

Flexible Command: A Solution to the Symmetry Problem of Adjunction, Scrambling, and Dislocation*

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1. Introduction

Since the inception of the biolinguistic program (generative syntax) about 60 years ago, command, along with basic measurements such as domination, has been the most useful measure for scaling structural relationships. Linguists have always wanted extremely precise command. I propose a command measurement that is flexible (flexible command) and accurate. Flexible command measures equilibrium between two nodes in a given structure (i.e., tree, a graph without loops) showing connection and disconnection. That is, if α commands β , α and β are in equilibrium, which balances the connection and disconnection levels of two nodes in a structure. The equilibrium degree varies case by case. Flexible command can deal well with more complicated structures such as a segment structure. Thus, natural languages with rich scrambling (segment-forming operation) such as Hindi-Urdu, Japanese, and Korean are good phenotypes (properties observable in natural objects) that provide excellent

test cases for increasing the accuracy of command measurement. This study's discussion clarifies the logical necessity of command. It also leads us to reach the genotypic studies of the C_{HL} (the computational procedure of human natural language) concerning laws and mechanisms that arise from and/or interact with human gene. Thus, clarification of the logical necessity of command is a prerequisite to thinking the biological necessity of command, a harder problem.

The organization of this paper is as follows. Section 2 discusses conceptual issues. This section debates the existence of self-dominance in the C_{HL} and concludes that the set-theoretic definition of domination avoids the reflexivity paradox. The section introduces the main proposal of this study: flexible command. Section 3 describes several recalcitrant problems and possible solutions with flexible command. Such problems include scrambling asymmetry, reconstruction asymmetry, heavy NP shift asymmetry, and English-type T vs. French-type T asymmetry. I propose that rightward dislocation is rightward adjunction. Section 4 concludes the discussion.

2. Conceptual Issues

2.1. Self-domination

Is domination reflexive? Does the language system allow self-domination? Does α dominate itself (α)? Let us begin with the simplest possible structure, for example, one in which α and β merge and the operation forms γ .

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(1)



The essential nature of the structure is set-theoretic. That is, the set γ has two members: set α and set β . We abstract away for the moment from the distinction in Pure Merge (not Move = Copy + Rmerge) between Set-Merge (substitution) forming $\{\gamma, \{\alpha, \beta\}\}$ and Pair-Merge (adjunction) forming $\{\gamma, \langle \alpha, \beta \rangle\}$, where γ is the label, i. e. its basic structural categorical property, and the ordered pair $\langle \alpha, \beta \rangle$ in the latter indicates that adjunction is inherently asymmetrical (α adjoining to β is distinct from β adjoining to α) (Chomsky 2000: 133).

(2) $\{\gamma\} = \{\{\alpha\}, \{\beta\}\}$

It is intuitively clear that γ dominates α and β . However, one must ask whether α dominates α , β dominates β , and γ dominates γ . Let us consider the following definitions of domination, containment, and exclusion, where α and β are syntactic categories (Cf. May 1985, Chomsky 1986).

(3) a. **Domination**

α dominates β iff every segment of α dominates β .

b. **Containment**

α contains β iff some segment of α dominates β .

c. **Exclusion**

α excludes β iff no segment of α dominates β .

Notice that domination is the key in that all three definitions use it as the standard measure. Therefore, the definition of domination is used axiomatically. Let us assume the following definition of command proposed in Reinhart 1979. Nunes and Thompson 1998, sec. A.7.2., provide the grounds and argument for this definition. Epstein, Groat, Kawashima, and Kitahara (EGKK) 1988 present an argument against this definition¹.

(4) Command

Where α and β are accessible to C_{HL} , α commands β iff

- a. α does not dominate β , and
- b. $\alpha \neq \beta$, and
- c. every category dominating α also dominates β .

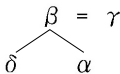
For condition (4a), β not dominating α follows from the irreflexivity of domination and condition (4c). We will discuss the demonstration of the irreflexivity of domination later. The demonstration that β does not dominate α in (4a) is as follows. Suppose that δ and α merge and it forms β , the label of which is γ .

$$(5) \beta = \{ \underline{\gamma}, \{ \delta, \alpha \} \}$$

$$\delta \leftarrow \uparrow \rightarrow \alpha$$

The label γ inherits the basic structural (categorical) property of either δ or α . The informal tree representation is as follows.

(6)



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Suppose α commanded β in the preceding structure. β dominates α . Therefore, given (4c), β dominates β . However, if domination was irreflexive, i.e., no self-domination existed, β does not dominate β . Consequently, β dominates β , and β does not dominate β , which is a contradiction. By reduction to absurdity (RTA), if α commands β , β does not dominate α (Q.E.D.).

Without condition (4b), the definition permits self-command. Suppose α and β merge, creating K , the label of which is γ .

$$(7) \text{ K} = \{ \gamma, \{ \alpha, \beta \} \}$$

$$\alpha \leftarrow \uparrow \rightarrow \beta$$

More informally,

(8)



Suppose that the definition of command lacked condition (4b). Does α command α ? Given irreflexivity of domination, α does not dominate α . Thus, condition (4a) is satisfied. Every category dominating α , namely K , also dominates β . Thus, condition (4c) is satisfied. It follows that α commands α . However, there is an argument that self-command does not exist.

The demonstration that command is irreflexive is as follows (Nunes and Thompson state that they owe Lasnik and Uriagereka (1988: 161, n.4) the demonstration that command is not reflexive). Assume that the binding principle (BP) (C) holds, which states that a referring (R) expression must be free everywhere, i.e., nothing binds an R-expression. The definition

of bind is as follows.

(9) Bind

α binds β iff

- (i) α and β bear the same index,
- and (ii) α commands β .

The BP (C) accounts for the following contrast.

- (10) a. * $Bacon_i$ puzzled $Bacon_i$.
- b. $Bacon_i$ puzzled $Bacon_j$.

In (10a), the first *Bacon* and the second *Bacon* bear the same index and the first commands the second. Thus, the second *Bacon* is bound (not free), in violation of the BP (C). In (10b), the first *Bacon* and the second *Bacon* do not bear the same index and the first commands the second. Thus, the second *Bacon* is unbound (free), in satisfaction of the BP (C). Now consider the following.

(11) $Bacon_i$ left.

According to the definition of command without condition (4b), $Bacon_i$ commands $Bacon_i$. By the BP (C), $Bacon_i$ must be free, which amounts to saying that $Bacon_i$ cannot bind $Bacon_i$. It follows that $Bacon_i$ cannot refer to $Bacon_i$, which is a contradiction. By RTA, $Bacon_i$ does not command $Bacon_i$ (Q.E.D.). Thus, condition (4b) is required to remove self-command. The following has been widely used as (4c) (Cf. Reinhart 1976).

(12) The first category dominating α also dominates β .

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However, as pointed out by Nunes and Thompson, if the first category dominating α also dominates β , every category dominating α also dominates β . Since the definition with universal quantification as in (4c) is conceptually simpler and more general than the one specifying a particular node as in (12), the former is adopted². Crucially, (12) makes an incorrect prediction regarding an adjunction at the root. That is, (12) states that there is at least one node that dominates α and β (existential quantification). When a term adjoins to the root containing β , there is no node that dominates α and β . By (12), such adjunction at the root is undesirably ruled out.

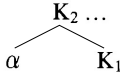
Let us assume the following definition of the linear correspondence axiom (LCA) (Kayne 1994).

(13) Linear Correspondence Axiom (LCA)

- A category α precedes a category β iff
- α asymmetrically commands β , or
 - γ precedes β and γ dominates α .

Kayne adopts the exclusion type of command: α commands β iff α excludes β , and every category dominating α also dominates β . Let us consider the following partial structure in which α adjoins to K_1 , forming a two-segment category $[K_2, K_1]$.

(14)



By the definition of domination given above, the category $[K_2, K_1]$ does not dominate α , instead, it just contains α . α commands outside $[K_2,$

K_1]. If α adjoins by internal merge, α commands its trace, thereby satisfying the chain condition (a moved element must command its trace).

Does $[K_2, K_1]$ dominate its lower segment K_1 ? Chomsky (1995: 339) assumes that it does. Let us repeat the relevant definition, where α and β are syntactic categories.

(15) Domination

α dominates β iff every segment of α dominates β .

For computational operations such as Move, the C_{HL} can see the two-segment category $[K_2, K_1]$, the lower segment K_1 , and α . Crucially, the C_{HL} cannot see the upper segment K_2 . For definition of measurement, however, one must be precise and count every segment. By the definition of domination in (15), if $[K_2, K_1]$ dominates its lower segment K_1 , every segment of $[K_2, K_1]$ dominates K_1 . It follows that K_2 dominates K_1 , and K_1 dominates K_1 . In that case, domination can be reflexive, i.e., the system must allow self-domination.

2.2. Argument for irreflexivity of domination

Evidence and reasons exist for domination being irreflexive (see Nunes and Thompson 1998, section A.2.2.).

The first argument for the irreflexivity of domination arises from RTA within the definition of command. Let us reproduce the definition of command in question.

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(16) Command

Where α and β are accessible to C_{HL} , α commands β iff

- a. α does not dominate β , and
- b. $\alpha \neq \beta$, and
- c. every category dominating α also dominates β .

Suppose that domination was reflexive. Then, the first category dominating α is α . By condition (16c), α dominates β , i.e., α dominating α also dominates β . However, by condition (16a), α does not dominate β . α dominates β , and α does not dominate β , which is a contradiction. By RTA, domination is not reflexive (Q.E.D.).

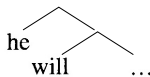
The second argument for the irreflexivity of domination arises from the LCA. Consider the set-theoretic representation of the following example (ibid., section A.2.2.).

(17) He will like it.

- (18) $C = \{\underline{\text{will}}, \{\text{he}, \{\text{will}, \{\text{will}, \{\text{like}, \{\text{like}, \text{it}\}\}\}\}\}\}$
 $\text{he} \leftarrow \uparrow \rightarrow B = \{\underline{\text{will}}, \{\text{will}, \{\text{like}, \{\text{like}, \text{it}\}\}\}\}$
 $\text{will} \leftarrow \uparrow \rightarrow A = \{\underline{\text{like}}, \{\text{like}, \text{it}\}\}$
 $\text{like} \leftarrow \uparrow \rightarrow \text{it}$

Let us consider the partial tree representation.

(19)



Let us reproduce the definition of command.

(20) Command

Where α and β are accessible to C_{HL} , α commands β iff

- a. α does not dominate β , and
- b. $\alpha \neq \beta$, and
- c. every category dominating α also dominates β .

Does *he* command *will*? Suppose we had the reflexive notion of domination. Let *he* be α , and *will* β in the definition of command. Condition (20a) is satisfied because *he* does not dominate *will*. The term *he* dominates itself. Condition (20b) is satisfied because *he* \neq *will*. As for condition (20c), the first category dominating *he* is *he*. Since *he* does not dominate *will*, condition (20c) is not satisfied. Therefore, *he* does not command *will*. Now let us adopt the following definition of the LCA.

(21) Linear Correspondence Axiom (LCA)

A category α precedes a category β iff

- a. α asymmetrically commands β , or
- b. γ precedes β and γ dominates α .

α (*he*) does not command β (*will*). Therefore, *he* does asymmetrically command *will*. By condition (21a), *he* and *will* would not be ordered³. The LCA incorrectly predicts that the example should be ruled out, contrary to the fact. Therefore, the assumption that domination is reflexive is incorrect. Hence, domination is irreflexive (Q.E.D.).

The third argument arises from a set-theoretic fact. The notion of domination is understood set-theoretically particularly within the bare phrase structure theory. Set membership cannot be reflexive. If set membership was reflexive (a set contains itself), the empty set $\{\phi\}$, which by definition contains no member, would paradoxically contain a member, that is, the empty set itself.

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$$(22) * \{\{\phi\}\} \ni \{\phi\}$$

Therefore, set membership must be irreflexive, i.e., a set must not contain itself.

Now let us consider the standard definition of domination, which section A.2.1. in Nunes and Thompson (1998) adapts from Chomsky (1995: 247).

(23) Domination

Given a syntactic object $K = \{\underline{\gamma}, \{\delta, \mu\}\}$ or $K = \{\langle \underline{\gamma}, \gamma \rangle, \{\delta, \mu\}\}$, K dominates α iff

- a. for some set L , $\alpha \in L$ and $L \in K$, or
- b. for some set M , K dominates M and M dominates α .

