuxP}$ t'_j t'_k [$_{VAuxP}$ t_k [$_{vP1}$ t_j [$_{VP1}$ say [$_{CP2}$ that [$_{TP2}$ I$_i$ [$_{vP2}$ t_i [$_{VP2}$ talked to t_i]]]]]]]]]

Ordering Table: *he<say<that<I<talked<to<which<girl*

he<did<say<that<I<talked<to<which<girl

e. *Spell-out of CP_1* → *Deletion of* vP_1

*[$_{CP1}$ which girl$_i$ [$_{TP1}$ he$_j$ did$_k$ [$_{vAuxP}$ t'_j t'_k [$_{VAuxP}$ t_k ~~[$_{vP1}$ t_j [$_{VP1}$ say [$_{CP2}$ that [$_{TP2}$ I$_i$ [$_{vP2}$ t_i [$_{VP2}$ talked to t_i]]]]]~~]]]]

Ordering Table: *he<~~say~~<~~that~~<~~I~~<~~talked~~<~~to~~<which<girl*

he<did<~~say~~<~~that~~<~~I~~<~~talked~~<~~to~~<which<girl

which girl*<*he*<*did*<~~say***~~<~~***that***~~<~~***I***~~<~~***talked***~~<~~***to***~~**

In this case, however, an ordering contradiction still arises, since *which girl* is specified to precede and follow *he* and *did* at the same time. Therefore, the derivation fails to converge.

Note that what is crucial in this account is that the linear ordering between a remnant and the elements that survive VP-ellipsis (namely, the subject and the auxiliary) is determined so as that the former follows the latter at the Spell-out of v_{Aux}P. Suppose then that the remnant *which girl* moves to the edge of v_{Aux}P before Spell-out applies to v_{Aux}P, as in (102). Then, it becomes possible to establish the ordering statement which is consistent with the one established at the Spell-out of CP_1.

(102) *Another continuation from (101b)*

Movement of which girl → *Spell-out of* v$_{Aux}$*P*

[$_{vAuxP}$ which girl$_i$ he$_j$ did$_k$ [$_{VAuxP}$ t_k [$_{vP1}$ t_j [$_{VP1}$ say [$_{CP2}$ that [$_{TP2}$ I$_i$ [$_{vP2}$ t_i [$_{VP2}$ talked to t_i]]]]]]

Ordering Table: ***which*<*girl*<*he*<*did*<*that*<*I*<*talked*<*to***

However, this kind of partial one-fell-swoop movement followed by successive-cyclic movement results in a semantic representation which is not parallel to that of the antecedent, as we have seen above (cf. (88)). Thus, deletion is not allowed, failing to yield (100a).

On the other hand, if the remnant can move successive-cyclically through the edge of each Spell-out Domain, no ordering contradiction arises. Thus, the case where the correlate undergoes successive-cyclic movement in (90a), repeated as (103a), VP-ellipsis is allowed as in (103c), as well as sluicing as in (103b).[37]

(103) *Sluicing vs. VP-ellipsis with a* wh-*correlate*

a. I know that which book John said that Mary read,

b. but YOU don't know [which one Δ]

c. ??but YOU don't know [which one he did Δ]

So far, the analysis in terms of the theory of Cyclic Linearization covers the data captured under Fox & Lasnik's (2003) barrier-based analysis. Armed with this implementation, the next subsection tries to derive the effect of the generalization in (77).

5.3.2. Cyclic Linearization and the Sluicing-COMP Effect

This subsection aims at deriving the effect of the generalization posited in Section 5.2.4, repeated here as (104).

(104) *New generalization on the Sluicing-COMP effect*

The Sluicing-COMP effect emerges only when the remnant *wh*-phrase linearly crosses the overt elements in C^0.

As originally done by Merchant (2001), I divide the relevant cases into the following two types: Ones where the relevant elements in C^0 are moved heads, and others where the relevant element in C^0 is a base-generated complementizer. In what follows, I examine these two cases one by one, reviewing some previous approaches and comparing the one to be proposed with them.

Let us start with the case where head-movement is involved. One concrete example of this kind is found in sluicing taking place in matrix clauses (so-called *matrix sluicing*).[38] Let us consider the example in (105a) (cf. (72a)).

(105) *Illegitimate English matrix sluicing*

a. A: Mary will see someone. B: *Who will?

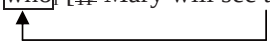
b. $[_{CP}$ who$_i$ $[_{C}{}^0$ will$_j$ C$]$ ~~$[_{TP}$ Mary t_j $[_{VP}$ see $t_i]]]$~~

B's utterance in (105a) has the structure in (105b), where the auxiliary *will* undergoes head-movement to C^0 and TP is deleted. Then, let us consider (106a).

(106) *Legitimate English matrix sluicing*

a. A: Mary will see someone. B: Who Δ?

b. [$_{CP}$ who$_i$ [$_{TP}$ ~~Mary will see t_i~~]]



In (106a), unlike (105a), the auxiliary *will* is absent from B's utterance, so that who is the only element that survives deletion as in (106b). Thus, the contrast between (105a) and (106a) confirms Merchant's original Sluicing-COMP generalization given in (71).

Lasnik (2001) points out that the grammaticality of (106a) raises a puzzle. In English matrix questions, auxiliaries must move across a subject, as in (107a). However, the alleged source of B's utterance in (106a) is something like (107b), which is ungrammatical.

(107) *English matrix questions*

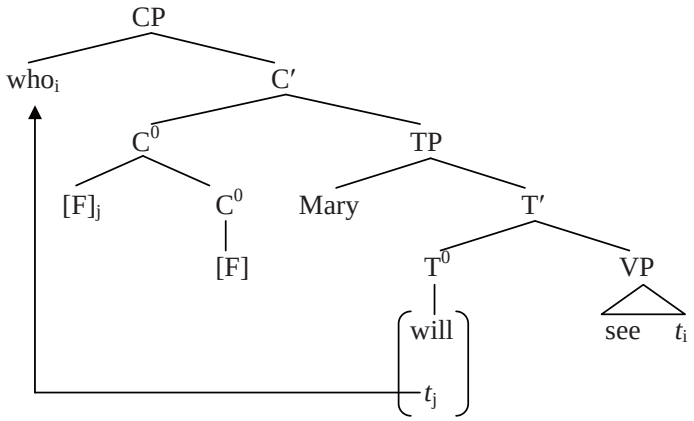
a. Who will Mary see?

b. *Who Mary will see?

Thus, the violation found in (107b), namely the lack of otherwise obligatory head-movement to C^0, is repaired by sluicing.

Lasnik (2001) then provides an analysis of this instance of repair effects in terms of Chomsky's (1995) Move F theory and Ochi's (1999) modification of it.[39] First, it is assumed that the matrix interrogative C^0 contains a formal feature F that needs to be checked by its counterpart located on T^0. Under the Move F theory, the minimal element that C^0 attracts is the feature F of T^0. Hence, a sentence like (107a) is analyzed as having an underlying structure like (108) below, where only F of T^0 is attracted and adjoined to C^0.

(108) *Attraction of F to C^0 under the Move F theory*



Note that in (108), the features of *will* are split into two different positions, namely C^0 and T^0. Chomsky (1995) argues that these split features induce a problem at PF. One way to save the structure is to move the whole T^0 by generalized pied-piping, as in (109a) below. This option yields (107a). In addition to this option, Lasnik (2001) proposes that the structure can be saved by deleting TP as in (109b), following Ochi's (1999) idea that a head from which a feature is attracted (in this case, *will*) becomes PF-defective. Since everything except for the remnant *who* in (109b) is deleted, the surface string of B's uttererance in (106a) is obtained.

(109) *Generalized pied-piping or deletion*

a. [$_{CP}$ who$_i$ [$_{C}{}^0$ will$_j$ C] [$_{TP}$ Mary t_j [$_{VP}$ see t_i]]]

b. [$_{CP}$ who$_i$ [$_{C}{}^0$ C] ~~[$_{TP}$ Mary will [$_{VP}$ see t_i]]~~]

That is, although the feature movement from T^0 to C^0 renders the T^0 unpronounceable by splitting its features, deletion of TP provides a way of avoiding to the problem. In this way, the repair effect concerning the lack of otherwise obligatory head-movement can be captured.

Returning to (105a), it is analyzed as involving generalized pied-piping of *will* and deletion of TP. Since generalized pied-piping has taken place, the auxiliary *will* is no more PF-defective (cf. (109a)). Meanwhile, deletion targets the TP, which is a complement of a *wh*-question C^0 having a *wh*-phrase as its Spec just like (109b), so that nothing appears to prevent deletion.

Lasnik (2006, 2008) suggests several possible solutions of this puzzle. One of them is that the Spec-head agreement relation between the *wh*-phrase and C^0, which is crucial to license deletion of TP, is disrupted by the moved auxiliary. That is, in the case of (105a), the auxiliary *will* has agreed with the subject *Mary* in Spec, TP, but the remnant *wh*-phrase *who* is the object. Hence, C^0, containing *will*, cannot enter in an appropriate Spec-head relation with *who*, failing to license deletion of TP. However, it is not clear how a Spec-head relation can be affected by an element that merely adjoins to the head.