A syntactic object $K = \{\underline{\gamma}, \{\delta, \mu\}\}$ arises from a symmetric Set-Merge of δ and μ (internal or external; δ set-merging with μ is in principle the same as μ set-merging with δ (Chomsky 2000: 133); this symmetry must be broken by Agree operation (feature-checking)), and the construct bears the label (the major property) γ (the selector feature). A syntactic object $K = \{\langle \underline{\gamma}, \gamma \rangle, \{\delta, \mu\}\}$ arises from an asymmetric Pair-Merge of δ and μ (adjunction; δ pair-merging with μ is different from μ pair-merging with δ), and the label is $\langle \underline{\gamma}, \gamma \rangle$ (non-selector (ibid. 134)). Chomsky (2000: 135) argues that the label is redundant; it is determined independently, i.e., the label in Set-Merge is determined by the selector, and the label in Pair-Merge is determined by the Merge operation itself (ibid. 134); therefore eliminable.

Suppose K reflexively dominates K . Thus, $K = \alpha$ in the definition above. Then, by condition (23a), K is a member of the set L , and the set L is a member of K .

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(26) Domination (def1)

K dominates a syntactic object α iff

- a. for every set L such that $L \in K$, $\alpha \in L$, or
- b. for some set M, K dominates M and M contains α .

The bottom line is: when K dominates α , all sets in K must have α as a member (Nunes and Thompson 1998). Nunes and Thompson argue that def1 is superior to the standard definition in (23), which they adapt from Chomsky 1995; 247; call it def2.

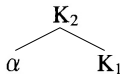
(27) Domination (def2) (= (23))

Given a syntactic object $K = \{ \gamma, \{ \delta, \mu \} \}$ or $K = \{ \langle \gamma, \gamma \rangle, \{ \delta, \mu \} \}$, K dominates α iff

- a. for some set L, $\alpha \in L$ and $L \in K$, or
- b. for some set M, K dominates M and M dominates α .

The crucial difference between def1 and def2 is that the quantification in condition (26a), i.e., the universal quantification (for every set L) is used in def1, whereas the existential quantification (for some set L) is used in def2, as in (27a). Def1 and def2 make different predictions with respect to dominance of an adjunct by a two-segment category $K = [K_2, K_1]$. The structure of interest is the following.

(28)

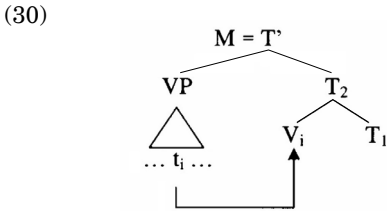


The bare phrase structure (BPS) representation of (28) is the following.

$$(29) \quad K = \{ \langle K_2, K_1 \rangle, \{K, \alpha\} \}$$

$$\alpha \leftarrow \uparrow \rightarrow K$$

According to condition (26a) of def1, since not every set has α as its member, i.e., the set $\langle K_2, K_1 \rangle$ does not have α as the member, the two-segment category K does not dominate α . On the other hand, according to condition (27a) of def2, since there is some set that has α as the member, i.e., set $\{K, \alpha\}$, K dominates α . By def2, the two-segment category $K = [K_2, K_1]$ dominates α and K_1 . It follows that α commands only K_1 . Crucially, α does not command outside category K . In contrast, by def1, the two-segment category $K = [K_2, K_1]$ dominates K_1 , but not α . It follows that α commands nothing in K . Crucially, α commands outside category K . Nunes and Thompson argue that def2 makes incorrect predictions in the chain condition (the head of a chain must command the tail of the chain, i.e., a moved term must command the trace). Nunes and Thompson consider two cases. The first is V-to-T raising.



The V adjoins to T_1 . By def2, V does not command out of $T = [T_2, T_1]$. As a result, the chain condition is violated. Given that a language allows V-to-T raising and that a chain must satisfy the chain condition, def2 incorrectly predicts that a language lacks V-to-T movement. In contrast, def1 correctly predicts that the above structure is acceptable: the V com-

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mands its trace, thereby satisfying the chain condition.

The second argument for def1, but against def2, arises from noncyclic adjunction of a relative clause (Lebeaux 1988). Consider the following example (Nunes and Thompson 1998, sec. A.2.3.).

(31) Which portrait that Rivera_i painted did he_i like?

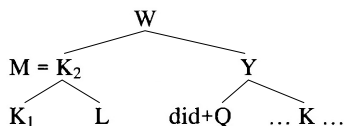
The partial representation is the following, where Q = null interrogative C.

(32)

W = {Q, {M, Y}}
M = {<which, which>, {K, L}} ← ↑ → Y = [did+Q he like K = {which (which, portrait)}]
K = {which (which, portrait)} ← ↑ → L = [that Rivera painted] which ← ↑ → portrait
which ← ↑ → portrait

The constituent L noncyclically adjoins (later inserted) to (already-built) K, which avoids the BP (C) violation, i.e., L from the outset appears in a position that is higher than the coindexed pronoun. The structure of the interest is the following.

(33)



By def2, the two-segment category $K = [K_2, K_1]$ dominates the lower segment K_1 and L. Therefore, the moved wh-phrase K_1 does not command outside of K. The antecedent K_1 fails to command its trace (K) in Y, in-

ducing the chain condition violation. Def2 incorrectly predicts that the example should be ruled out. Def1, by which the moved wh-phrase K_1 commands its trace (K), satisfies the chain condition. Thus, def1 correctly predicts that the example is acceptable. The problem dissolves (or does not exist) however under the occurrence-based definition of chain and the hypothesis that head-adjunction takes place in the PF (Chomsky 2000: 117, n. 68).

Def1, not def2, makes correct predictions. Therefore, let us adopt def1, which is proposed in Nunes and Thompson (1998), repeated below.

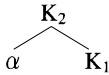
(34) Domination (def1)

K dominates a syntactic object α iff

- a. for every set L such that $L \in K$, $\alpha \in L$, or
- b. for some set M , K dominates M and M contains α .

As pointed out by Nunes and Thompson, (34a) requires as a necessary condition that all sets in K (the dominator) have α (the dominee) as a member, when we want K to dominate α . Let us repeat the structure in question.

(35)



The question is whether the two-segment category $[K_2, K_1]$ dominates the lower segment K_1 . We want $[K_2, K_1]$ to dominate K_1 . Under the set-theoretic definition of domination, in order for $[K_2, K_1]$ to dominate K_1 , all sets in $[K_2, K_1]$ must have K_1 as a member. According to the system based on the set theory and the BPS theory (Chomsky 1995) adopted by Nunes and

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Thompson, the relevant representation is the following.

$$(36) \quad [K_2, K_1] = \{ \{ \{ K_1 \} \}, \{ \alpha, K_1 \} \}$$
$$\alpha \leftarrow \uparrow \rightarrow K_1$$

The object $[K_2, K_1]$ has two sets as members: $\{\{K_1\}\}$ and $\{\alpha, K_1\}$. $\{\{K_1\}\}$ is the label (information of the major property) of $[K_2, K_1]$ ⁴. α and K_1 together are members of $\{\alpha, K_1\}$ but not of the label $\{\{K_1\}\}$.

Do all sets in $[K_2, K_1]$ have K_1 as a member? Yes, they do. K_1 is a member of $\{\{K_1\}\}$ and $\{\alpha, K_1\}$. It follows that $[K_2, K_1]$ dominates K_1 , as desired.

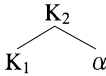
Notice that $[K_2, K_1]$ does not dominate α , for all sets in $[K_2, K_1]$ do not have α as a member; the label $\{\{K_1\}\}$ does not have α .

Therefore, the purely set-theoretic definition of domination avoids the dilemma; we can maintain the irreflexivity of domination, while at the same time allowing a two-segment category to dominate the lower segment. A structure must be considered set-theoretically. We will often use tree representation, however, for expository purposes unless set-theoretic clarity is necessary.

2.4. Flexible command: different levels of disconnection (the main proposal)

Let us reproduce the relevant structure.

(37)



Let us now adopt the view that $[K_2, K_1]$ dominates its lower segment K_1 .

Does K_1 command α ? As stated above, $[K_2, K_1]$ does not dominate α because not all sets in $[K_2, K_1]$ have α as a member; the label $\{\{K_1\}\}$ does not have α . Alternatively, according to a more informal definition of command, in order for K_1 to command α , every category dominating K_1 must also dominate α . Thus, given that $[K_2, K_1]$ dominates K_1 in order for K_1 to dominate α , $[K_2, K_1]$ must dominate α . However, $[K_2, K_1]$ does not dominate α but $[K_2, K_1]$ only contains α . Therefore, K_1 does not command α .

Does α command K_1 ?

Chomsky (1995: 339-340) suggests that the result varies depending upon our definition of the disconnection condition in the following definition of command (adapted from Chomsky 1995).

(38) Command

α commands β iff

- a. every γ that dominates α dominates β (the connection condition), and
- b. α and β are disconnected (the disconnection condition).

The bottom line is: Command measures and determines the equilibrium (balance) of connection and disconnection between two nodes in a language structure (tree graph). Command is fundamentally antisymmetric: When X commands Y it is not always the case that Y commands X . As Moro (2000: 15-29) proposes, the C_{HL} does not tolerate a point of symmetry (too unstable). The structural information (formal feature) is the driving force for breaking the symmetry in the C_{HL} . Once the symmetry is broken and an antisymmetric structure is formed, the structure becomes stable. The C_{HL} creates an antisymmetric structure like H_2O crystal (ice) where the molecules are in the stable phase with the minimum energy (cost). Command measures how two nodes establish a stable (balanced) relationship in a

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given tree.

For the disconnection condition, Chomsky (1995: 339-340) points out three levels of disconnection.

(39) Levels of disconnection

- a. (Level a) α and β are disconnected iff α excludes β .
- b. (Level b) α and β are disconnected iff no segment of one contains the other.
- c. (Level c) α and β are disconnected iff neither is a segment of a category that contains the other.

Chomsky confesses that he does not see any principled way to choose among the various options. I want to propose that there is a principle way (presence/absence of agreement and computational cost) to choose among the options. Let us reproduce the definitions of domination, containment, and exclusion (Chomsky 1986: 9).

(40) a. Domination

α dominates β if every segment of α dominates β .

b. Containment

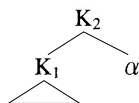
α contains β if some segment of α dominates β .

c. Exclusion

α excludes β if no segment of α dominates β .

Let us concentrate on the following tree structure at the root.

(41)



Does α command K_1 ? With respect to connection condition, there is no γ that dominates α and K_1 , thereby the connection condition (38a) is vacuously satisfied. $(\forall_x)(x>0 \Rightarrow D(x))$, where x is a node, and D indicates dominating α and β . That is, if a node x exists, then x dominates α and β . If x does not exist, (38a) is irrelevant (vacuously satisfied). Under truth-value calculation, $A(x>0) \Rightarrow B(D(x))$ is true when A and B are false.

Consider the disconnection conditions. At the level of disconnection (39a) (or disconnection level (a)), α asymmetrically commands $[K_2, K_1]$ and K_1 which is dominated by $[K_2, K_1]$. According to the LCA, α precedes $[K_2, K_1]$ and K_1 .

At the level of disconnection (39b) (or disconnection level (b)), α asymmetrically commands K_1 . According to the LCA, α precedes K_1 . Notice that, at this level of disconnection, a container is excluded, i.e., α fails to asymmetrically command $[K_2, K_1]$. Therefore, the container $[K_2, K_1]$, which contains α and K_1 are excluded from the command calculation.

At the level of disconnection (39c) (or disconnection level (c)), command relations are not determined if the relevant structures involve segments. The above structure involves segments. Therefore, no command relationship is determined. α and K_1 are not ordered.

The difference between disconnection levels (a) and (b) is important. This issue is related to the totality problem in the sense of Kayne (1994).

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- (42) Three defining properties of linear ordering of (at least) terminal symbols
- a. It is transitive; that is, $xLy \ \& \ yLz \rightarrow xLz$.
 - b. It is total; that is, it must cover all the members of the set: for all distinct x, y , either xLy or yLx .
 - c. It is antisymmetric, that is, not $(xLy \ \& \ yLx)$. (Kayne 1994)

The issue is whether one should take “all the members of the set” in (42b) to include nonterminal as well as terminal symbols. If the system requires strict totality (the set must include nonterminal and terminal symbols), no ordering between α and K_1 is determined at the disconnection level (b), contrary to Chomsky’s view. It is because at this level, α fails to asymmetrically command $[K_2, K_1]$, which dominates K_1 . α and $[K_2, K_1]$ are disconnected. Since $[K_2, K_1]$ dominates K_1 , α and K_1 are also disconnected. This conclusion is what the First Law (EGKK 1998: 39-40) guarantees; no syntactic relationship exists between the two terms x (equals to or contained in the larger constituent X) and y (equals to or contained in the larger constituent Y) when X and Y are disconnected at any point of the derivation (see section 3.1.2.).

In sum, capitalizing on Chomsky’s (1995: 339-340) insights, I propose the definition of command as in the following.

- (43) Command
 α commands β iff
- a. α and β are connected, and
 - b. α and β are disconnected.