Another possible account noted in Lasnik (2008), which is attributed to Johannes Jurka (p.c.), ascribes the source of ungrammaticality of (105a) to a violation of strict formal identity conditions imposed on deletion. Suppose that the antecedent and the target in (105a) are represented as in (110), respectively. In the antecedent clause (110a), the indefinite is bound by an operator Op, and in the target clause (110b), the trace of *wh*-movement is bound by the *wh*-operator WH.

(110) *Structures of (105a)*

a. Op_i [$_{TP}$ Mary will see x_i]

b. WH_i $will_j$ [$_{TP}$ Mary t_j see x_i]

Since the auxiliary moves only in the target clause, the TP in the antecedent is not formally identical to the one in the target clause. Thus, deletion of TP is not allowed.

Put simply, this analysis requires that if head-movement takes place in one clause, either antecedent or target, it also takes place in the other. The strict formal identity conditions, however, seem to be too strict, since they rule out the following examples, contrary to fact (based on Lasnik 2008:9)

(111) *Negative inversion and sluicing*

A: Never will$_i$ [$_{TP}$ Susan t_i understand some linguists].

B: Which linguists ~~[$_{TP}$ Susan will never understand]~~?

In Speaker A's utterance, *will* moves out of TP because of the presence of *never*. On the other hand, it stays within TP in Speaker B's utterance. Nevertheless, deletion is possible.

Fox & Lasnik's (2003) barrier-based analysis reviewed in the previous subsection cannot capture the ungrammaticality of (105), either. First, all the maximal projections that are barriers for one-fell-swoop movement of the remnant are deleted. Moreover, head-movement of *will* from T^0 to C^0 should not cross a barrier, otherwise any instance

of T-to-C movement induces a locality violation, contrary to fact. Therefore, (105b) is predicted to be without any problem.

The analysis in terms of the theory of Cyclic Linearization can provide a straightforward solution to the puzzle, maintaining Lasnik's (2001) insight. First, the antecedent of (105a), repeated as (112a), has the semantic representation in (112b).

(112) *Semantic representation of (112a)*

a. Mary will see someone

b. ∃f λf′ [Mary will see f′(person)]

Given Parallelism, the remnant *who* must undergo one-fell-swoop movement. Thus, when Spell-out applies to v_{Aux}P of the target clause of (105a), the ordering statement where the auxiliary *will* precedes *who* is established, as in (113).

(113) *Spell-out of* v_{Aux}*P in the target clause*

[$_{vAuxP}$ Mary$_i$ will$_j$ [$_{VAuxP}$ t_j [$_{vP}$ t_i [$_{VP}$ see who]]]]

Ordering Table: ***Mary*<*will*<*see*<*who***

In the surface structure of (105b), *who* precedes *will*, however. Hence, the derivation that yields (105b) necessarily induces an ordering contradiction, just like the case of impossible case of VP-ellipsis illustrated in (101).[40] Therefore, the auxiliary *will* must be contained within TP, which is ultimately subject to deletion at PF.[41]

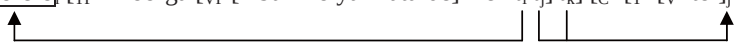
Recall that Japanese, unlike languages like Engilsh, allows V-stranding sluicing. One representative example of V-standing sluicing is given in (114) (cf. (54)). (114b) is the target, which is claimed to have a structure like (114c) repeated from (55).

(114) *V-stranding sluicing in Japanese*

a. Taroo-wa [Ziroo-ga dono mondai-o [zibun-no yarikata-de] izen
Taroo-TOP Ziroo-NOM which problem-ACC self-GEN way-in once
toita ka] sitteiru ga,
solved Q know but
'(lit.) Though Taroo knows [which problem Ziroo once solved in his (= Taroo's) way]'

b. Hanako-wa [dore-o Δ toita ka] sir-anai
Hanako-TOP which-ACC solved Q know-NEG
'(intended) Hanako doesn't know [which one he once solved in her (= Hanako's) way]'

c. $[_{CP}$ dore-o$_i$ ~~$[_{TP}$ Ziroo-ga $[_{VP}$ [zibun-no yarikata-de] izen t_i $t_j]$ $t_k]$~~ $[_{C}{}^{0}$ $[_{T}{}^{0}$ $[_{V}{}^{0}$ toi]$_j$-ta]$_k$-ka]]



We can now derive this difference between Japanese and English from a more fundamental difference between these two languages: Japanese is head-final, whereas English is head-initial. The reason why the auxiliary *will* in (105b) cannot appear is that Spell-out of v_{Aux}P establishes the ordering statement where *will* precedes the remnant *who*, as in (113) above. On the other hand, Spell-out of *v*P establishes the ordering statement where the verb follows the remnant in Japanese, as schematically shown in (115).

(115) *Spell-out of* v*P in Japanese*
$[_{vP}$ … $[_{VP}$ … *wh*… V] …] Ordering Table: ***wh*<V**

Therefore, head-movement of V^0 to C^0 does not induce an ordering contradiction at the Spell-out of CP, unlike the case of English. In this way, the difference between Japanese and English with respect to the possibility of V-stranding sluicing can be derived.[42]

This analysis maintains Lasnik's (2001) insight that either generalized pied-piping or TP-deletion can render the PF-defective element unproblematic. In languages like English, applying both strategies results in ungrammaticality since the derivation necessarily ends up with inducing an ordering contradiction, which is independent of these repair-strategies. In this sense, Japanese is good language to show that both strategies are independent of and compatible with each other, since applying both strategies can yield a legitimate structure.

To sum up so far, I argued that the linear ordering between the remnant and the head that moves to C^0 is specified before the derivation reaches to the CP-domain. Since English is head-initial, the ordering statement where the auxiliary precedes the remnant is established, so that it induces an ordering contradiction when the derivation yields the surface string of (72a). On the other hand, Japanese is head-final, so that the linear ordering between the remnant and the verb can be preserved throughout the derivation. This analysis seem to be able to extended to other languages, because many languages examined in Merchant (2001) is head-initial.[43] Then, the half of the effect of the new

generalization in (104) is derived.

Then, let us turn to the second case where the relevant element in C^0 is a base-generated complementizer. One concrete example from Irish is repeated as (116) from (74).

(116) *Sluicing and base-generated complementizers in Irish*

Cheannaigh sé leabhar inteacht ach níl fhios agam céacu ceann (*a/*ar) Δ
bought he book some but not.is knowledge at.me which one C C
'He bought a book, but I don't know which'

This is the opposite of what we observed for Japanese, exemplified by (117) (cf. (16)).

(117) *SLC_{NFC}*

a. Taroo-wa [PRO dono zyaanaru-ni ronbun-o das-oo ka] kimeta ga,
Taroo-TOP which journal-to paper-ACC submit-INF Q decided but
'(lit.) Though Taroo has decided [to which journal to submit a paper],'

b. Hanako-wa [doko-ni Δ ka] mayotteiru / kimekaneteiru
Hanako-TOP which-to Q hesitate cannot.decide
'(lit.) Hanako hesitates/cannot decide [to which journal Δ]'

One possible account for the ungrammaticality of sentences like (116) is proposed by Baltin (2006), who claims that the complementizer is contained within the ellipsis site, assuming Rizzi's (1997, 2001) split CP-system. Under this analysis, the relevant part of (116) is analyzed as having a structure like (118).

(118) *Structure of (116)*

… $[_{CP1}$ céacu ceann$_i$ $[_{C}{}^{0}{}_{1}$ Ø] ~~$[_{CP2}$ $[_{C}{}^{0}{}_{2}$ a/ar] $[_{TP}$ … t_i …]]~~]

Under this analysis, the relevant complementizer in Japanese (namely, the Q-marker *ka*) happens to be base-generated under the head of the higher CP, namely $C^0{}_1$, which happens to be phonologically null in languages like Irish.

I suggest another possibility that relates the case of the base-generated complementizers to the case of V-stranding sluicing. Suppose that CP is recursive, as in Baltin's (2006) account, and that each CP constitutes a Spell-out Domain. Then, the derivation of the relevant part of (118) involves the step depicted in (119).

(119) *Spell-out of CP_2 in Irish*

$[_{CP2}\ [_{C}{}^{0}{}_{2}$ a/ar$]\ [_{TP}$ … céacu ceann …]] Ordering Table: ***a/ar<céacu ceann***

Assuming that the landing site for *wh*-phrases is Spec, CP_1, the remnant stays in-situ at the step in (119) in order to satisfy Parallelism. Then, Spell-out of CP_2 establishes the ordering statement where the complementizer precedes the remnant. Therefore, the derivation induces an ordering contradiction if the remnant precedes the complementizer at the surface structure. On the other hand, due to the head-finality of Japanese, the linear ordering between the remnant and the complementizer can be preserved throughout the derivation. Specifically, Spell-out of CP_2 establishes the ordering statement where the remnant precedes the complementizer *ka*, as in (120).

(120) *Spell-out of CP_2 in Japanese*

$[_{CP2}\ [_{TP}$ … *wh* …$]\ [_{C}{}^{0}{}_{2}$ ka]] Ordering Table: **wh<*ka***

One advantage of this analysis is that the difference between Japanese and Irish can be derived from independent factors, namely head-directionality, assuming a unified structure for these two languages. Furthermore, this analysis can cover the Hungarian and Hindi examples in (121), repeated from (75).

(121) *Sluicing and base-generated complementizers in Hungarian and Hindi*

a. A gyerekek találkoztak valakivel de nem emlékszem, (hogy) kivel Δ
   the children met someone.with but not I.remember that who.with
   'The kids met someone, but I don't remember who'

b. Salmaa-ne ek ciiz khariidii par mujhe nahii pataa [(ki) kyaa Δ]
   Salma-ERG a thing bought but I.DAT NEG know that what
   'Salma bought something but I don't know [what Δ]'

No matter where the ultimate landing site of *wh*-phrases in these languages, the linear order between the complementizer and the remnant is kept constant throughout the derivation just like Japanese. The minimal difference between Hungarian and Hindi on the one hand and Japanese on the other is that in the former the complementizer precedes the remnant while the opposite linear order is achieved in the latter. Again, this difference is reduced to another difference between them, namely head-directionality.

5.4. Remaining Issues and Some Speculative Suggestions

This section discusses some remaining issues, and suggests some directions to pursue for future study. In Section 5.4.1 discusses the conflict between the proposals made in Section 5.3 and the Spell-out Domain Parameter proposed in Chapter 2. Section 5.4.2 examines some cases where ellipsis fails to repair island violations.

5.4.1. Spell-out and Head-movement

Recall that it was claimed in Section 5.3.1.2 that Spell-out of *v*P linearizes the whole *v*P, including the elements on its edge, even in languages like English (see (96c)). This assumption allows us to establish the ordering statement where the remnant is preceded by the materials that survive deletion. Let us reconsider the relevant cases. (122a) illustrates the case of illegitimate VP-ellipsis, and (123a) does the case of illegitimate matrix sluicing.

(122) *Illegitimate VP-ellipsis*

a. *Fred said that I talked to a certain girl, but I don't know [which girl he did Δ]

b. [$_{vAuxP}$ he$_i$ did$_j$ [$_{VAuxP}$ t_j [$_{vP}$ t_i [$_{VP}$ … [$_{CP}$ … which girl]]]]]

Ordering Table: ***he*<*did*<*which*<*girl***

(123) *Illegitimate matrix sluicing*

a. A: Mary will see someone. B: *Who will?

b. [$_{vAuxP}$ Mary$_i$ will$_j$ [$_{VAuxP}$ t_j [$_{vP}$ t_i [$_{VP}$ see who]]]]

Ordering Table: ***Mary*<*will*<*see*<*who***

The derivation of the relevant part of the target clause in (122a) contains the step in (122b), where Spell-out of v_{Aux}P specifies the remnant to follow *he* and *did* (cf. (101b)). This step ultimately induces an ordering contradiction. Similarly, the derivation that yields the surface string of B's utterance in (123a) involves the step in (123b), where Spell-out of v_{Aux}P specifies the remnant to follow *will* (cf. (113)). Since *will* follows the remnant in (123a), an ordering contradiction is inevitable. In this way, we can uniformly capture these two cases.

The assumption that Spell-out of *v*P linearizes the whole *v*P in English is not consistent with the proposal made in Chapter 2, however. In Chapter 2, I proposed the Spell-out Domain Parameter given in (124), and I argued that languages like English choose the parametric value in (124b).

(124) *Spell-out Domain Parameter for* v*P*

When Spell-out applies to *v*P,

a. Linearize the whole *v*P, including the elements on its edge, or

b. Linearize the complement of v^0.

Furthermore, under the system assumed in this chapter, subject-aux inversion found in yes/no-question always results in an ordering contradiction, contrary to fact. This is because the linear order between the subject and the auxiliary is specified so as that the former precedes the latter, as in (122b) and (123b).

Once the parametric value in (124b) is chosen for English, subject-aux inversion becomes possible, since in the schematic structure in (125), the linear ordering between the subject and the auxiliary can be left unspecified. This is because, given the parametric value (124b), the linearization procedure targets $V_{Aux}P$, and both the subject and the auxiliary have evacuated the domain that is subject to linearization.

(125) *Spell-out of* $v_{Aux}P$ *under the parametric value (123b)*

$[_{vAuxP}\ Subj_i\ [_{vAux}{}^0\ Aux_j\ v_{Aux}]\ [_{VAuxP}\ t_j\ [_{vP}\ t_i\ [_{VP}\ V\ Obj]]]$ Ordering Table: **V<Obj**

Note however that the linear ordering of the subject and the auxiliary with respect to the elements within $V_{Aux}P$ is also left unspecified. Suppose then that the object in (125) is indeed a remnant that stays in-situ (due to Parallelism). Its linear ordering with respect to the subject and the auxiliary is not specified at this step, so that nothing prohibits the remnant from preceding them in a later point of the derivation. Thus, the explanation of the ungrammaticality of the cases in (122) and (123) is lost.

To resolve the discrepancy, I stipulate that head-movement, unlike phrasal movement, takes place after Spell-out. To be more specific, I suggest that although the relevant relation between heads that causes head-movement is established in narrow syntax, actual displacement of a head takes place at PF (cf. Chomsky 2000). In fact, Boeckx & Stjepanović (2001) point out, based on Lasnik's (1995, 1999b) analysis of pseudogapping, which is in turn adopted in Lasnik 2001, that head-movement, unlike phrasal movement, is best considered to be a PF-phenomenon. That is, if deletion is a PF process, generalized pied-piping of a head (namely, head-movement) should also be a PF process: Otherwise it becomes unclear why PF-deletion may apply prior to head-movement conceived as a narrow syntactic operation.

Given the idea suggested above, I claim that the structure in (125) can be refined as

in (126). In narrow syntax, the subject undergoes phrasal movement, while the auxiliary stays within $V_{Aux}P$, though it enters the relation with v_{Aux}^{0} (indicated by dotted line in (126a)), which eventually induces actucal displacement of it at PF as in (126b).

(126) *Refinement of (125)*

a. *Narrow syntax*: [$_{vAuxP}$ $Subj_i$ v_{Aux}^{0} [$_{VAuxP}$ Aux [$_{vP}$ t_i [$_{VP}$ V Obj]]

Ordering Table: **Aux<V<Obj**

b. *PF*: [$_{vAuxP}$ $Subj_i$ [v_{Aux}^{0} Aux_j v_{Aux}] [$_{VAuxP}$ t_j [$_{vP}$ t_i [$_{VP}$ V Obj]]

Since the auxiliary stays within $V_{Aux}P$, which is subject to the linearization procedure, its linear ordering with respect to the other elements contained in $V_{Aux}P$ is specified in the way we want. Meanwhile, the relative ordering between the subject and the other elements, including the auxiliary, can be left unspecified, because the subject moves to Spec, $v_{Aux}P$, which is outside of the relevant linearization domain. In this way, we can maintain the core idea of the explanation of the illegitimate instances of deletion.

This refinement has a consequence once we reconsider the F&P's explanation of Holmberg's generalization discussed in Chapter 2. Let us first review how the contrast in (127a-b) is explained under the original view where head-movement takes place within narrow syntax, on a par with phrasal movement.

(127) *Licit and illicit object shift in Swedish*

a. Jag $kysste_i$ $henne_j$ inte [$_{VP}$ t_i t_j]
   I kissed her not

b. *… att jag $henne_i$ inte [$_{VP}$ kysste t_i]
   … that I her not kissed

The step in (128a) is common to (127a-b), where the ordering statement *kysste<henne* is established. The derivation that yields (127a) proceeds on to the step in (128b), where both the verb and the object undergoes movement. Since Spell-out of CP can establish a consistent ordering statement, the derivation succeeds to converge. On the other hand, the derivation that results in (127b) involves the step in (128c), where Spell-out of CP establishes an ordering statement where the object is specified to precede the verb, which stays within *v*P. As a result, the derivation crashes because of an ordering contradiction.

(128) *Derivational steps involved in (127a-b)*

a. *Construction of* v*P* → *Spell-out of* v*P*
   [$_{vP}$ … v^0 [$_{VP}$ kysste henne]] Ordering Table: ***kysste*<*henne***

b. *Construction of CP* → *Spell-out of CP*
   [$_{CP}$ … kysste$_i$ [$_{TP}$ … henne$_j$ inte [$_{vP}$ t_i t_j]]]] Ordering Table: *kysste*<*henne*
   kysste*<*henne*<*inte

c. *Construction of CP* → *Spell-out of CP*
   *[$_{CP}$ … [$_{TP}$ … henne$_i$ inte [$_{vP}$ kysste t_i]]]] Ordering Table: *kysste*<*henne*
   henne*<*inte*<*kysste

Now, let us reconsider this explanation under the refinement where head-movement takes place at PF. As for cases like (127b), where no verb-movement is involved, the account remains essentially the same as before: At the Spell-out of *v*P, the verb is specified to precede the object, and at the Spell-out of CP, the shifted object is specified to precede the verb, hence an ordering contradiction. On the other hand, we have to say something about the derivation that yields (127a). Under the refined view to head-movement, the derivation proceeds in a manner depicted in (129).