- (44-1) Connection
 α and β are connected iff every γ that dominates α dominates β .

(44-2) Disconnection

α and β are disconnected iff

- a. (Level a) α excludes β , or
- b. (Level b) no segment of one contains the other, or
- c. (Level c) neither is a segment of a category that contains the other.

The three distinct levels of disconnection yield three different types of command. Therefore, flexible command is obtained. The choice of the three levels is determined by factors such as presence or absence of agreement and computational cost that will be clarified empirically below.

The LCA is redefined as follows.

(45) LCA

α precedes β iff

- (i) α asymmetrically commands β , or
- (ii) $\gamma (\neq \alpha)$ precedes β and γ dominates α .

3. Empirical Issues

3.1. Problem 1

3.1.1. Scrambling asymmetry

Many SOV languages allow a *wh*-phrase to permute into the sentence-initial position but prohibit the same phrase to permute into the sentence-final position after V. The phenomenon has been descriptively known (for Japanese, see Haraguchi 1973 for example), but has resisted an explanation. Bayer (1996) is one of the studies that have emphasized the significance of the problem. As for Japanese data, see Kuno 1978: 68, Inoue 1978: 98, Miyaji 1984, Takami 1995, Simpson and Bhattacharya 2003: 132, n.3, p.c. with Hajime Hoji. Let us consider Japanese examples.

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- (46) a. John-wa nani-o tabe-ta-no?
John-TOP what-ACC eat-PAST-Q
'What did John eat?'
- b. nani-o_i John-wa t_i tabe-ta-no?
what-ACC John-TOP eat-PAST-Q
'What did John eat?'
- c. * John-wa t_i tabe-ta-no nani-o_i?
John-TOP eat-PAST-Q what-ACC
'What did John eat?'

No such restriction is observed for a non-wh phrase.

- (47) a. John-wa osushi-o tabe-ta-no?
John-TOP sushi-ACC eat-PAST-Q
'Did John eat sushi?'
- b. osushi-o_i John-wa t_i tabe-ta-no?
sushi-ACC John-TOP eat-PAST-Q
'Did John eat sushi?'
- c. John-wa t_i tabe-ta-no osushi-o_i?
John-TOP eat-PAST-Q sushi-ACC
'Did John eat sushi?'

Why does the system bar a wh-phrase to appear after V in SOV languages? A similar phenomenon is observed in other languages. In these languages, the wh-phrase can scramble to the sentence-initial position, but it cannot scramble to the sentence-final position after V, as in the following⁵.

- (48) a. ??/* KriSno t_i bhalobaS-e ka-ke? [Bengali]
Krishna-NOM love-3 who-ACC
'Who does Krishna love?' (Cf. Bayer 1996: 284-285)

- b. * Sita-ne dhyaan-se t_i dekh-aa thaa kis-ko_i? [Hindi-Urdu]
 Sita-ERG care-with look-PAST.PERF was who-ACC
 ‘Who had Sita looked at carefully?’ (Bhatt and Dayal 2007: 290-291)
- c. * ku-nun t_i mogosumi-ka muo-suli? [Korean]
 he-TOP ate-Q what-ACC
 ‘What did he eat?’
- d. * avan t_i saappiTaana enna_i ? [Tamil]
 he-ACC ate what-ACC
 ‘What did he eat?’(Cf. Savio (1991: 56) via Bayer (1996: 307, n. 45))
- e. * Para-yı t_i çal-dı kim_i? [Turkish]
 money-ACC stole who
 ‘Who stole the money?’ (Erguvanlı 1984 via Takano 2010)
- f. * Ramin bara Kimea t_i xarid chi(-ro)_i ? [Persian]
 Ramin for Kimea bought what(-ra) (ra = [+specific, ±definite])
 ‘What did Ramin buy for Kimea?’ (Karimi 2003: 115)

What is interesting is that in Japanese, exclamatory-wh and interrogative-wh phrases constitute a natural class, but pronominal-wh phrases behave differently. That is, the former two cannot scramble to the post-verbal position, whereas the latter can do so.

- (49-1) a. * John-wa t_i kaita-n-daroo [nan-to sugoi e-o]! [Japanese]
 John-TOP drew-fact-may what-that stunning picture-ACC
 ‘What a stunning picture John drew!’
- b. * John-wa t_i tabeta-no nani-o_i? (=46c)
 John-TOP ate-Q what-ACC
 ‘What did John eat?’
- c. John-wa t_i tabeta-no nani-o_i?
 John-TOP ate-Q what-ACC
 ‘Did John eat that thing (whatchamacallit)?’

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In the Tokyo dialect (the standard Japanese), an interrogative-wh *nani* ‘what’ is pronounced as high-low pitch pattern [NAni], whereas a pronominal-wh *nani* ‘that thing’ is pronounced as low-high [naNI] (Kindaichi et al 2006: 617). The two-types of wh differ in prosody and behave differently with respect to postverbal scrambling. In the Kagoshima dialect, the interrogative and pronominal wh are distinguished morphologically.

- (49-2) a. * John-wa t_i tabeta-to na-yu_i?
 John-TOP ate-Q what-ACC
 ‘What did John eat?’
- b. John-wa t_i tabeta-to nani-o_i?
 John-TOP ate-Q what-ACC
 ‘Did John eat that thing (whatchamacallit)?’

The interrogative wh *na-yu* ‘what-ACC’ cannot appear postverbally as in (49-2a) whereas the pronominal wh *nani-o* ‘that thing-ACC’ can as in (49-2b). That the two types of wh differ in phonology and morphology indicates that they behave differently before spell-out in the narrow (overt) syntax (NS). What is the common syntactic feature that is shared between interrogative-wh phrases and exclamatory-wh phrases, but not with pronominal-wh phrases? A candidate is focus [FOC] as a syntactic (formal) feature⁶. In fact, there are SOV languages in which a focused phrase is prohibited in the postverbal position.

- (50) a. ??/* KriSno t_i bhalobaS-e ta-ke-o. [Bengali]
 Krishna-NOM love-3 (s)he-ACC-too
 ‘Krishna loves him/her too.’ (Bayer 1996: 285)

- b. * Ramin bara Kimea t_i xarid Pirhan-ro_i [Persian]
 Ramin for Kimea bought SHIRT-ra
 'Ramin bought that specific shirt for Kimea.' (Karimi (1999: 4), Karimi (2003: 115))

Similarly, in Japanese, the thematic topic marker (wa: low pitch and not stressed) can appear postverbally, while the contrastive topic marker (WA: high pitch and stressed) cannot do so.

- (51) a. John-wa t_i tabeta, sarada-wa_i.
 John-TOP ate salad-TOP (thematic)
 'Speaking of salad, John ate it.'
- b. * John-wa t_i tabeta, sarada-WA_i.
 John-TOP ate salad-TOP (contrastive)
 'John ate at least salad (I don't know what else he ate).'

Why does a focus phrase resist appearing in the postverbal position in SOV languages? Before we attempt to propose a solution, let us verify the nature of the postverbal position created by postposing.

3.1.2. Postverbal DP has undergone rightward scrambling and is the highest commander in the same sentence

In this section, I demonstrate that a postverbal DP has undergone rightward scrambling and is the highest commander for the rest of the terms in the same sentence. I argue for syntactic rightward movement analysis of Japanese postposing (Ross 1967, Haraguchi 1973, Baltin 1978, 1983, Kayne 1979, Guéron 1980, Choe 1987, Simon 1989, Rochemont and Culicover 1990, Kural 1994, 1997, Cecchetto 1999, Kornfilt 2005)⁷. I argue against base-generation analysis (Sells 1999, Soshi and Hagiwara 2004) and more-than-one sentence analysis (Inoue 1978, Kuno 1978, Abe

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1999, Endo 1996, Tanaka 2001, Takita (to appear), Whitman 2000)⁸. See Takano (2010: 15) for three possible analyses of postposing. The first law, the most fundamental law of syntax according to EGKK 1998, is relevant which has two versions: representational and derivational (EGKK 1998: 39–40, Epstein 1999).

(52) The First Law (Representationally Construed)

A term (= tree, category, constituent) T_1 can enter into a syntactic relation with a term T_2 only if there is at least one term T_3 of which both T_1 and T_2 are member terms.

(52') The First Law (Derivationally Construed)

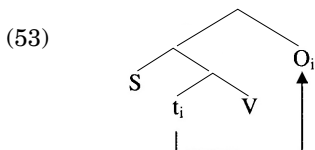
T_1 can enter into C-Command relations with T_2 only if there exists no derivational point at which:

- i. T_1 is a proper subterm of K_1 ,
- and ii. T_2 is a proper subterm of K_2 ,
- and iii. there is no K_3 such that K_1 and K_2 are both terms of K_3 .

EGKK nickname the First Law “relationship blocker (ibid. 43)” in that it defines as to when two nodes are disconnected in a tree. The bottom line of the representational First Law is: If A and B interact syntactically, they are in the minimal simplex tree. Syntactic objects A and B interact syntactically when they interact with respect to syntactic calculations such as scope, binding, weak crossover (WCO), parasitic gap licensing, and the like. The derivational First Law defines more specific relationship: command. It defines how command fails; for example, a member x of TP Spec and a member y of VP are unconnected (no command relationship exists) because there exists a derivational point at which x is a proper subterm of TP Spec, and y is a proper subterm of VP, and there is no TP (yet) such that TP Spec and VP are both terms of TP. Thus, the derivational

First Law derives command; command is unnecessary (ibid. 41).

In particular, I argue the following structure for the sentence in which, for example, the object scrambles rightward to the postverbal position.



More specifically, I agree with analyses in Mahajan 1988 and Kural 1994, and disagree with those in Kayne 1994, Mahajan 1997a and Mahajan 1997b. The evidence for (53) is the following.

First, the postverbal element is responsible for scope ambiguity. It is important to keep the neutral prosody (no extra pause or stress) in testing.

(54-1) Scope ambiguity (\forall vs. \exists)

a. dareka-ga daremo-o sonkeishiteiru ($\exists > \forall$, $*\forall > \exists$)
 someone-NOM everyone-ACC respect
 ‘Someone respects everyone.’

b. daremo-o_i dareka-ga t_i sonkeishiteiru ($\exists > \forall$, $\forall > \exists$)
 everyone-ACC someone-NOM respect
 ‘Someone respects everyone.’

c. dareka-ga t_i sonkeishiteiru daremo-o_i ($\exists > \forall$, $\forall > \exists$)
 someone-NOM respect everyone-ACC
 ‘Someone respects everyone.’

In (54c), the rightward scrambling of the universally quantified object guarantees its wide-scope reading. The postverbal term commands a term to its left at least in the LF⁹. See Abe (1999) and the example (74) in Takano (2010: 17) for the same conclusion. Let us examine another paradigm; the

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scope relationship between a universally quantified phrase (UQP or \forall) and a negative head (NEG). Again it is extremely important to keep the neutral prosody (no extra pause or stress) in testing. Arbitrary addition of pauses and stresses alters interpretation. See Miyagawa and Arikawa (2007) who emphasize the importance of careful and minute control over prosodic properties in grammaticality reaction test. The relevant examples are as follows.

(54-2) Scope ambiguity (\forall vs. NEG)

- a. John-wa zen'in-o nagur-ana-katta. (* $\forall > \text{NEG}$, $\text{NEG} > \forall$)
John-TOP all-ACC beat-NEG-PAST
'John did not beat all.'
- b. zen'in-o_i John-wa t_i nagur-ana-katta. ($\forall > \text{NEG}$, $\text{NEG} > \forall$)
all-ACC John-TOP beat-NEG-PAST
'John did not beat all.'
- c. John-wa t_i nagur-ana-katta zen'in-o_i. ($\forall > \text{NEG}$, $\text{NEG} > \forall$)
John-TOP beat-NEG-PAST all-ACC
'John did not beat all.'

When the object UQP is in situ as in (54-2a), NEG takes wide scope over UQP ("it is not the case that John beat all") because NEG asymmetrically commands UQP. When UQP scrambles leftward as in (54-2b), the scope ambiguity arises ("it is not the case that John beat all" and "For every x, x a human, John beat x") because UQP commands and is commanded by NEG given that the trace of UQP is the copy of the original UQP. Crucially, when the object UQP undergoes right dislocation to the postverbal position, the scope ambiguity arises. That indicates that the object UQP has scrambled rightward and adjoined to the root node CP which is higher than NEG.

Second, the postverbal element can bind an anaphor to its left.

(55) Anaphor binding

a. * otagai_k-no sensee-ga karera_k-o_i hihanshita
 each other's teacher-NOM they-ACC criticized
 '(Lit.) Each other's teacher criticized them._i'

b. ? karera-o_i otagai_k-no sensee-ga t_i hihanshita.
 they-ACC each other's teacher-NOM criticized
 'Each other's teacher criticized them._i'

(Cf. Mahajan 1988, 1990, Saito 1992)

c. ? otagai_k-no sensee-ga t_i hihanshita karera_k-o_i.
 each other's teacher-NOM criticized they-ACC
 'Each other's teacher criticized them._i'

In (55c), the postverbal object DP is scrambled rightward and has become the binder for the anaphor. The postverbal term commands a term to its left, at least in the LF¹⁰.

Third, the postverbal element interacts with the Condition C effect. Let us look at the typical Condition C effect in English (Reinhart 1976, Abe 2003).

(56-1)

- a. * He_i put his cigars in Ben_i's box.
- b. * [_{PP} In Ben_i's box]_j, he_i put his cigars t_j.
- c. [[_{PP} In the ivory box]_j that Ben_i bought from China], he_i put his cigars t_j.

The example in (56-1a) is ruled out by the binding condition (C), which bars an R-expression *Ben* to be bound. The left dislocation does not remedy the condition (C) violation in (56-1b) while it does in (56-1c). The difference between (56-1b) and (56-1c) is that the R-expression is more “deeply

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embedded” in the dislocated phrase in the latter. Saito (1985) described the phenomenon as follows.

(56-2)

If an R-expression is c-commanded by a pronoun that is coreferential to it in the underlying structure and a phrase that dominates the R-expression escapes the c-command domain of the pronoun by movement, then the resulting structure is free from a Condition C violation only if the R-expression is “deeply embedded” in the moved phrase.

According to the late-merge analysis of adjunct (Lebeaux 1988), the R-expression exists in the lower original copy in (56-1b) but not in (56-1c); the relative clause being an adjunct merges with the PP after dislocation. The Condition (C) violation arises in (56-1b) but not in (56-1c). Let us look at the dislocation examples in Japanese.

(56-3)

- a. * kare_i-ga John_i-no sensee-o kenashita.
He-NOM John-GEN teacher-ACC disparaged
'He disparaged John's teacher.'
- b. ??? John_i-no sensee-o_j kare_i-ga t_j kenashita.
John-GEN teacher-ACC he-NOM disparaged
'He disparaged John's teacher.'
- c. ??? kare_i-ga t_j kenashita John_i-no sensee-o_j.
he-NOM disparaged John-GEN teacher-ACC
'He disparaged John's teacher.'

The example in (56-3a) corresponds to (56-1a) and (56-3b/c) to (56-1b); the condition (C) violation is not ameliorated. The violation is amnestied when the R-expression is deeply embedded (Abe 1993: 211)¹¹.

(56-4)

- a. * *kare_i-ga* [_{DP}[*John_i-ga kiratteiru*] *sensee*]-*o* *kenashita*.
 he-NOM John-NOM dislike teacher-ACC disparaged
 ‘He disparaged the teacher that John dislikes.’
- b. [_{DP}[*John_i-ga kiratteiru*] *sensee*]-*o_k* *kare_i-ga t_k* *kenashita*.
 John-NOM dislike teacher-ACC he-NOM disparaged
 ‘He disparaged the teacher that John dislikes.’
- c. ? *kare_i-ga t_k* *kenashita* [_{DP}[*John_i-ga kiratteiru*] *sensee*]-*o_k*.
 he-NOM disparaged John-NOM dislike teacher-ACC
 ‘He disparaged the teacher that John dislikes.’

The examples in (56-4b/c) show that the binding condition (C) looks at the dislocated phrase at the landing site. Under the late-merge analysis, the relative clause exists in the copy of the dislocated phrase only at the landing site. Given the identical syntactic behavior, left dislocation and right dislocation must be the same operation: scrambling.

Fourth, right dislocation interacts with variable binding. In the test, the pronominal bound variable *kare* ‘he’ must be sufficiently de-stressed as [kr].

(56-5)

- a. * *Mary-wa* *kare_i-no* *jyooshi-ni* *dono* *dansee_i-o-mo* *uttaeta*.
 Mary-TOP he-GEN boss-DAT which man-ACC-also complained
 ‘Mary complained of every man_i to his_i boss.’
- b. *dono* *dansee_i-o-mo_j* *Mary-wa* *kare_i-no* *jyooshi-ni* *t_j* *uttaeta*.
 which man-ACC-also Mary-TOP he-GEN boss-DAT complained
 ‘Mary complained of every man_i to his_i boss.’
- c. *Mary-wa* *kare_i-no* *jyooshi-ni* *t_j* *uttaeta* *dono* *dansee_i-o-mo_j*.
 Mary-TOP he-GEN boss-DAT complained which man-ACC-also
 ‘Mary complained of every man_i to his_i boss.’

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Both leftward scrambling and rightward scrambling provide the new operator binding the pronominal variable. Crucially, the right-dislocated QP serves as the binder (hence the commander) for the pronominal variable¹².

Fifth, rightward scrambling to the postverbal position ameliorates the WCO effect.

(57) WCO remedy

a. ?* soko_i-no shain-ga dono kaisha_i-o-mo hihanshita.
it-GEN employee-NOM which company-ACC-also criticized
'(Lit.) Its_i employee criticized every company_i.'

b. dono kaisha_i-o-mo_k soko_i-no shain-ga t_k hihanshita.
which company-ACC-also it-GEN employee-NOM criticized
'Its_i employee criticized every company_i.'

(Cf. Mahajan 1988, 1990, Webelhuth 1989, Saito 1992)

c. soko_i-no shain-ga t_k hihanshita dono kaisha_i-o-mo_k
it-GEN employee-NOM criticized which company-ACC-also
'Its_i employee criticized every company_i.'

In (57c), the postverbal universal object is scrambled rightward, which is an A-movement. The A-moved postverbal term serves as the binder of the pronominal variable without causing the WCO effect. The postverbal term commands a term to its left, at least in the LF¹³.

Sixth, rightward scrambling to the postverbal position licenses a parasitic gap.

(58) Right-scrambled post-V term licenses parasitic gap.

a. ?? John-wa [Mary-ga [PRO e_i yom-azuni] sono hon_i-o suteta to] omotteiru.
John-TOP Mary-NOM reading-without the book-ACC discard that thinks
'John thinks that Mary threw away the book without reading.'

- b. sono hon_i-o_k John-wa [Mary-ga [PRO e_i yom-azuni] t_k suteta to] omotteiru
 the book-ACC John-TOP Mary-NOM reading-without discard that thinks
 ‘John thinks that Mary threw away the book without reading.’
- c. John-wa [Mary-ga [PRO e_i yom-azuni] t_k suteta to] omotteiru sono hon_i-o_k.
 John-TOP Mary-NOM reading-without discard that thinks the book-ACC
 ‘John thinks that Mary threw away the book without reading.’

In (58c), the A-moved lower object licenses the parasitic gap. The postverbal term commands a term to its left, at least in the LF. These examples indicate that the rightward dislocation in Japanese is a syntactic operation that interacts with various syntactic conditions, and it is highly likely that the dislocated postverbal term is the highest asymmetrical commander within the minimal clause.

Kuroda (1980) also assumes that the postverbal term is within the same minimal sentence. Kuroda claims, however, that a sentence with the postverbal term needs special treatment because, unlike leftward dislocation, which can occur both in the matrix and the embedded clauses, rightward dislocation takes place only in the matrix clause.

- (59) a. [_{CF} [_{CF} [John-ga Mary-o nagutta]-no]-wa kinoo-da].
 John-NOM Mary-ACC beat-that-TOP yesterday-is
 ‘Speaking of the fact that John beat Mary, it happened yesterday.’
- b. * [_{CF} [_{CF} [John-ga nagutta Mary-o] -no]-wa kinoo-da].
 John-NOM beat Mary-ACC -that-TOP yesterday-is
 ‘Speaking of the fact that John beat Mary, it happened yesterday.’

According to Kuroda (1980), (59b) indicates that rightward dislocation does take place in the embedded clause, which is the standard assumption that Japanese right dislocation must target the highest root node (Cf. Cecchetto

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1996). However, I think that (59b) is not sufficiently idealized for the test because the rightward dislocation is always unacceptable with the formal nominalizer *no* even in the matrix clause.

(60-1) a. [_{CP} John-ga Mary-o nagutta-no-da].
John-NOM Mary-ACC beat-that-is
'John beat Mary (that's why).'

b. * [_{CP} John-ga nagutta Mary-o - no-da].
John-NOM beat Mary-ACC -that-is
'John beat Mary (that's why).'

The morpheme *no-da* is a modal auxiliary at the matrix level, which is used to explain the background of the event in question (Teramura 1984). With the nominalizer *no*, rightward dislocation is bad everywhere. In addition, (59b) becomes better if the object appears immediately after the topic marker.

(60-2) ? John-ga nagutta-no-wa Mary-o kinoo-da.
John-NOM beat-that-TOP Mary-ACC yesterday-is
'Speaking of the fact that John beat Mary, it happened yesterday.'

One cannot use these examples to indicate that rightward dislocation takes place only in the matrix clause. The following examples indicate that rightward dislocation does occur in the embedded environment.

(61-1) a. [_{CP} Bill-wa [_{CP} John-ga Mary-o nagutta-nodewanaika-to] utagatteirul].
Bill-TOP John-NOM Mary-ACC beat-wonder-that suspect
'Bill suspects that John beat Mary.'

- b. [_{CP} Bill-wa [_{CP} John-ga t_i nagutta-nodewanaika Mary-o_i-to] utagatteiru].
 Bill-TOP John-NOM beat-wonder Mary-ACC -that suspect
 ‘Bill suspects that John beat Mary.’

Note that the above examples do not include a verb of statement. Therefore, they do not include direct quotations that are comparable to the matrix clause. As in the example in (61-1b), rightward dislocation is possible in the embedded clause, contrary to Kuroda’s observation. Cecchetto (1999: 65) report the following example that seems consistent with Kuroda’s observation.

- (61-2) * Ken-wa okusan-ni [[[t_i yameru]-tte] kaisya-o_i] itta.
 Ken-TOP wife-to quit -that company-ACC said
 ‘Ken said to his wife that he would quit his company.’

However, if the embedded-clause object dislocated rightward between the lower TP and the CP, the example is ameliorated.

- (61-3) ? Ken-wa okusan-ni [[[t_i yameru] kaisya-o_i] -tte] itta.
 Ken-TOP wife-to quit company-ACC-that said
 ‘Ken said to his wife that he would quit his company.’

Japanese right dislocation can target the node lower than the root. Turkish PVC (post verbal constituent) also can appear in the embedded clause if the embedded clause is not nominal (Erguvanlı (1984:113), Takano (2007: 24-25)). Note that Japanese allows the embedded PVC in nominal clause, as in (60-2).

Furthermore, Japanese allows right dislocation to a non-root position between the verb and the auxiliary as in the following, which poses a serious problem for Cecchetto (1999), who constructs a model with the assump-

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tion that Japanese right dislocation must target the root node. SP stands for sentence particle.

- (61-4) a. ? John-wa tabeta, osushi-o, rashii-yo.
John-TOP ate sushi-ACC look-SP
'It looks like John ate sushi.'
- b. John-wa tabeta, osushi-o, toiukoto-rashii-yo.
John-TOP ate sushi-ACC fact-look-SP
'The fact is that it looks like John ate sushi.'

With pauses, the examples are relatively acceptable. Cecchetto (1999: 78, n. 37) mentions the difference between Hindi-Urdu and Japanese in that the former allows non-root right dislocation.

- (61-5) a. * Sita-ne dhyaan-se t_i dekh-aa thaa kis-ko? [Hindi-Urdu]
Sita-ERG care-with look-PAST.PERF was who-ACC
'Who had Sita looked at carefully?' (Bhatt and Dayal 2007: 290-291)
- b. Sita-ne dhyaan-se t_i dekh-aa kis-ko; thaa?
Sita-ERG care-with look-PAST.PERF who-ACC was
'Who had Sita looked at carefully?'
(Cf. Mahajan 1997b, Bhatt and Dayal 2007: 290-291)

Like Japanese, Hindi-Urdu disallows right dislocation of a wh-phrase as in (61-5a), but allows the wh-phrase dislocated between the verb and the auxiliary as in (61-5b). Interestingly, the Japanese counterparts show a similar effect.

- (61-6) a. * John-wa tabeta-no nani-o?
John-TOP ate-Q what-ACC
'What did John eat?'

- b. ?? John-wa tabeta, nani-o, toiukoto-rashii-no?
John-TOP ate what-ACC fact-look-Q
‘What is it look like John ate?’

In the ameliorated examples, the *wh*-phrase ceased to be the final term and it occupies the CP Spec in the eye of the LCA, a possibility. See note 4 for the relevant discussion.

Cecchetto (1999: 54-58) argues that Japanese right dislocation is a well-behaved syntactic phenomenon for the following reasons.