(129) *Derivation of (127a)*

a. *Construciton of* v*P* → *Spell-out of* v*P*
   [$_{vP}$ … v^0 [$_{VP}$ kysste henne]] Ordering Table: ***kysste*<*henne***

b. *Construction of CP* → *Spell-out of CP*
   *[$_{CP}$ … C^0 [$_{TP}$ … T^0 … henne$_i$ inte [$_{vP}$ … v^0 [$_{VP}$ kysste t_i]]]]
   Ordering Table: *kysste*<*henne*
   henne*<*inte*<*kysste

Although the relations between heads, which ultimately raise the verb to C^0 at PF is established, the verb itselt stays within *v*P. Hence, the derivation crashes because of an ordering contradiction, on a par with (127b). Recall at this point that we saw in Section 5.3.1.2 above that a derivation that results in an ordering contradiction can be saved by applying deletion at PF (cf. (95)). Then, I speculate that displacement of a head at PF has an effect similar to PF-deletion that nullifies an ordering contradiction.[44] In this sense, the refinement suggested here provides another way of circumventing ordering

contradictions, requiring further explorations.

At this point, there are many problems regarding the relation between Spell-out and head-movement, so that the suggestions made above remain speculative at best. I hope to return to this issue in future works.

5.4.2. Failure of Island-repair

Lasnik (2006, 2008) observes that when the remnant is an adjunct like *why* and *how*, island violations cannot be repaired (see also Nakao & Yoshida 2007). As shown in (130a), although sluicing is possible with *how/why* as the remnant (based on Nakao & Yoshida 2007:322-323), the sentence becomes ungrammatical if the correlate is contained within an island as in (130b).

(130) *Sluicing with* how/why *as remnants*

a. John fixed the car in a certain way/for a certain reason, but I don't know [how/why Δ]

b. *John wants to hire someone who fixes cars in a certain way/for a certain reason, but I don't know [how/why Δ]

Lasnik (2006, 2008) suggests, following Lasnik & Saito (1984, 1992), that there is an additional constraint on traces of adjuncts that must be satisfied at LF. Since it is an LF-constraint, PF-deletion cannot ameliorate its violation. Hence, an island violation still persists in (130b) even under sluicing.

Lasnik (2006, 2008) further observes that adjunct *wh*-phrases cannot be moved out of complement clauses under sluicing (based on Lasnik 2008:23).

(131) *Sluicing with* how/why *as remnants without islands*

a. *Mary claimed that John left for some reason, but I don't know [$_{CP}$ exactly why$_i$ ~~[$_{IP}$ Mary claimed [that John left t_i]]~~]

b. *Bob thinks that Mary fixed the car somehow, but I don't know [$_{CP}$ exactly how$_i$ ~~[$_{IP}$ Bob thinks [that Mary fixed the car t_i]]~~]

Taking the constraint on adjuncts as the ECP, which requires an empty category to be either antecedent-governed or head-governed by a lexical head, Nakao & Yoshida (2007) argue that this observation can be explained in terms of Fox & Lasnik's (2003) Parallelism. Given Parallelism, the adjuncts in the target clauses in (131) must undergo one-fell-swoop movement. As a result, their traces fail to be antecedent-governed. Since

adjuncts are not governed by a lexical head, the ECP is violated.

Some mechanism that yields the ECP effect is also required under the analysis of island-repair in terms of the theory of Cyclic Linearization. In fact, the mechanism is necessary to capture the fact that in-situ adjunct *wh*-phrases such as *naze* 'why' in Japanese and *weishenme* 'why' in Chinese exhibits an island effect (see Huang 1982, Lasnik & Saito 1984, 1992, Nishigauchi 1986, 1990, Tsai 1994, 1999). One Japanese example is given in (132).

(132) Naze *'why' in a complex NP island*

*Taroo-wa [$_{NP}$ [$_{RC}$ Hanako-ga naze kaita] hon]-o katta no?
Taroo-TOP Hanako-NOM why wrote book-ACC bought Q
'(lit.) Why$_i$ did Taroo buy [a book [which Hanako wrote t_i]]'

Since no overt movement of *naze* 'why' has happened in (132), it is not likely that the ungrammaticality of the sentence is an ordering contradiction between *naze* 'why' and some other elements. Thus, the mechanism that regulates the distribution of adjuncts is required independent of the issue of the lack of island-repair with adjunct *wh*-phrases.

Another case of failure of island-repair has to do with the SLC_{FC} mentioned in Section 5.2.2.6. The relevant examples are given in (133), repeated from (43).

(133) *Failure of island-repair in SLC_{FC}*

a. Taroo-wa [keisatu-ga mazu [$_{NP}$ [$_{RC}$ zibun-no mise-de nanika-o
Taroo-TOP police-NOM first self-GEN store-in something-ACC
kowasita] otoko]-o sirabeta to] omotteiru ga,
broke man-ACC checked that think but
'(lit.) Though Taroo thinks [that the police checked first [the man [who had broken something in his store]]],'

b. *Hanako-wa [nani-o$_i$ keisatu-ga mazu [$_{NP}$ [$_{RC}$ zibun-no mise-de t_i
Hanako-TOP what-ACC police-NOM first self-GEN store-in
kowasita] otoko]-o sirabeta ka] sir-anai
broke man-ACC checked Q know-NEG
'(lit.) Hanako doesn't know [what$_i$ the police checked first [the man [who had broken t_i in her store]]]'

c. Hanako-wa [nani-o Δ (da) ka] sir-anai
Hanako-TOP what-ACC COP Q know-NEG
'(lit.) Hanako doen't know [what Δ]
(i) Hanako doesn't know [what$_i$ the police checked first [the man [who had broken t_i in his (= Taroo's) store]]]'
(ii) *Hanako doesn't know [what$_i$ the police checked first [the man [who had broken t_i in her (= Hanako's) store]]]'

The lack of the sloppy reading in (133c) indicates that it is not the case that (133c) is derived from (133b) by deleting the TP which contains the complex NP.

Given that the SLC$_{FC}$ unambiguously has the pseudo-sluicing structure, the source of (133c) can be either a copula sentence like (134a) (cf. (44)) or a cleft sentence like (134b). Recall that the fact that (133c) lacks the sloppy reading in (133c-ii) follows if (134a) is the underlying source, since it also lacks the reading.

(134) *Possible underlying sources of (133c)*
a. Hanako-wa [sore-ga nani-o (da) ka] sir-anai
Hanako-TOP it-NOM what-ACC COP Q know-NEG
'(lit.) Hanako doen't know [what it is]'
(i) Hanako doesn't know [what$_i$ the police checked first [the man [who had broken t_i in his (= Taroo's) store]]]'
(ii) *Hanako doesn't know [what$_i$ the police checked first [the man [who had broken t_i in her (= Hanako's) store]]]'
b. *Hanako-wa [[$_{CP}$ keisatu-ga mazu [$_{NP}$ [$_{RC}$ zibun-no mise-de t_i nusunda]
Hanako-TOP police-NOM first self-GEN store-in stole
otoko]-o siraberu no]-ga nani-o$_i$ (da) ka] sir-anai
man-ACC check C-NOM what-ACC COP Q know-NEG
'Hanako doesn't know [what$_i$ the police checked first [the man [who had stolen t_i from her (= Hanako's) store]]]'

The lack of the sloppy reading in (133c) also indicates that an island violation found in (134b) cannot be ameliorated by argument ellipsis of the presupposition CP subject. This is one of the conclusions that we reached in Section 5.2.2.6.

Note at this point that the cleft construction involves movement of a phonologically null operator (Hoji 1990). Hence, the embedded clause of (134b) is analyzed as having a schematic structure in (135).

(135) *Structure involved in (134b)*

… [[$_{CP}$ Op$_i$ … [$_{NP}$ [$_{RC}$ … t_i …] …] …] nani-o$_i$ (da) ka] …

In (135), the null operator Op undergoes movement to Spec, CP of the presupposition CP subject, crossing the island. From that position, it is related to the pivot *nani-o* 'what'. Note that the null operator in the relevant case originates an argument position, so that the ungrammaticality of (134) cannot be attributed to the ECP-like mechanism mentioned above, which is designed to regulate the distribution of adjuncts. Under the current approach to island-repair, then, the fact that the null operator induces an island violation suggests that movement of the null operator does create an ordering contradiction.

Given that the null operator lacks its phonological features, in what sense does it induce an ordering contradiction? I tentatively speculate that Spell-out linearizes a more abstract entity (for instance, a label of a syntactic object), not just phonological features, and that PF cannot deal with the two ordering statement where an element X precedes and follows another element Y, no matter whether X and/or Y have overt phonological features. If so, empty elements such as the null operator are subject to the linearization procedure. On the other hand, it has been assumed in this dissertation that traces are invisible to the linearization procedure. I further speculate that this difference between these two types of empty elements has to do with the fact that elements like the null operator intrinsically lacks its phonological features, whereas a trace, being considered as a lower copy left by movement, loses its phonological realization in the course of derivation. Recall here that the elements that undergo PF-deletion also lose their phonological realizations in the course of derivation. The fact that traces and ellipsis sites behave as if they are invisible to the linearization procedure further supports the distinction, although further investigation is required.[45]

Let us turn to the question of why island-repair is not possible with argument ellipsis of a presupposition CP subject. Given the discussion above, an ordering contradiction induced by the movement of the null operator should be ameliorated, contrary to fact, since an island contained in the CP is elided.