- (62) Reasons that Japanese right dislocation is syntactic phenomenon
- a. It obeys Subjacency Condition (island constraint).
 - b. It obeys the Proper Binding Condition (PBC).
 - c. It shows Relativized Minimality effect.

The argument supports our main claim. Cecchetto claims that “our understanding of optionality and directionality has been affected negatively by the fact that much attention has been devoted in the previous literature to leftward detachment (scrambling and topicalization), while very limited attention has been devoted to rightward detachment (ibid. 49).” I agree with Cecchetto in that we tend to stipulate that the study of permutation, or more generally, of symmetry, in the C_{HL} should focus on leftward dislocation phenomena. At the earlier stages of research on the symmetry issue, at least for Japanese, we had three research options.

- (63) Possible research options for the study on symmetry in C_{HL}
- a. To start with Haraguchi (1973), concentrating on rightward dislocation, as in Simon (1989).
 - b. To adopt Kuroda (1980), concentrating on leftward dislocation, as in Saito (1985).

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- c. To pursue a well-balanced study of both leftward and rightward dislocation.

The trend of academic politics has favored the second line, and ignored the other two. The linguists adopting the second position somehow believe without solid evidence that rightward dislocation forms a heterogeneous set (a lot of semantics and pragmatics), and that leftward dislocation constitutes a pure and good object for fruitful research (as pure syntax). I think that the second line has been influenced negatively by the research attitude within generative syntax that the main objects of study are operations such as *wh*-movement, topicalization, and passivization (leftward dislocations) rather than operations such as extraposition and heavy NP shift (rightward dislocation). I think that, unlike SVO languages, SOV languages (the majority (45%) of human natural language; SVO=35%, VSO =18%, etc.) constitute excellent phenotypes for symmetry studies of the system that Mother Nature has created, and that dislocation phenomena in general (whether leftward or rightward) are an excellent natural object that we can observe to identify the relevant natural laws.

Let us now reexamine each test. The Subjacency Condition prohibits a term from being extracted out of an island (complex structure) such as complex DPs and adjunct clauses¹⁴. A term cannot move out of a complex structure at a single swoop because such a move exceeds the limit of the memory capacity of the C_{HL} . Observe typical examples of the Subjacency Condition violation.

- (64) a. * Who_i did Mary criticize [_{DP} the person that John introduced t_i to Bill]?
b. * Who_i did Mary criticize John_j [after he_j introduced t_i to Susan]?

In (64a), the complex DP is too complex a structure for the wh-phrase to be extracted. In (65b), the adjunct clause is too complex a structure for the wh-phrase to be extracted. In a sense, the wh-phrase and the trace (the copy of the wh-phrase) are too distant to be connected. That is, the memory load is too costly for the system to connect the wh-phrase and the copy in these examples. Let us look at examples in Japanese¹⁵.

(65-1) NS extraction out of complex DP in Japanese

- a. Mary-wa [John-ga Bill-ni syookai-shita hito]-o hihan-shita.
 Mary-TOP John-NOM Bill-DAT introduction-did person-ACC criticism-did
 ‘Mary criticized the person that John introduced to Bill.’
- b. * Bill-ni_i Mary-wa [John-ga t_i syookai-shita hito]-o hihan-shita.
 Bill-DAT Mary-TOP John-NOM introduction-did person-ACC criticism-did
 ‘(Lit.) To Bill, Mary criticized the person that John introduced.’
- c. * Mary-wa [John-ga t_i syookai-shita hito]-o hihan-shita Bill-ni.
 Mary-TOP John-NOM introduction-did person-ACC criticism-did Bill-DAT
 ‘Mary criticized the person that John introduced, to Bill.’

Both in the leftward and rightward dislocation out of the island (complex DP), the outcomes are unacceptable. These examples indicate that Japanese scrambling obeys the Subjacency Condition (island constraint). Therefore, Japanese rightward scrambling is a syntactic phenomenon. The following paradigm shows more clearly that Japanese dislocation is a syntactic phenomenon.

(65-2)

- a. John-wa [shiranai kuni-kara kita hito-ni] deatta.
 John-TOP unknown country-from came person-DAT encountered
 ‘John encountered a person that came from an unknown country.’

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- b. * shiranai kuni-karai John-wa [ti kita hito-ni] deatta.
unknown country-from John-TOP came person-DAT encountered
'John encountered a person that came from an unknown country.'
- c. * John-wa [ti kita hito-ni] deatta shiranai kuni-karai.
John-TOP came person-DAT encountered unknown country-from
'John encountered a person that came from an unknown country.'

The conclusion contradicts Takano (2010), which argues that island effects are absent or weak in Japanese dislocation. But I think that Takano (2010) lacks sufficient idealization of data. Necessary idealizations are the following. First, move PP to make sure that it leaves a trace (not a pro) in the island (Saito 1987). Second, choose PP that does not associate with the matrix-clause verb. For example, (13b) in Takano (2010) becomes worse when the matrix verb *-o shitteiru* 'knows -' is replaced by *-ni haitta* 'entered -.' Third, avoid arbitrary addition of pauses and stresses. For example, (13a) in Takano (2010) becomes better if a pause is inserted after the dislocated object; such object becomes the major object (a species of topic) that leaves a pro. Fourth, avoid arbitrary omission of matrix arguments, which causes the dislocated term to be interpreted at the matrix level. For example, (11) (cited from Simon 1989, and used in Endo 1996, Abe 1999, Tanaka 2001) and (12) in Takano (2010) are worse because the matrix subject omission causes the embedded subject to behave as the matrix subject. Such interference of irrelevant factors must be avoided. Let us look at the NS extraction out of another island, i.e., an adjunct clause.

(65-3) NS extraction out of adjunct clause in Japanese

- a. Mary-wa [John-ga Susan-ni Bill-o syookai-shita-atode], John-o hihan-shita.
 Mary-TOP John-NOM Susan-DAT Bill-ACC introduction-did-after John-ACC criticism-did
 ‘Mary criticized John after he (John) introduced Bill to Susan.’
- b. ?? Bill-o_i Mary-wa [John-ga Susan-ni _{t_i} syookai-shita-atode], John-o hihan-shita.
 Bill-ACC Mary-TOP John-NOM Susan-DAT introduction-did-after John-ACC criticism-did
 ‘(Lit.) Bill_i, Mary criticized John after he (John) introduced _{t_i} to Susan.’
- c. * Mary-wa [John-ga Susan-ni _{t_i} syookai-shita-atode], John-o hihan-shita Bill-o_i.
 Mary-TOP John-NOM Susan-DAT introduction-did-after John-ACC criticism-did Bill-ACC
 ‘(Lit.) Mary criticized John after he (John) introduced _{t_i} to Susan, Bill_i.’

It is observed that the rightward dislocation is worse. Two possibilities follow. First, the right dislocation is a more well-behaved, syntactic phenomenon. Second, the adjunct clause is less complex as an island in that it tolerates leftward dislocation, which is costless. Whichever line we take, one thing is clear: the rightward dislocation (extraction) out of an island obeys the Subjacency Condition (island constraint) and is thus a syntactic phenomenon.

Takano (2007: 18) citing Kural (1997) reports that right dislocation in Turkish, an SOV language, obeys the island constraint.

(66-1) NS extraction out of complex DP in Turkish

- a. * Ayşe-ye_i ben [[Ahmet-in _{t_i} verdiği] kitab]₋₁ sevdim.
 Ayşe-Dat I Ahmet-Gen gave book-Acc liked
 ‘I liked the book that Ahmet gave to Ayşe.’
- b. * pro [[Ahmet-in _{t_i} verdiği] kitab]₋₁ sevdim Ayşe-ye_i.
 (I) Ahmet-Gen gave book-Acc liked Ayşe-Dat
 ‘I liked the book that Ahmet gave to Ayşe.’

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Both leftward scrambling (66-1a) and rightward scrambling (66-1b) exhibit island violation with respect to complex DP. Consider the NS extraction out of adjunct clause.

(66-2) NS extraction out of adjunct clause in Turkish

- a. * pasta- y_i ben [Ahmet t_i yerdiği için] sana kızdım.
Cake-Acc I Ahmet ate for you.Dat angered
'I got angry with you because Ahmet ate the cake.'
- b. * pro [Ahmet t_i yerdiği için] sana kızdım pasta- y_i .
(I) Ahmet ate for you.Dat angered Cake-Acc
'I got angry with you because Ahmet ate the cake.'

Both leftward scrambling (66-2a) and rightward scrambling (66-2b) exhibit island violation with respect to adjunct clause. Like Japanese, Turkish right dislocation shows island effect suggesting that it is a syntactic phenomenon¹⁶.

The second argument for the syntactic nature of Japanese right dislocation arises from the fact that it obeys the PBC. Cecchetto adopts the Parameterized Bare Phrase Structure (BPS) Theory (Saito and Fukui 1998), which has the following characteristics.

(67) Parameterized BPS Theory

- a. A merge forms an ordered pair set $\langle \alpha, \beta \rangle$. The parameter value of a language determines which one must be projected.
- b. When the parameter value is head initial, the leftward dislocation must take place only at the root, whereas the rightward dislocation can take place anywhere.
- c. When the parameter value is head final, the rightward dislocation must take place only at the root, whereas the leftward dislocation can take place anywhere.

The demonstration for (67b) is as follows. Suppose a DP adjoined to the left of the TP in an SVO language, and the DP projected. The entire tree is now a DP with the TP in its Spec. At the final step, the C selects the DP, in violation of a selectional restriction, which requires the C to select the TP, not the DP. Therefore, leftward adjunction cannot take place at the site that is not the root. Now suppose a DP adjoined to the left of the CP, and the DP projected. The entire tree is now a DP with the CP in its Spec. This is the final step. Nothing selects this root node. Selectional restrictions are vacuously satisfied. Therefore, leftward adjunction can take place only at the root in SVO languages. No such asymmetry exists for rightward dislocation; it can occur anywhere (Q.E.D.).

The demonstration for (67c) is as follows. Suppose a DP adjoined to the right of the TP in an SOV language, and the DP projected. The entire tree is now a DP with the TP in its Spec. At the final step, the C selects the DP, in violation of a selectional restriction, which requires the C to select the TP, not the DP. Therefore, rightward adjunction cannot take place at the site that is not the root. Now suppose a DP adjoined to the right of the CP, and the DP projected. The entire tree is now a DP with the CP in its Spec. This is the final step. Nothing selects this root node. Selectional restrictions are vacuously satisfied. Therefore, rightward adjunction can take place only at the root in SOV languages. No such asymmetry exists for rightward dislocation: it can occur anywhere (Q.E.D.).¹⁷

Given the Parameterized BPS Theory as above, Cecchetto cites Saito's (1985) examples to indicate that both leftward and rightward dislocation obey the PBC. Consider leftward dislocation. In the following examples, unlike Saito's, the matrix subject bears the topic marker to make sure that the matrix clause is a CP.

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(68)

- a. [CP [PP kono mura-ni]_j [CP [CP Bill-ga t_j sundeiru-to]_i [CP John-wa t_i omotteiru]]].
 this village-in Bill-NOM live-that John-TOP think
 ‘John thinks that Bill lives in this village.’
- b. * [CP [CP Bill-ga t_i sundeiru-to]_j [CP [PP kono mura-ni]_i [CP John-wa t_j omotteiru]]].
 Bill-NOM live-that this village-in John-TOP think
 ‘John thinks that Bill lives in this village.’

In (68a), the embedded clause is scrambled leftward, and then the embedded locative PP therein undergoes leftward scrambling. The PP is used to guarantee that the movement leaves a trace (Saito 1987). In (68b), the embedded locative PP is scrambled leftward, and then the embedded clause undergoes leftward scrambling. The example in (68b) is in violation of the PBC; the trace in the leftmost adjunct clause adjoined to the matrix CP at the final step fails to be commanded by the possible binder¹⁸. Cecchetto argues that the following rightward dislocation examples obey the PBC.

(69)

- a. [CP [CP [CP Bill-ga t_j sundeiru-to]_i [CP John-wa t_i omotteiru]] [PP kono mura-ni]_j].
 Bill-NOM live-that John-TOPthink this village-in
 ‘John thinks that Bill lives in this village.’
- b. * [CP [CP [PP kono mura-ni]_i [CP John-wa t_j omotteiru]] [CP Bill-ga t_i sundeiru to]_j].
 this village-in John-TOP think Bill-NOM live-that
 ‘John thinks that Bill lives in this village.’

In (69a), the rightward dislocation targets the root. The postverbal PP is the highest asymmetrical commander. The PBC is respected. In (69b), the postverbal CP is the highest asymmetrical commander. The trace inside the CP fails to be bound by the binder (PP) and thus the PBC viola-

tion¹⁹. Cecchetto also refers to multiple scrambling.