One solution to this puzzle is proposed by Sugawa (2008), who develops the idea suggested by Saito (2004). As pointed out by Saito (2004) and Sugawa (2008), argument ellipsis found in the SLC_{FC} differs from sluicing in that the former targets a CP while the latter does a TP, as schematically shown in (136) (Op here stands for any

kind of operators, including the null operator and *wh*-operators).[46]

(136) *Targets of argument ellipsis and sluicing*

a. ~~[$_{CP}$ Op$_i$ [$_{TP}$ … t_i …] …]~~ (= argument ellipsis)

b. [$_{CP}$ Op$_i$ ~~[$_{TP}$ … t_i …]~~ …] (= sluicing)

Note that Op itself is contained within the ellipsis site in the case of (136a), while it is not in the case of (136b).

The antecedent clause of (136a) has a schematic structure in (137), which is intended to cover the cases where the correlate is a quantifier, especially an indefinite, (indicated as QP), a *wh*-phrase (indicated as WH), or a focused phrase (indicated as XP$_{Foc}$). At the first sight, (136a) and (137) do not look identical to each other enough to license ellipsis. Saito (2004) then suggests that Fiengo & May's (1994) vehicle change plays an important role in licensing ellipsis in the case at hand.

(137) *Schematic structure of the antecedent clause*

[$_{CP}$ [$_{TP}$ … QP/WH/XP$_{Foc}$ …] …]

Let us consider the examples in (138). If (138b) is the underlying source of (138a), which involves VP-ellipsis, it is not clear why (138a) is free from a Condition C violation. To accommodate this observation, Fiengo & May (1994) proposes the operation vehicle change, which turns a name into a corresponding pronoun, so that the VP in (138c) counts as identical to the antecedent VP.

(138) *Vehicle change in VP-ellipsis*

a. Mary loves John$_i$'s mother, and he$_i$ does Δ, too

b. *Mary loves John$_i$'s mother, and he$_i$ does [$_{VP}$ love John$_i$'s mother]

c. Mary loves John$_i$'s mother, and he$_i$ does [$_{VP}$ love his$_i$ mother]

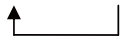
Since (138a) can have (138c) as its underlying source, it exhibits no Condition C violation.

Saito (2004) points out that if vehicle change can turn a name into a pronoun, which contains less specific information, it is also plausible to assume that it can turn *wh*-phrase phrase into a null operator, which also contains less specific information (Sugawa 2008 further extends Saito's 2004 idea to a quantifier and a focused phrase). Given this idea, the structure in (137) is turned into something like (139a).

(139) *Structure of (137) after vehicle change*

a. $[_{CP}\ [_{TP}\ \ldots\ Op\ \ldots]\ \ldots]$

b. $[_{CP}\ Op_i\ [_{TP}\ \ldots\ t_i\ \ldots]\ \ldots]$



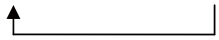
After vehicle change, the operator undergoes movement to Spec, CP as in (139b). As a result, the antecedent becomes identical to the target in (136), so that ellipsis is properly licensed.

Then, Sugawa (2008) points out that although island violations in the target clause can be repaired by ellipsis, island violations induced by the operator movement in the antecedent cannot be repaired, simply because no ellipsis applies to the antecedent. Suppose that the antecedent and the target have the schematic structures in (140a-b), respectively.

(140) *Configurations involving an island*

a. $\ldots\ [_{CP}\ [_{TP}\ \ldots\ [_{island}\ \ldots\ QP/WH/XP_{Foc}\ \ldots]\ \ldots]\ \ldots]\ \ldots$ (= antecedent)

b. $\ldots\ \sout{[_{CP}\ Op_i\ [_{TP}\ \ldots\ [_{island}\ \ldots\ t_i\ \ldots]\ \ldots]\ \ldots]}\ \ldots$ (= target)



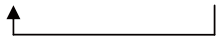
In (140b), the null operator, which moves to Spec, CP of the presupposition CP of the cleft construction, crosses an island. However, since everything within the CP is subject to ellipsis, such an island violation can be nullified. Rephrased in terms of the analysis developed in this chapter, an (abstract) ordering contradiction induced by the null operator is circumvented by deletion.

On the other hand, after vehicle change, (140a) is turned into (141a).

(141) *Structure of (140a) after vehicle change*

a. $\ldots\ [_{CP}\ [_{TP}\ \ldots\ [_{island}\ \ldots\ Op\ \ldots]\ \ldots]\ \ldots]\ \ldots$

b. $*\ldots\ [_{CP}\ Op_i\ [_{TP}\ \ldots\ [_{island}\ \ldots\ t_i\ \ldots]\ \ldots]\ \ldots]\ \ldots$



Then, the null operator undergoes movement, crossing an island. Unlike the case of (140b), however, there is no ellipsis, so that an island violation cannot be repaired. Since an appropriate antecedent cannot be constructed, ellipsis is not licensed. In this way, failure of island-repair with argument ellipsis is captured.

To sum up, this subsection discussed the two cases where ellipsis fails to repair island violations. Each case has to do with the question of whether all the island phenomena can be attributed to ordering contradictions. Although many suggestions made in this subsection remain tentative and incomplete, I believe they contribute to deepen our understanding of the nature of islands and their interactions with ellipsis.

5.5. Conclusion

In this chapter, I examined the interaction between ellipsis and the theory of Cyclic Linearization. First, I addressed the issue of whether Japanese has the genuine sluicing structure, namely *wh*-movement followed by TP-deletion. I argued that Japanese does have genuine sluicing, by examining what we are calling the sluicing-like constructions with finite and non-finite complements. Based on the results of various diagnostic tests that distinguish genuine sluicing from pseudo-sluicing, which has the copula/cleft constructions as its underlying source, I illustrated that the genuine sluicing structure is attested when the complement is a non-finite clause, whereas the pseudo-sluicing structure is the only available option when the complement is a finite clause. I further argued that finite verbs in Japanese move to C^0, so that deletion of TP whose verb is finite yields what we are calling V-stranding sluicing, where everything except for the remnant and the elements located under C^0 is deleted. Several pieces of evidence for V-stranding sluicing were provided from Japanese-internal and comparative facts. Based on these results, we reached the conclusion that TP-deletion in Japanese results in two different surface structures depending on the finiteness of verb, as schematically shown in (142).

(142) *Two outcomes of genuine sluicing in Japanese*

a. … [$_{CP}$ *wh*$_i$ [~~$_{TP}$ … t_i … t_V … t_T~~] [$_C{}^0$ V-T-C]] … (= finite clauses)

b. … [$_{CP}$ *wh*$_i$ [~~$_{TP}$ … t_i … V … T~~] [$_C{}^0$ C]] … (= non-finite clauses)

Then, I pointed out that the structures in (142) requires a reformulation of Merchant's (2001) Sluicing-COMP generalization, which states that nothing but an operator can survive deletion under sluicing. I proposed an alternative generalization in (143) to accommodate the Japanese pattern.

(143) *New generalization on the Sluicing-COMP effect*

The Sluicing-COMP effect emerges only when the remnant *wh*-phrase linearly crosses the overt elements in C^0.

Having established the existence of genuine sluicing in Japanese and its implications for the study of sluicing, I tried to derive the effect of the new generalization in terms of the theory of Cyclic Linearization. To achieve this, I first illustrated that the theory of Cyclic Linearization, combined with Fox & Lasnik's (2003) Parallelism, can explain the difference between sluicing and VP-ellipsis with respect to island-repair. To be more specific, Parallelism requires the remnant to undergo one-fell-swoop movement, so that contradicting ordering statements are established by Spell-out. Such an ordering contradiction can be removed by sluicing, since it deletes every offending element other than the remnant. On the other hand, VP-ellipsis fails to do so, so that one-fell-swoop movement is not allowed in this case. In particular, a contradiction concerning the linear ordering between the remnant and an auxiliary cannot be resolved in the case of VP-ellipsis. Then, I illustrated that the difference between languages like English that exhibit the Sluicing-COMP effect and ones like Japanese that do not is reduced to a more fundamental difference between these two types of languages, namely, head-directionality.

Although there are several remaining issues and problems, some of which were discussed in this chapter, the analysis advocated in this chapter has the following two implications. First, it confirms the conclusion reached in Chapter 3 that both sluicing and VP-ellipsis are best analyzed in terms of PF-deletion. Second, and more importantly, the fact that Japanese does have genuine sluicing allows us to contribute to cross-linguistic studies of sluicing from the language on a more solid ground.

Notes to Chapter 5

[1] Part of the materials discussed in this chapter (especially those in Section 5.2.1 and 5.2.2) is based on Takita (to appear c).

[2] Following the notation introduced in Chapter 3, the symbol Δ is used to indicate a phonologically null gap without any theoretical commitment.