- (70) [_{CP} [_{CP} [_{CP} John-wa t_j omotteiru] [_{PP} kono mura-ni]_i] [_{CP} Bill-ga t_i sundeiru-to]_j].
 John-TOP think this village-in Bill-NOM live-that
 ‘John thinks that Bill lives in this village.’

Suppose that the locative PP first undergoes rightward scrambling and then the embedded clause CP. Then, the PBC incorrectly predicts that the example should be ruled out. Cecchetto argues that the above structure is incorrect and that in the correct structure, the embedded clause CP first undergoes rightward scrambling, and then the locative PP undergoes leftward scrambling within the CP, as in the following.

- (71) [_{CP} [_{CP} John-wa t_i omotteiru] [_{CP} [_{PP} kono mura-ni]_j] [_{CP} Bill-ga t_j sundeiru-to]_i].
 John-TOP think this village-in Bill-NOM live-that
 ‘John thinks that Bill lives in this village.’

The locative PP commands the trace in the embedded clause CP. Hence the example obeys the PBC. To support this analysis, Cecchetto refers to Jun Abe’s observation that the example is unacceptable when a pause separates the two adjuncts. In the correct structure, the pause does not separate the PP and the CP. I agree with Abe that the example is unacceptable when a pause separates the two adjuncts. However, the example becomes acceptable when two pauses are inserted, one between the matrix CP and the locative PP, and the other between the locative PP and the embedded CP. Why can the analysis ignore the first pause? Why must clause-internal leftward scrambling take place? I will argue later that the acceptability is accounted for with the successive rightward scrambling structure, which is simpler and natural, if we attribute the acceptability

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to the fact that, unlike multiple leftward scrambling, multiple rightward scrambling disobeys the Minimality Condition on Reconstruction (MCR, Kuno 2006) because of the distinct types of commands that the system chooses for leftward and rightward scrambling (caused by the difference in cost in movement operation as proposed in Fukui's (1993) Parameter Value Preservation measure).

Cecchetto argues that Japanese rightward dislocation shows a Relativized Minimality (RM) effect. Cecchetto points out the following parallelism between English and Japanese. The examples are adapted from Cecchetto (1999: 57).

- (72) a. How_i do you think she fixed the car t_i?
b. * How_i don't you think she fixed the car t_i?

In (72b), the RM dictates that the matrix C must attract a phonetically null operator Neg-Op in the Spec of the matrix NegP because the Neg-Op is closer to matrix C. However, the C has attracted the adjunct wh-phrase that is not closest to the C, which is a violation of the RM. Consider these Japanese examples.

(73)

- a. Mary-wa [t_i John-o party-ni yob-ana-i-to] omotteiru daremo.
Mary-TOP John-ACC party-to invite-not-PRES-that think no one
'Mary thinks that no one will invite John to the party.'
- b. ?* Mary-wa [t_i John-o party-ni yob-ana-i-kadooka] shiritagatteiru daremo.
Mary-TOP John-ACC party-to invite-not-PRES-whether wonder no one
'Mary wonders whether no one will invite John to the party.'

In (73b), the RM dictates that the matrix C must attract a phonetically

null operator *Whether-Op* in the Spec of the matrix CP because the *Whether-Op* is closer to the matrix C. However, the C has attracted the negative polarity item (NPI)-phrase that is not closest to the C, which is a violation of the RM. The fact that Japanese rightward dislocation shows the RM effect indicates that the phenomenon is syntactic in nature.

Now, let us ask a more specific question. Is the postverbal term within the minimal simplex clause or within the second independent clause? There is evidence indicating that the postverbal term exists within the minimal simplex clause. First, look at the following examples in which the NPI scrambles rightward to the postverbal position and is reconstructed in the LF (so that the NEG commands the NPI).

- (74) a. John-wa t_i tabe-na-katta nanimo_i. [na.ni.mo] = [LLL]
 John-TOP eat-NEG-PAST anything
 ‘John didn’t eat anything.’
- b. John-wa t_i tabe-na-katta osushi-shika_i. [shi.ka] = [LL]
 John-TOP eat-NEG-PAST sushi-NPI
 ‘John didn’t eat anything but sushi.’

The following examples show that a long-distance reconstruction exists.

- (75) a. [John-wa [Mary-ga t_i tabe-nakat-ta to] itta] nanimo_i
 John-TOP Mary-NOM eat-NEG-PAST said anything
 ‘John said that Mary didn’t eat anything.’
- b. [John-wa [Mary-ga t_i tabenakatta to] itta] osushi-shika_i
 John-TOP Mary-NOM eat-NEG-PAST said sushi-NPI
 ‘John said that Mary didn’t eat anything but sushi.’

Maruyama (1999: 50-52) offers more examples of this phenome-

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non. Maruyama argues that the NPI disobeys the clausemate condition, which requires the NPI and the NEG to be in the same simple minimal clause as in the following. The example is adapted from Maruyama (1999: 51).

- (76) John-wa [PRO sono hon-shika yonda to] iw-ana-katta.
John-NOM the book-NPI read that say-NEG-PAST
'John said that he had read nothing but the book.'

My observation is that the example is acceptable if the embedded-clause object is interpreted in the matrix-clause. The correct structure is the following.

- (77) John-wa sono hon_i-shika [PRO pro_i yonda to] iw-ana-katta.
John-NOM the book-NPI read that say-NEG-PAST
'John said that he had read nothing but the book.'

The NPI-phrase behaves as the second topic. If that is the case, the NPI does obey the clausemate condition. It follows that the sentence with the postverbal NPI has the following structure.

- (78) John-wa [PRO pro_i yonda to] iw-ana-katta sono hon_i-shika
John-NOM read that say-NEG-PAST the book-NPI
'John said that he had read nothing but the book.'

If so, the postverbal term exists within the minimal simplex clause. Crucially, the postverbal term does not exist in the second clause. Maruyama argues that the example becomes bad when the complement clause is scrambled rightward.

- (79) * John-wa t_i iw-ana-katta [PRO sono hon-shika yonda to]_i
 John-NOM say-NEG-PAST the book-NPI read that
 ‘John said that he had read nothing but the book.’

The example indicates that the postverbal clausal complement becomes an island for the NPI reconstruction. However, if pauses exist before and after the NPI-phrase, the sentence is ameliorated.

- (80) John-wa iw-ana-katta, sono hon-shika, yonda to.
 John-NOM say-NEG-PAST the book-NPI read that
 ‘John said that he had read nothing but the book.’

In this example, the embedded-clause object is scrambled rightward, followed by the scrambling of the embedded verb. The structure is the following.

- (81) [[[John-wa t_i [_{CP} pro_i t_j] iw-ana-katta] [sono hon-shika]_i] [yonda to]_i]
 John-NOM say-NEG-PAST the book-NPI read that
 ‘John said that he had read nothing but the book.’

The NPI-phrase can reconstruct because there is no island. This, in turn, indicates that the postverbal term is contained within the minimal simplex clause.

In summary, the above examples indicate that a postverbal term in SOV languages is calculated as the highest commander scrambled rightward within the minimal simplex clause, at least in the LF (covert syntax after spell-out), and possibly in the PF. If so, the LCA correctly predicts that a wh/focus phrase cannot appear in the postverbal position in SOV languages. That is, the LCA requires the postverbal asymmetrical commander to be pronounced at the beginning of the sentence, which is not

phonetically realized, in violation of the LCA. However, a non-wh/focus phrase can appear in the postverbal position in these languages, and the postverbal phrase behaves as a binder (hence, commander) for LF computation. Why does the LCA fail to rule out these examples? This is the Bayer’s paradox, or the LCA puzzle that we have to solve.

3.1.3. A solution

As [WH]-agreement (checking, valuation, and deletion of relevant formal features), [FOC]-agreement takes place in the narrow (overt) syntax (NS) as well as in the covert (LF). [FOC] here indicates identification-focus (FOC^{ID}), not information-focus (FOC^{INFO}), in the sense of Kiss (1998). FOC^{ID} includes terms with quantificational forces such as wh-phrases and contrastive topics, and bears heavier stress. FOC^{INFO} lacks quantificational forces and bears lighter stress. See Karimi (1999: 5) for relevant discussion. In the following example, [FOC]-agreement takes place in the LF.

- (82) John-wa nani-o tabe-ta-no?
 John-TOP what-ACC eat-PAST-Q
 ‘What did John eat?’

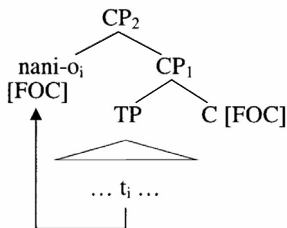
The LF-agreement does not interact with the PF measure (the LCA), and thus, does not affect the linear order permutation (i.e., the basic word order is preserved).

The [FOC]-agreement in the NS on the other hand affects the LCA calculation in the PF. The presence of agreement forces the system to choose the exclusion-type disconnection (level (a), the least disconnected) for command calculation (for the LCA purpose in the PF). A relevant example showing the preceding situation is the following.

- (83) nani-o_i John-wa t_i tabe-ta-no?
 what-ACC John-TOP eat-PAST-Q
 ‘What did John eat?’

The relevant structure is the following.

- (84) Scrambling of wh-phrase to sentence-initial position

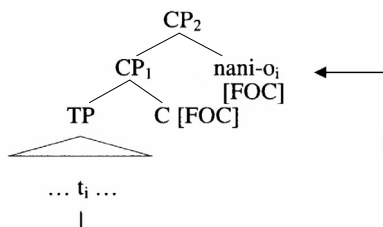


The wh-phrase and the C agree. The presence of agreement forces the system to choose the least disconnected level (a). The wh-phrase excludes the two-segment category [CP₂, CP₁] and everything that [CP₂, CP₁] dominates. Therefore, the wh-phrase asymmetrically commands every term in the CP. The LCA requires that the wh-phrase be pronounced at the beginning of the sentence, which occurs in this example. The LCA is satisfied. Let us look at a crucial example.

- (85) * John-wa t_i tabe-ta-no nani-o_i?
 John-TOP eat-PAST-Q what-ACC
 ‘What did John eat?’

The relevant example is the following.

(86) Scrambling of wh-phrase to sentence-final position



The wh-phrase and the C agree. The presence of agreement forces the system to choose the least disconnected level (a). The wh-phrase excludes the two-segment category $[CP_2, CP_1]$ and everything that $[CP_2, CP_1]$ dominates²⁰. Therefore, the wh-phrase asymmetrically commands every term in the CP. The LCA requires that the wh-phrase be pronounced at the beginning of the sentence, which does not occur in this example. Therefore, the example is excluded as an LCA violation at PF. The postverbal exclamatory-wh-phrase is excluded in the same way.

Takano (2010: 9) proposes that C bearing $[-F]$ (a counterpart of a focus feature) attracts a constituent bearing $[-F]$. Takano's analysis becomes compatible with my analysis if we assume that $[-F]$ is FOC^{INFO} , and that FOC^{INFO} does not establish agreement.

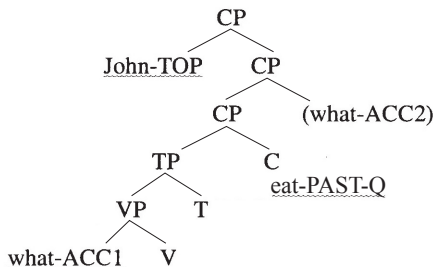
It is predicted that the example would be acceptable if the postverbal wh-phrase fails to agree with the C. The prediction is borne out, as demonstrated by the following acceptable examples²¹.

- (87) a. John-wa t_i tabeta-no nani-o?
 John-TOP ate-Q what-ACC
 'Did John eat that thing (whatchamacallit)?'

- b. John-wa nani-o tabe-ta-no nani-o?
 John-TOP what-ACC eat-PAST-Q what-ACC
 ‘What did John eat?’
- c. John-wa [nan-to sugoi e-o] kaita-n-daroo [nan-to sugoi e-o] !
 John-TOP stunning picture-ACC drew-fact-may what-that stunning picture-ACC
 ‘What a stunning picture John drew!’

In these examples, the sentence-final wh-phrase is, in fact, the original copy within the VP. Other terms have undergone multiple leftward scrambling to higher positions. The relevant structure of (87a) is the following.

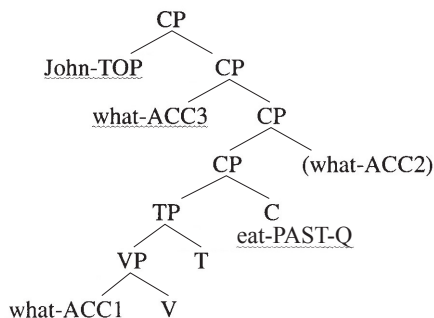
(88)



The pronounced terms are wave underlined, and the parentheses indicate that the term exists but is not pronounced (being invisible to the LCA). There are two copies of the same wh-phrase. *What-ACC1* is externally merged. At this stage, the uF [ACC] is checked and erased, and the term is assigned a θ by V. Crucially, when the C appears, the C [+FOC] does not agree with the pronominal wh-phrase. As a result, *what-ACC2* fails to become a commander and is thereby invisible to the LCA. The LCA can see *what-ACC1*, but not *what-ACC2*. The relevant structure of (87b) is the following.