[3] In this chapter I restrict myself to the "merger" type sluicing, where a correlate appears overtly in the antecedent, and do not discuss the "sprouting" type, where a correlate is implicit (see Chung, Ladusaw & McCloskey 1995 for these types). This choice is not without reasons; first, it is not clear if it is possible to construct clear examples of sprouting type because of the radical *pro*-drop property of Japanese; second, it is well-known since Chung, Ladusaw & McCloskey (1995) that merger type sluicing behaves differently from the sprouting type in several respect (see Nakao 2009 for recent discussion), and it is beyond the scope of this dissertation to examine their differences in Japanese. I hope to return to this important issue in future works.

[4] Although Japanese is a *wh*-in-situ language, Takahashi (1994) assumes that scrambling of *wh*-phrases counts as *wh*-movement, following Takahashi (1993).

[5] See Hoji (1990) and Murasugi (1991) for detailed discussions on the structure of the cleft constructions in Japanese.

[6] In this dissertation I do not discuss sluicing taking place in matrix clauses in Japanese. See Hasegawa (2006, 2008) and Abe (2008) for recent discussions on Japanese matrix sluicing.

[7] See Fujii (2006) and references cited therein for the control properties of the clauses whose predicates have the infinitive marker *-(y)oo*.

[8] I do not go into any detail why the copula and cleft constructions are not allowed under the predicates in question.

[9] Merchant (2001) notes that sluicing in English does not easily allow the sloppy reading, contrary to Ross' (1969a) observation. As shown in Section 5.2.2, the SLC_{NFC} in Japanese, which I claim to be an instance of genuine sluicing, allows the sloppy reading. I leave the difference between English and Japanese for future research.

[10] There appears to be no identical clausal subject in the antecedent clause, namely (11a). See Section 5.4.2 on this issue.

[11] As far as I can tell, *mayotteiru* 'hesitate' and *kimekaneteiru* 'cannot decide' behave in the same way, so that the same result obtains if *kimekaneteiru* 'cannot decide' is replaced by *mayotteiru* 'hesitate' in the SLC_{NFC} examples provided later in the text. Hence, I use only *kimekaneteiru* 'cannot decide' as the matrix predicate for the relevant examples.

[12] (17b-c) are still ungrammatical if something is moved from the elided TP, as in (i), no matter whether the complementizers are retained or not.

(i) a. *They say that John will go to Tokyo, but I don't know [$_{CP}$ to Tokyo (whether) Δ]
b.* They say that John loves Mary, but I don't know [$_{CP}$ Mary (that) Δ]

[13] There seem to exist certain variations regarding the grammatical status of examples like (25c). For instance, Mihara & Hiraiwa (2006:279-280) report that examples like (25c) are fine when the copula *da* is missing, while they sound marginal when the copula is present. Yet another group of speakers finds that (25c) is, independent of the existence or absence of the copula, not so ungrammatical as indicated in the text. As far as I can tell, however, there is no speaker in this group who gets a contrast between (25c) and (26). Thus, it might be the case that for those speakers *tatoeba* 'for example' is not a good expression to invoke the "mention-some" interpretation.

Related to this point, Mamoru Saito (p.c.) points to me that changing the indefinite correlates of the examples in the text to the *wh*-phrases as in (i) below somehow strengthens the contrast between the SLC_{NFC} (= (ia), corresponding to (24)) and the SLC_{FC} (= (ib), corresponding to (25)).

(i) a. Taroo-wa [PRO dono zyaanaru-ni ronbun-o das-oo ka] kimeta ga,
Taroo-TOP which journal-to paper-ACC submit-INF Q decided but
Hanako-wa [tatoeba doko-ni Δ ka] kimekaneteiru
Hanako-TOP for.example where-to Q cannot.decide
'(lit.) Though Taroo has decided [to which journal to submit a paper], Hanako cannot decide [to where, for example Δ]
b.* Taroo-wa [Ziroo-ga dono zyaanaru-ni ronbun-o dasu-tumori ka] sitteiru ga,
Taroo-TOP Ziroo-NOM which journal-to paper-ACC submit-intend Q know but
Hanako-wa [tatoeba doko-ni Δ (da) ka] siritagatteiru
Hanako-TOP for.example where-to COP Q want.to.know
'(lit.) Though Taroo knows [to which journal Ziroo intends to submit a paper], Hanako wants to know [to where, for example Δ]'

Thus, although further careful investigation is required, I believe that the "mention-some" interpretation can still be used as a diagnostic test.

[14] For recent discussions on the P-stranding generalization, see, for instance, Almeida & Yoshida (2007), Stjepanović (2008), and Sato (2008).

[15] To be more precise, Hoji (1990) suggests that when the Case-markers/post-positions are dropped, the sentence can be analyzed as the copula construction. I ignore the distinction between the copula and cleft constructions since it is not important for the current purpose.

[16] Fukaya & Hoji (1999) observe that island effects are not observed if the remnant lacks

Case-marker, and suggest that the construction involving Case-marked remnants has a different structure from the one involving Case-less remnants (see also footnote 15). Following their suggestion, I focus on the cases which involve Case-marked remnants to avoid unnecessary complications.

[17] In fact, in many earlier works on sluicing in Japanese, for instance Takahashi (1994) and Fukaya & Hoji (1999), the surface strings of examples like (43c) are judged as ungrammatical. However, Saito (2004) points out that certain instances of the surface strings of examples like (43c) are not so ungrammatical, with much individual variation, and that it is safer to investigate their deeper properties. Thus, I used the availability of the sloppy reading in the text as one such property. I refer readers to Saito (2004) for the property that is used to show the island-sensitivity of the SLC_{FC} (see also Fukaya 2003 for a similar consideration and for yet another property used there). I thank Jun Abe (p.c.) for pointing out the importance of clarifying this point.

[18] In Takita (to appear c), I used the examples in (i) and (ii) to examine the possibility of island-repair of the SLCs (they are slightly modified from the original ones in order to make them more natural). While the correlates in (42) and (43) in the text are indefinites, the ones in these examples are *wh*-phrases.

(i) a. Taroo-wa [PRO mazu [$_{NP}$ [$_{RC}$ zibun-no mise-de nani-o kowasita] otoko]-o
Taroo-TOP first self-GEN store-in what-ACC broke man-ACC
sirabe-yoo ka] kimeta ga,
check-INF Q decided but
'(lit.) Though Taroo decided [what$_i$ to check first [the man [who had broken t_i in his store]]],'

b.* Hanako-wa [nani-o$_i$ PRO mazu [$_{NP}$ [$_{RC}$ zibun-no mise-de t_i kowasita] otoko]-o
Hanako-TOP what-ACC first self-GEN store-in broke man-ACC
sirabe-yoo ka] kimekaneteiru
check-INF Q cannot.decide
'(lit.) Hanako cannot decide [what$_i$ to check first [the man [who had broken t_i in her store]]]'

c. Hanako-wa [nani-o Δ ka] kimekaneteiru
Hanako-TOP what-ACC Q cannot.decide
'(lit.) Hanako cannot decide [what Δ]
(i) Hanako cannot decide [what$_i$ to check first [the man [who has broken t_i in his (= Taroo's) store]]]'
(ii) Hanako cannot decide [what$_i$ to check first [the man [who has broken t_i in her (= Hanako's) store]]]'

(ii) a. Taroo-wa [keisatu-ga mazu [$_{NP}$ [$_{RC}$ zibun-no mise-de nani-o kowasita] otoko]-o
Taroo-TOP police-NOM first self-GEN store-in what-ACC broke man-ACC
sirabeta ka] sitteiru ga,
checked Q know but
'(lit.) Though Taroo knows [what$_i$ the police checked first [the man [who had broken t_i in his store]]],'

b.* Hanako-wa [nani-o$_i$ keisatu-ga mazu [$_{NP}$ [$_{RC}$ zibun-no mise-de t_i kowasita]
Hanako-TOP what-ACC police-NOM first self-GEN store-in broke
otoko]-o sirabeta ka] sir-anai
man-ACC checked Q know-NEG
'(lit.) Hanako doesn't know [what$_i$ the police checked first [the man [who had broken t_i in her store]]]'

c. Hanako-wa [nani-o Δ (da) ka] sir-anai
Hanako-TOP what-ACC COP Q know-NEG
'(lit.) Hanako doen't know [what Δ]
(i) Hanako doesn't know [what$_i$ the police checked first [the man [who had broken t_i in his (= Taroo's) store]]]'
(ii) *Hanako doesn't know [what$_i$ the police checked first [the man [who had broken t_i in her (= Hanako's) store]]]'

These examples pattern with the ones in (42) and (43) (and the contrast with respect to the availability of the sloppy reading seems to be even clearer for some speakers; see also footnote 13). One potential problem of these examples is that they appear to belong to a subtype of 'contrast' sluicing in the sense of Merchant (2008), which is known to be island-sensitive (see also Merchant 2001, Fukaya 2003). One concrete example of contrast sluicing that fails to repair island violations is given in (iii) (cited from Merchant 2008:148).