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(89)



There are three copies of the same wh-phrase. *What-ACC1* is externally merged. At this stage, uF [ACC] is checked and erased, and the term is assigned θ by V. Crucially, when C appears, C [+FOC] chooses to agree with *what-ACC1*, which C will attract at LF. Therefore, when *what-ACC2* is internally merged (by rightward scrambling), C and *what-ACC2* do not agree. As a result, *what-ACC2* fails to become a commander and is thereby invisible to LCA. *What-ACC3* is the copy of *what-ACC2*, which is internally merged (scrambled leftward) at a later stage. *What-ACC1* undergoes successive cyclic scrambling. LCA can see *what-ACC1* and *what-ACC3*, but not *what-ACC2*. The example (87c) is accounted for in the same way. If *what-ACC1* undergoes further leftward scrambling, the following order is produced.

- (90) nani-o John-wa t tabe-ta-no nani-o?
 what-ACC John-TOP eat-PAST-Q what-ACC
 ‘What did John eat?’

If all LCA-visible wh-phrases are pronounced, the following order is pro-

duced.

- (91) nani-o John-wa nani-o tabe-ta-no nani-o?
 what-ACC John-TOP what-ACC eat-PAST-Q what-ACC
 ‘What did John eat?’

This example is important in that it relates to the tension between the computational efficiency-based hypothesis that what is pronounced is the highest copy, allegedly required by computational efficiency (pronouncing one copy is more economical than pronouncing two or more copies), as shown by ungrammatical examples as “* What did John eat what?”, and the communicative efficiency-based hypothesis that pronouncing all copies facilitates communicative usability (cf. Chomsky 2005).

A more difficult problem is that the issue involves the additional-wh saving effect, in which additions of wh ameliorate the acceptability.

- (92-1) a. * Mary-ni CD-o ageta-no dare-ga?
 Mary-DAT CD-ACC gave-Q who-NOM
 ‘Who gave the CD to Mary?’
 b. ? dare-ni nani-o ageta-no dare-ga?
 Who-DAT what-ACC gave-Q who-NOM
 ‘Who gave what to whom?’

The additional wh-phrases remedy the acceptability in (92-1b). Watanabe (1992) reported the additional-wh effect as in the following.

- (92-2) a. ?? John-wa [Mary-ga nani-o katta kadooka] Tom-ni tazuneta-no?
 John-TOP Mary-NOM what-ACC bought whether Tom-DAT asked-Q
 ‘What is the thing x such that John asked Tom whether Mary bought x?’

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- b. John-wa [Mary-ga nani-o katta kadooka] dare-ni tazuneta-no?
John-TOP Mary-NOM what-ACC bought whether who-DAT asked-Q
'Who is the person y and what is the thing x such that John
asked y whether Mary bought x?'

In (92-2a), a phonetically null wh-operator inside the wh-phrase located within the wh-island undergoes overt wh-movement to the matrix CP Spec and the Subjacency Condition is violated. Thus Watanabe argued that Japanese has overt wh-movement as in English. In (92-2b), the additional -wh in the matrix clause saves the sentence. The matrix wh undergoes wh-movement in the NS without an island violation. In the LF, the wh-phrase inside wh-island undergoes wh-movement. Given that LF movement is immune to the island effect, no island violation is invoked²².

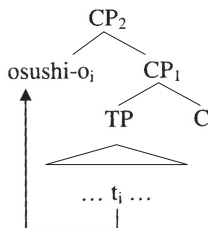
Capitalizing on Watanabe (1992), a possible solution to the (92-1) problem would be the following. In (92-1a), the wh-phrase agrees with the [+WH] C and becomes the highest commander by the disconnection-level (a) command. The example violates the LCA requiring the wh-commander be pronounced in the first position. In (92-1b), the indirect wh-object or (and) the direct wh-object is (are) in the agreeing CP Spec in the NS. The wh-subject adjoins to the CP in the NS without agreement. Consequently, the wh-subject commands nothing by the disconnection-level (c) command. As a last resort, the LCA searches the lower copy of the wh-subject located within the TP. The LCA has no problem pronouncing first the indirect and direct object wh-phrases in the CP Spec, second the raised predicate in the C, and third the wh-subject in the TP Spec (or lower).

Let us consider leftward scrambling of a non-wh-phrase.

- (93-1) *osushi-o_i John-wa t_i tabe-ta-no?*
sushi-ACC John-TOP eat-PAST-Q
 'Did John eat sushi?'

The relevant structure is the following.

- (93-2) Scrambling of non-wh-phrase to sentence-initial position



The wh-phrase and the C do not agree. The lack of agreement forces the system to choose the medially disconnected level (b). Why does the system choose the medially disconnected level (b), not the most disconnected level (c)? The cost of movement as considered by Fukui (1993) is relevant. Fukui (1993: 400) proposed the parameter value preservation (PVP) measure.

- (94) The parameter value preservation (PVP) measure

A grammatical operation (Move α , in particular) that creates a structure that is inconsistent with the value of a given parameter in a language is costly in the language, whereas one that produces a structure consistent with the parameter value is costless.

According to the PVP measure, in a language with the head-parameter set as head final (OV-type), the leftward movement is cheaper than the rightward movement. The rightward movement is more costly because it

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destroys the basic head-final property. More specifically, the rightward movement, but not the leftward one, is feature driven (more costly) in SOV languages. On the other hand, in a language with the head-parameter set as head-initial (VO-type), the leftward movement is more expensive than the rightward one. The leftward movement is more costly because it destroys the basic head-initial property. More specifically, the leftward movement, but not the rightward one, is feature driven (more costly). In an SOV language, the leftward movement is costless. The low cost of movement forces the system to choose the medially disconnected level (b) but not (c). The non-wh-phrase asymmetrically commands CP1. The LCA requires that the non-wh-phrase be pronounced at the beginning of the sentence, which occurs in this example. The LCA is respected.

An alternative analysis exists in which two distinct formal (structural) features are postulated, i.e., a formal feature that triggers scrambling (FF (SCR)), and a formal feature that triggers focus agreement (FF (FOC)). That is, scrambling is a feature-driven movement that involves agreement.

For an argument for FF (SCR), see Miyagawa 1997, Grewendorf and Sabel 1999, Holmberg 2000, Kitahara 2002, Kawamura 2004, Sabel (2001, 2005)²³. If we adopt this line of argument for rightward scrambling, the PF system chooses the disconnection level according to the number of feature checking (agreement) operations. That is, for example, when the postverbal term is a wh-phrase, the dislocation operation involves two instances of agreement: FF (SCR) and FF (FOC) agree with the C. When the postverbal term is a non-wh-phrase, one instance of agreement occurs: FF (SCR) agrees with the C. An alternative is to assume that the PF system is sensitive to the number of agreements (feature-checking). When there is one instance of feature-checking, the PF chooses the most disconnected level (c). When there are two instances of feature-checking, the

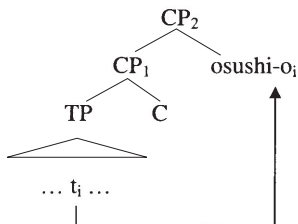
PF chooses the least disconnected level (a). I leave the choice between the two analyses for future research.

Let us next consider rightward scrambling of a non-wh-phrase.

- (95) John-wa t_i tabe-ta-no osushi-o_i?
 John-TOP eat-PAST-Q sushi-ACC
 ‘Did John eat sushi?’

The relevant structure is the following.

- (96) Scrambling of a non-wh-phrase to the sentence-final position



The non-wh-phrase and the C do not agree. Lack of agreement forces the system to choose the most disconnected level (c). The system chooses disconnection level (c), not (b), because the movement is rightward, which is more expensive. The scrambled phrase commands nothing and is fully disconnected from the rest of the sentence. The PF and the LCA cannot see the scrambled phrase. As a last resort, the PF orders the original copy of the phrase, which exists at the lowest position. Thus, the scrambled non-wh phrase at the sentence-final position is, in fact, the original copy of the phrase. The LCA requires that the non-wh-phrase be pronounced at the end of the sentence, which occurs in this example. Therefore, the

example satisfies the LCA at the PF.

Importantly, unlike the PF, the LF sees the scrambled term as the highest commander (PF-LF asymmetry). This is why the scrambled postverbal term serves as the highest commander for the purpose of LF calculations such as scope, binding, WCO, and parasitic gap licensing. The LF is lazier with respect to the types of command; it always chooses the medially disconnected level (b), by which the scrambled term becomes a commander. The PF in contrast is pickier with respect to the types of command in that the PF measure (the LCA) sees the term that establishes the agreement relationship.

3.1.4. Evaluation of previous analyses on word order

The facts have been known that (a) a *wh*/focus-phrase cannot scramble rightward to the postverbal position, (b) a non-*wh*/focus-phrase can scramble rightward to the postverbal position, (c) the postverbal term is the highest asymmetrical commander, (d) the LCA correctly rules out cases in (a), and (e) the LCA incorrectly rules out cases in (b) (Bayer's paradox, or LCA puzzle). This phenomenon resists previous analyses on word order. Let us review several important works on the relationship between structure and order. They cannot solve Bayer's paradox (LCA puzzle) as they stand. First, let us consider the PVP measure (Fukui 1993, Saito & Fukui 1998). The PVP measure states that a parameter-value-destroying movement is costly and needs motivation. The relevant PV (parameter value) for Japanese is head-final, and rightward movement is costly. The analysis correctly predicts that a focused phrase cannot scramble rightward to the postverbal position, provided that such rightward movement lacks motivation in Japanese. However, it incorrectly predicts that a non-focused phrase cannot scramble rightward.

Second, consider dynamic agreement (Rizzi 1991, Bayer 1996: 285-287). The postverbal *wh*-phrase occupies the VP Spec on the wrong (illicit) side (on the right hand side (not left) in SOV languages). By dynamic agreement mechanism, Spec-Head agreement in SOV languages takes place only when Spec is occupied on the licit (left hand) side. Spec-head agreement fails and the VP becomes a barrier for LF movement of the *wh*-phrase. The *wh*-phrase fails to be licensed in the LF. However, the analysis fails to explain the fact that postverbal non-*wh* phrases become the highest commander.

Third, consider demerge (Takano 1996, 2003a, 2003b, Fukui & Takano 1998). The demerge-based linearization instructs as follows: start from the top, demerge XP, and place it earlier. The analysis correctly predicts that a CP-right-adjoined focused phrase cannot appear at the end; because it is the first XP that is demerged, it must be pronounced at the beginning of the sentence. However, it incorrectly predicts that a CP-right-adjoined non-focused phrase cannot appear at the end.

Fourth, consider derivational command (EGKK 1998: 32). Syntactically visible X derivationally commands syntactically visible Y (and the members) only when X and Y are concatenated. Concatenation creates sisters. Adjunction does not create sisters, and an adjunct cannot become a commander (hence syntactically invisible). Derivational command correctly predicts that a *wh*/focus-phrase cannot scramble rightward to the postverbal position (i.e., never enters into linearization), but incorrectly predicts that a term cannot scramble leftward or non-*wh*/focus cannot scramble rightward to the postverbal position.

Fifth, consider the cyclic linearization principle (Fox & Pesetsky 2003). It instructs as follows: avoid an ordering contradiction between vP and CP. That is, linear information at each phase must be preserved. Con-

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consider a bad example in which a focused DP adjoins to the right of the CP, yielding $\langle \dots, V, DP \rangle$ order at the CP-phase. To get a contradictory order between the CP and vP, we must assume that the DP must move higher than the V at the vP-phase. Consider a good example in which a non-focused DP adjoins to the right of the CP, yielding $\langle \dots, V, DP \rangle$ order at the CP-phase. To get a non-contradictory order between the CP and vP, we must assume that the V must move higher than the DP at the vP-phase. It is unclear why a focused DP raises higher than the V in the vP, whereas a non-focused DP remains lower than the V in the vP. Note that the analysis works if one assumes that a focused phrase raises to the edge of the vP.

Sixth, consider Q-particle movement (Ogawa 1976, Kishimoto 1998, Takahashi 2002, Hagstrom 2004). According to this analysis, a Q-particle in a wh-phrase moves to C to satisfy the relevant feature-checking requirement. Therefore, an additional wh-phrase movement is redundant, which is excluded as an economy principle violation. The analysis correctly predicts that a wh-phrase, unlike a non-wh-phrase, cannot adjoin to the right of the CP. However, the analysis incorrectly predicts that a wh-phrase cannot adjoin to the left of the CP.