(iii) *ABBY wants to hire someone who speaks GREEK, but I don't remember what OTHER languages ~~she wants to hire someone who speaks~~

Hence, the fact that island-repair is observed for (ic) might be rather surprising. Although there seem to be several ways to pursue, I leave this topic for future research. I thank Jun Abe (p.c.) and Daiko Takahashi (p.c.) for bringing this issue to my mind and advising me to use examples involving indefinite correlates.

[19] One piece of evidence for overt verb-movement in Japanese discussed in Koizumi (1995,

2000) concerns examples like (i), where each conjunct appear to consist of the subject and the object, excluding the verb (based on Koizumi 2000:230). Assuming that subjects overtly raise to Spec, TP, Koizumi (1995, 2000) argues that (i) involves coordination of TP where the verbs of both conjuncts have been moved to C^0 (via T^0) in the "across-the-board" manner, as in (ii) (irrelevant details are omitted).

(i) [[Mary-ga ringo-o hutatu] to [Nancy-ga banana-o san-bon]] tabeta
Mary-NOM apple-ACC 2.CL and Nancy-NOM banana-ACC 3-CL ate
'(lit.) [Mary two apples] and [Nancy three bananas] ate (meaning: Mary ate two apples, and Nancy three bananas)'

(ii) $[_{CP}\ [_{TP}\ [_{TP}$ Mary-ga ringo-o hutatu t_i] to $[_{TP}$ Nancy-ga banana-o san-bon t_i]] $[_{C^0}$ [tabeta]$_i$ C]]

It is then predicted under the proposal made in the text that coordination of TP fails if we use non-finite verbs, since non-finite verbs are claimed not to move to C^0. However, since non-finite clauses cannot host overt subjects (in particular, the subject of a control complement is PRO), it is not possible to test this prediction by making a similar example.

[20] When it is not crucial, the distinction between *v*P and VP is suppressed in this chapter.

[21] It is not at issue whether non-finite verbs move to T^0 or stay within VP, because what is important for our purpose is that non-finite verbs do not reach C^0 so that TP-deletion does yield the surface string of the SLC_{NFC}. Thus, I use the structure where V stays within VP for the SLC_{NFC}, leaving open whether non-finite verbs move or not.

[22] The asterisk assigned to (52b) indicates that the sentence lacks the intended reading, though the string itself is grammatical with irrelevant readings. Similar remarks apply to the subsequent examples provided in the text when I supply only the intended reading as their translations.

[23] As for island-repair (see Section 5.2.2.6), it is quite difficult to check whether V-stranding sluicing exhibits the effect. This is because V-stranding sluicing seems to be impossible if the remnant undergoes long-distance *wh*-movement, even when there is no island is involved. To see this, let us consider the examples in (i). In (ia), which is the antecedent, the correlate *doko-kara* 'from where' undergoes long-distance movement from the lowest clause. By assumption, the predicate *itta* 'said' has been moved to C^0 of CP_1. Then, it should be possible to delete the complement of CP_1, giving rise to the surface string of (ib). However, (ib) does not have the intended interpretation.

(i) a. Taroo-wa [$_{CP1}$ doko-kara$_i$ Ziroo-ga [$_{CP2}$ Yoko-ga t_i kita to] itta ka] sitteiru ga,
Taroo-TOP where-from Ziroo-NOM Yoko-NOM come that said Q know but
'(lit.) Though Taroo knows [from where$_i$ Ziroo said [that Yoko come t_i]]'

b.* Hanako-wa [$_{CP1}$ doko-kara Δ itta ka] sir-anai
Hanako-TOP where-from said Q know-NEG
'(intended) Hanako doesn't know [from where$_i$ Ziroo said [that Yoko come t_i]]'

Whatever is the source of the ungrammaticality of (ib), this interfering factor prevents us from testing island-repair in V-stranding sluicing.

[24] I thank Daiko Takahashi (p.c.) for pointing out the importance of this issue.

[25] McCloskey (1991:269, fn. 7) notes that negation in Irish is realized in C^0.

[26] Since exploring why VP-ellipsis is not allowed in Japanese is beyond the scope of this dissertation, I leave it as an open question.

[27] For recent discussions on other kinds of repair-by-ellipsis effects that I do not discuss in this chapter, see Lasnik 1995, 1999b, 2001, 2006, 2008, Merchant 2001, 2002, 2008, Lasnik & Park 2003, van Craenenbroeck 2004, Boeckx & Lasnik 2006, and van Craenenbroeck & den Dikken 2006, among many others.

[28] In fact, Fox & Pesetsky (2003, 2005) and Lasnik (2006, 2008) have already suggested that the theory of Cyclic Linearization provides a way to explain the repair effects. Thus, the analysis I argue for in this subsection can be considered as a concrete implementation of their suggestions. See also footnote 31.

[29] Following Fox & Lasnik's (2003) presentation, successive-cyclic movement to the lowest VP is omitted in (84b).

[30] Fox & Lasnik (2003) suggest that the $^{??}$-status of (90c) may have to do with Merchant's (2008) MaxElide, which roughly demands that ellipsis targets the largest constituent possible.

[31] Fox & Pesetsky (2003, 2005) have already suggested that certain instances of islands can be captured in terms of an ordering contradiction at PF. For instance, Fox & Pesetsky (2003) assume that the phrase headed by *after* in (i) constitutes a Spell-out Domain that lacks a left-edge landing site for movement (based on Fox & Pesetsky 2003:21).

(i) *John left after he talked to a certain boy, but I don't remember [$_{CP}$ which boy$_i$ [$_{TP}$ John left [$_{Adjunct}$ after he talked to t_i]]]

Since the *wh*-phrase cannot make use of the left-edge of the adjunct clause, the linear order between *which boy* and the elements within the adjunct clause, in particular *after*, is specified so as that the

former follows the latter. This linear ordering contradicts the surface one of (i), so that the sentence becomes ungrammatical. They further argue that deletion of the TP of (i) via sluicing renders the elements within the adjunct clause unpronounced, nullifying the contradiction. Thus, island-repair under sluicing is captured. However, they do not discuss the difference between sluicing and VP-ellipsis. Since the problematic ordering relation is the one between the *wh*-phrase and the elements within the adjunct clause, it is not immediately clear why VP-ellipsis fails to nullify the contradiction. Basically following their approach to island-repair, I provide an analysis that allows us to explain the relevant difference.

[32] I am not claiming that deletion of TP_1 takes place *after* Spell-out of CP_1. Rather, the information that TP_1 is subject to deletion is sent to the Ordering Table via Spell-out of CP_1. This is not unnatural assumption because deletion of TP is locally licensed by the head of CP_1 (together with the *wh*-phrase in its Spec; see Lobeck 1990, 1995, Saito & Murasugi 1990, and Merchant 2001), which is the target of Spell-out.

[33] Although Fox & Lasnik (2003) do not discuss about A-movements of *Fred* and *I* in (95), I believe these movements should not disrupt the identity relation between the antecedent and the ellipsis site, because their counterparts in the antecedent also undergo A-movement.

[34] At this point, one may wonder how sentences involving subject-aux inversion like *What can John eat?* are derived, since under the claims in (96), Spell-out of v_{AUX}P of *can* never succeed to establish the ordering statement where *can* precedes *John*. I come back to this point in Section 5.4.1.

[35] Recall that Fox & Lasnik (2003) also assume (at least tacitly) that VP-ellipsis targets a complement of Asp, not that of T (cf. (86c)).

Mamoru Saito (p.c.) suggests an alternative possibility, where the lowest v^0 licenses deletion of its complement VP. That is, v^0 in (i) licenses deletion of the VP in the presence of *he* in Spec, *v*P.

(i) … [$_{vP}$ he v^0 [$_{VP}$ ~~swim~~]]

This alternative allows us to maintain the strict local relation between the ellipsis site (in this case VP) and its licensor (in this case v^0). Based on examples like (ii) below, however, Aelbrecht (2009:96-99) argues that VP-ellipsis requires the presence of T^0.

(ii) a. *I hadn't thought about it, but I recall Morgan$_i$ having
b. * Pat having shown up at the game and Pete not having was a surprise to everyone

If v^0 is the sole licensor of deletion of its complement VP as in (i), it is not clear why (iia), for instance, cannot have a structure like (iii), where deletion of the complement VP is intended to be

licensed by v^0.

(iii) I_i hadn't [$_{vP}$ t_i v^0 [$_{VP}$ thought about it]], but I recall Morgan$_j$ having [$_{vP}$ t_j v^0 ~~[$_{VP}$ thought about it]~~]

Hence, I keep assuming (96b).

[36] Given that an auxiliary projects its own *v*P (labeled as v_{Aux}P), it is expected that it is also subject to deletion. Lobeck (1995), however, observes the following (based on Lobeck 1995:163):

(i) a. *Mary might have been writing and John might ~~[have been writing]~~ too
b.* Mary might have been writing and John might have ~~[been writing]~~ too

That is, VP-ellipsis cannot target the projection of the intermediate auxiliaries (see also Zagona 1988). Rather surprisingly, however, Akmajian, Steele, & Wasow (1979:15) report the opposite judgment for a quite similar sentence, as in (ii).

(ii) John couldn't have been studying Spanish, but Bill could (have (been (studying Spanish)))

For them, any variant of (ii) is regarded as possible. At this point, I do not have any clear answer to the question of why such a variation exists.

[37] I follow Fox & Lasnik (2003) in that the status of (103c) is due to something like MaxElide, which is at work independent of Cyclic Linearization. See footnote 30.

[38] Lasnik (2001) offers one piece of evidence that matrix sluicing is indeed an instance of sluicing. It is based on the so-called *swiping* phenomena, where a preposition and its complement *wh*-phrase are inverted in their linear order only in the sluicing context (see also Merchant 2001, 2002). As in (i), the preposition *to* can be preceded by its complement *whom*, although it cannot be in normal environments (based on Lasnik 2001:306).

(i) Lois was talking, but I don't know [to whom/whom to]
(cf. … *but I don't know [whom to Lois was talking])

The same pattern is observed for matrix sluicing, indicating that the same process is involved (based on Lasnik 2001:306):

(ii) Lois was talking. To whom?/Whom to? (cf. *Whom to was Lois talking?)

[39] Lasnik (2001) bases the analysis on his earlier works on pseudogapping (cf. Levin 1978,

1979/1986) given in Lasnik (1995, 1999b), which revive the insight of Jayaseelan (1990). I leave it for future research to explore the consequences of the analysis being made in the text for pseudogapping (But see Takahashi 2004 for an analysis of pseudogapping based on Fox & Pesetsky's 2003, 2005 framework).

[40] Given that a subject can precede an auxiliary when Spell-out applies to v_{Aux}P, it is predicted that if the remnant is a subject, the auxiliary can appear, without inducing any ordering contradictions. In fact, Lasnik (2001:318) observes that in addition to sluicing, the VP-ellipsis version is also allowed in such cases, as in (i).

(i) A: Someone solved the problem. B: Who (?did)?

According to Lasnik (2001), the VP-ellipsis version is not perfect, but I believe this degraded status has nothing to do with linearization, but an effect of MaxElide (see fn. 30), following suggestions by Lasnik (2006, 2008).

[41] Following Lasnik (2001), I assume that generalized pied-piping is required when TP-deletion has not applied.

[42] In Section 5.4.1 below in the text, I suggest that head-movement takes place in the PF component. Then, the analysis discussed in the text implies that within the PF component head-movement happens before deletion. If these processes are not ordered in this way, deletion of TP may yield the surface string of the SLC_{FC}, contrary to the conclusion reached in Section 5.2.2. Furthermore, it implies that an application of head-movement in PF must refer to the ordering statements established in narrow syntax so as not to create an ordering contradiction. Otherwise English matrix sluicing is never derived. To see this, suppose that an object remnant is specified to follow an auxiliary at the Spell-out of the v_{Aux}P, just like (113), as in (ia). Then, if head-movement blindly applies before TP-deletion, as in (ib), PF always receives contradictory instructions about the linear ordering between the remnant and the auxiliary, leading the derivation to a PF crash.

(i) a. $[_{vAuxP} \ldots \text{Aux} \ldots [_{vP} \ldots \boxed{\text{Obj}} \ldots]]$ Ordering Table: Aux<Obj

b. $[_{CP} \boxed{\text{Obj}_i} [_{C}{}^{0} \text{Aux}_j \text{C}^{0}] [_{TP} \ldots [_{vAuxP} \ldots t_j \ldots [_{vP} \ldots t_i \ldots]]]]$

Therefore, I have to stipulate that PF must take into account ordering statements in appliying head-movement. The idea behind this stipulation is that PF cannot disobey instructions provided by narrow syntax. I leave it to future work if we can find independent evidence for this stipulation. See also footnote 44 for further elaborations.

[43] One potential problem is Germanic OV languages such as German and Dutch. However, the problem may disappear if we can assume that these languages are underlying head-initial (cf. Kayne 1994) and that their head-initiality is maintained in the sluicing context (possibly to satisfy Parallelism).

[44] Two things are noteworthy here. First, the speculation that head-movement can nullify an ordering contradiction does not undermine the account of illegitimate matrix sluicing. In the case of Holmberg's generalization, the landing site of the shifted object is structurally lower than that of verb-movement; on the contrary, in the case of illegitimate matrix sluicing, the landing site of the remnant is Spec, CP, which is structurally higher than that of an auxiliary. Hence, irrespective of whether head-movement applies, the remnant still precedes the auxiliary, so that an ordering contradiction is inevitable in the latter.

Second, I suggested in footnote 42 that PF cannot apply head-movement if the result contradicts with the ordering statement established in narrow syntax. Now, the result of the head-movement that saves the derivation from a PF-crash in (129) seems to contradict with the ordering statement established at the Spell-out of CP. The crucial difference between the case discussed in footnote 42 and the one in the text is that in the case of the former the result of head-movement contradicts with the ordering statement established at an earlier point of Spell-out, while in the latter the result contradicts with the one established at the same point of Spell-out. The generalization is, then, that head-movement can nullify an ordering contradiction induced by the ordering statement established in the same cycle.

[45] Discussing an issue quite independent from the one in the text, Fox & Pesetsky (2003:24) briefly note the similarity between traces and ellipsis sites, based on King's (1970) constraint on contraction. As in (ia), contraction is not possible right before an ellipsis site. It is not possible before a trace, as in (ib), either.

(i) a. Is Mary French? No, Sue is ~~[French]~~./*No, Sue's ~~[French]~~.

b. Mary is smart, {which$_i$ John is t_i too/*which$_i$ John's t_i too}

[46] I pretend as if argument ellipsis is a PF-deletion, contrary to the conclusion reached in Chapter 3, for the sake of illustration.

Chapter 6
Conclusion

In this dissertation, I argued for a particular approach to successive-cyclicity, namely the theory of Cyclic Linearization proposed by Fox & Pesetsky (2003, 2005), through close examinations of various constraints on movement and ellipsis. In this concluding chapter, I briefly summarize the results.

In Chapter 2, I illustrated that the theory of Cyclic Linearization provides an explanation of the Proper Binding Condition effects found in Japanese scrambling, where scrambling of a constituent that results in a creation of an unbound trace is strictly barred. It was shown that once the theory of Cyclic Linearization is combined with a few independent assumptions, especially with Ko's (2005a, 2007) hypothesis that the whole *v*P is linearized via Spell-out in languages like Japanese, a derivation that involves such a remnant movement in this language always results in inducing an ordering contradiction at PF, so that the derivation fails to converge. Meanwhile, I proposed the parameter concerning a domain of linearization via Spell-out, in order to capture the basic facts about languages like English, German and Swedish. I further argued that this parameter allows us to capture the difference between languages like Japanese and those like English and German with respect to the possibility of remnant movement. It was also shown that the proposed analysis explains the constraints on the possible landing sites and on scrambling of ECM and Small Clause complements, receiving further empirical support.

In Chapter 3, I examined a constraint on argument ellipsis, where ellipsis of a constituent from which subextraction has taken place is not possible, although it is elidable when no such subextraction has occurred. I argued that this constraint can be explained by the mechanism that is independently necessary to license arguments. It was also argued that the analysis maintains Shinohara's (2006a, b) idea that argument ellipsis is an instance of LF-copying while sluicing and VP-ellipsis involve PF-deletion.

Chapter 4 discussed the constraints on VP-scrambling in Japanese in light of the theory of Cyclic Linearization. Building on the insights of the previous studies, I provided more fine-grained generalizations on licit and illicit VP-scrambling. Then, I illustrated that the theory of Cyclic Linearization nicely explains the generalizations in question. Furthermore, I discussed several implications of the proposed analysis, making some novel empirical observations and predictions on possible cross-linguistic

variations regarding movement of VP, which I believe invoke further research on this topic.

In the first part of Chapter 5, I addressed the issue of whether Japanese allows sluicing, namely deletion of TP preceded by *wh*-movement. I argued that Japanese does have a construction comparable to sluicing in English and other languages, based on a novel set of data. It was shown that sluicing in Japanese yields two types of structures depending on the finiteness of the verb: If it is non-finite, sluicing yields the surface string consisting of the *wh*-phrase and the Q-marker; if it is finite, on the other hand, sluicing yields what is called V-stranding sluicing, consisting of the *wh*-phrase and the verbal complex formed by (successive-cyclic) head-movement of the verb to C^0. Then, I pointed out that the pattern of sluicing found in Japanese constitutes a clear counterexample for Merchant's (2001) Sluicing-COMP generalization, which states that nothing but *wh*-elements can survive sluicing. An alternative generalization is proposed in order to accommodate the Japanese pattern. The second half of Chapter 5 tries to derive the effect of this new generalization from the theory of Cyclic Linearization. In order to achieve this goal, I first proposed to implement under the theory of Cyclic Linearization Fox and Lasnik's (2003) idea that one-fell-swoop movement is required under deletion, which is originally proposed to explain the difference between sluicing and VP-ellipsis with respect to the possibilities of the island-repair. Then, I argued that under the proposed analysis, the effect of the new generalization on the Sluicing-COMP effect follows from a more fundamental difference among languages, namely head-directionality.

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