Seventh, consider prosodic wh-domain analysis (Richards 2010). According to this analysis, an interrogative sentence is acceptable when the wh-phrase and the relevant C are prosodically close enough. A language allows a wh in situ when the wh and the C are contained in the simplest possible prosodic wh-domain. Otherwise, the wh-phrase must move to the C system as the last resort. In Japanese, the wh-phrase cannot appear in the postverbal position because the wh and the C to its left cannot create the simplest possible prosodic wh-domain. The analysis correctly predicts that prosody is relevant to the types of *nani* and their asym-

metrical distribution. However, the analysis incorrectly predicts that the exclamatory wh-phrase should be allowed to appear in the postverbal position because no wh-feature is involved²⁴.

The following summarizes the evaluation of previous analyses as to how well they account for the Bayer's paradox, or the LCA puzzle. ○ indicates that it is predicted, while × indicates it is unexpected.

(97) Evaluation of previous analyses on structure and word order

	Post-V term as highest commander	Leftward scrambling	Rightward scrambling of non-wh/focus	No rightward scrambling of wh/focus	No post-V exclamatory wh
PVP	○	○	×	○	○
Dynamic agreement	×	○	○	○	○
Demerge	×	○	×	○	○
Derivational command	×	×	×	○	○
Cyclic linearization	Unmotivated movement	Unmotivated movement	Unmotivated movement	Unmotivated movement	Unmotivated movement
Q-particle movement	×	×	○	○	×
Prosodic wh-domain	×	○	○	○	×

The PVP measure analysis and the dynamic agreement analysis compete in that they have four expected facts and one unexpected fact. The PVP measure cannot account for the acceptability of rightward scrambling of non-wh/focus phrases. Under the dynamic agreement analysis, the postverbal phrase (in SOV languages) is on the right hand (wrong) side Spec of the VP. This analysis encounters a serious problem in that it cannot

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predict the fact that the postverbal term is the highest asymmetrical commander. That is, the VP Spec is too low to become the highest. Furthermore, it seems ad hoc to assume that the right dislocation is a movement to the right hand side Spec of the VP. Next, the demerge analysis and the prosodic wh-domain analysis compete in that they have three expected facts and two unexpected ones. My solution capitalizes on the PVP measure and can explain all the related facts in a simpler and more natural way.

3.2. Problem 2

3.2.1. Scrambling asymmetry in complex (island) structure

The scrambling transformation affects island extractability both in the NS (Narrow Syntax: the process between lexicon and Spell-Out) and in the LF.

We have seen that Japanese scrambling like Turkish one shows island sensitivity. Consider scrambling out of a complex DP island.

(98)

- a. John-wa [[Mary-ga Bill-ni ageta] hon]-o suteta.
John-TOP Mary-NOM Bill-DAT gave book-ACC discarded
'John discarded the book that Mary gave to Bill.'
- b. * Bill-ni_i John-wa [[Mary-ga t_i ageta] hon]-o suteta.
Bill-DAT John-TOP Mary-NOM gave book-ACC discarded
'John discarded the book that Mary gave to Bill.'
- c. * John-wa [[Mary-ga t_i ageta] hon]-o suteta Bill-ni_i.
John-TOP Mary-NOM gave book-ACC discarded Bill-DAT
'John discarded the book that Mary gave to Bill.'

Both leftward and rightward scrambling is sensitive to the complex DP island. I argue against Takano (2010: 6), which claims that Japanese postposing lacks island effects.

Maruyama (1999: 47) observes that, unlike leftward scrambling, the right dislocation obeys the Subjacency Condition. Examples are adapted from Maruyama (1999: 47).

- (99) a. Mary-wa [John-o mikaketa-atode] Susan-ni denwa-sita.
 Mary-TOP John-ACC happened to see-after Susan-DAT phone-did
 ‘Mary was calling Susan after she happened to see John.’
- b. John-o_i [Mary-wa [_{t_i} mikaketa-atode] Susan-ni denwa-sita].
 John-ACC Mary-TOP happened to see-after Susan-DAT phone-did
 ‘Mary was calling Susan after she happened to see John.’
- c. * [Mary-wa [_{t_i} mikaketa-atode] Susan-ni denwa-sita] John-o_i.
 Mary-TOP happened to see-after Susan-DAT phone-did John-ACC
 ‘Mary was calling Susan after she happened to see John.’

In (99b), the embedded-clause object can scramble leftward out of the adjunct clause, whereas in (99c), it cannot scramble rightward.

However, I do not think (99b) is sufficiently idealized; it is possible that the embedded-clause object adjoins to the embedded clause that contains the topic phrase inside. If the matrix-clause indirect object appears before the adjunct clause, both leftward and rightward scrambling become sensitive to island.

- (100) a. Mary-wa Susan-ni [John-o mikaketa-atode] denwa-sita.
 Mary-TOP Susan-DAT John-ACC happened to see-after phone-did
 ‘Mary was calling Susan after she happened to see John.’

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- b. * John-o_i [Mary-wa Susan-ni [t_i mikaketa-atode] denwa-sita].
 John-ACC Mary-TOP Susan-DAT happened to see-after phone-did
 ‘Mary was calling Susan after she happened to see John.’
- c. * [Mary-wa Susan-ni [t_i mikaketa-atode] denwa-sita] John-o_i.
 Mary-TOP Susan-DAT happened to see-after phone-did John-ACC
 ‘Mary was calling Susan after she happened to see John.’

Both leftward and rightward scrambling shows island effect²⁵. An NS operation as scrambling is sensitive to island. Crucially, leftward and rightward scrambling is symmetrical in that they both show island sensitivity. Interestingly, antisymmetry appears when there is an interaction between the NS/LF wh-movement and the leftward/rightward scrambling of a wh-containing complex constituent. Let us first consider non-interrogative clausal complements (a non-island, with the C phonetically realized as *to* ‘that’)²⁶. The pitch pattern of the pronominal *nani* (translated as ‘that thing’) is [LH], and the wh-*nani* (translated as ‘what’) [HL].

- (101) S O V [Japanese]
 Mary-wa [_{CP} John-ga nani-o tabeta to] itta-no?
 Mary-TOP John-NOM what-ACC ate that said-Q
 ‘Did Mary say that John ate that thing?’
 NOT ‘Did Mary say what John ate?’
 ‘What did Mary say John ate?’

The example above indicates that the wh-phrase obligatorily undergoes LF movement after Spell-Out. Let us consider NS movement. The embedded wh-phrase can undergo long-distance leftward scrambling in which the meanings above are preserved. The wh-phrase can undergo NS movement before Spell-Out.

- (102) nani-o_i Mary-wa [_{CP} John-ga t_i tabeta to] itta-no?
 what-ACC Mary-TOP John-NOM ate that said-Q
 ‘Did Mary say that John ate that thing?’
 NOT ‘Did Mary say what John ate?’
 ‘What did Mary say John ate?’

Let us scramble the clausal complement leftward to the sentence-initial position.

- (103) [_{CP} John-ga nani-o tabeta to]_i Mary-wa t_i itta-no?
 John-NOM what-ACC ate that Mary-TOP said-Q
 ‘Did Mary say that John ate that thing?’
 NOT ‘Did Mary say what John ate?’
 ‘What did Mary say John ate?’

The wh-phrase obligatorily undergoes wh-movement in the LF. The embedded wh-phrase can undergo long-distance scrambling in the NS in which the meaning above is preserved.

- (104) ? nani-o_i denwa-de [_{CP} John-ga t_i tabeta to]_i Mary-wa t_i itta-no?
 what-ACC phone-by John-NOM ate that Mary-TOP said-Q
 ‘Did Mary said on the phone that John ate that thing?’
 NOT ‘Did Mary say on the phone what John ate?’
 ‘What did Mary say on the phone John ate?’

Now, an asymmetry appears when we scramble the clausal complement rightward to the postverbal position. Crucially, the embedded wh-phrase cannot take the matrix scope, indicating that the clausal complement moved to the postverbal position is an island for LF-movement (LF island effect).

Flexible Command:

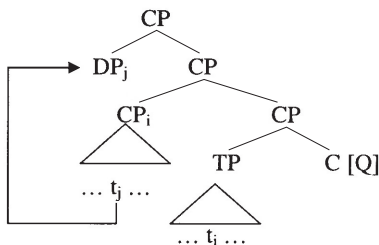
- (105) Mary-wa t_i itta-no [_{CP} John-ga nani-o tabeta to]_i?
Mary-TOP said-Q John-NOM what-ACC ate that
'Did Mary say that John ate that thing?'
'Did Mary say what John ate?'
NOT 'What did Mary say John ate?'

What is interesting is that the example above is acceptable with the narrow-scope reading of the interrogative *wh*-phrase, meaning 'Did Mary say what John ate?', which is absent when the clausal complement is scrambled leftward to the sentence-initial position. Furthermore, the postverbal clausal complement becomes an island not only for LF movement but also for NS movement²⁷.

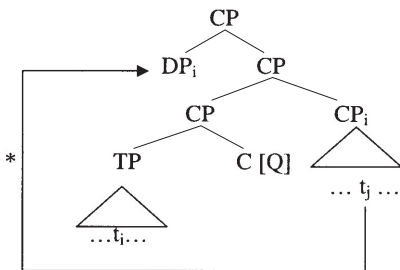
- (106) * nani-o_j [_{CP} Mary-wa t_i itta-no [_{CP} John-ga t_j tabeta to]_i]?
what-ACC Mary-TOP said-Q John-NOM ate that
NOT 'Did Mary say that John ate that thing?'
NOT 'Did Mary say what John ate?'
NOT 'What did Mary say John ate?'

The example above shows that the postverbal clausal complement is an island for NS-movement (NS island effect). As the last translation indicates, the example is unacceptable even with the pronominal *nani* 'that thing,' suggesting that the scrambling in general shows the island effect in postverbal environments²⁸. The following summarizes the island asymmetry.

(107) NS/LF movement out of left-dislocated non-interrogative clausal complement (No island effect is detected.)



(108) NS/LF movement out of right-dislocated non-interrogative clausal complement (Island effect is detected.)



An island effect is observed in the NS and the LF in the postverbal environments. A similar LF island effect is detected in postverbal environments in other SOV languages²⁹.

(109) a. ora t_i Suneche [_{CP} ke aSbe_i] ? [Bengali]
 they heard who come-future
 ‘Have they heard who will come?’
 NOT ‘Who have they heard will come?’ (Bayer 1996: 272-273)

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- b. Raam-ne kahaa [_{CP} ki kOn aa-yaa] hE? [Hindi-Urdu]
Ram-ERG said that who come-past.perf is
'Did Ram say who had come?'
NOT 'Who did Ram say has come?' (Mahajan 1990: 128)

To summarize, the clausal complement in the base position or in the sentence-initial position does not constitute an island for movement in the NS and the LF. In contrast, the clausal complement in the postverbal position constitutes an island for movement in the NS and the LF. The scrambling transformation is antisymmetrical. How can we explain the asymmetry?

3.2.2. A solution

Let us repeat the crucial contrast.

- (110) a. [_{CP} John-ga nani-o tabeta to]_i Mary-wa t_i itta-no?
John-NOM what-ACC ate that Mary-TOP said-Q
'Did Mary say that John ate that thing?'
NOT 'Did Mary say what John ate?'
'What did Mary say John ate?'
b. Mary-wa t_i itta-no [_{CP} John-ga nani-o tabeta to]_i?
Mary-TOP said-Q John-NOM what-ACC ate that
'Did Mary say that John ate that thing?'
'Did Mary say what John ate?'
NOT 'What did Mary say John ate?'

The *wh*-phrase in (110a) can have the wide scope reading, but not the narrow scope reading. The situation is reversed in (110b): the *wh*-phrase cannot have the wide-scope reading, but it can have the narrow-scope reading. The disappearance of wide-scope reading of *wh* is also observed when

a complex DP is scrambled rightward to the postverbal position.

- (111) a. [nani-o tabeta hito-o]_i Mary-wa t_i hometa-no?
 what-ACC ate person-ACC Mary-TOP praised-Q
 ‘Did Mary praise the person who ate that thing?’ ([naNI])
 ‘What is x, a thing, such that Mary praised the person who ate
 x?’ ([NA_ni])
- b. Mary-wa t_i hometa-no [nani-o tabeta hito-o]_i?
 Mary-TOP praised-Q what-ACC ate person-ACC
 ‘Did Mary praise the person who ate that thing?’ ([naNI])
 NOT ‘What is x, a thing, such that Mary praised the person who ate
 x?’ ([NA_ni])

Two questions arise at this point.

- (112) Why does the wide scope reading of wh disappear when the complex argument (clausal complement or complex DP) is scrambled rightward to the postverbal position?
- (113) Why does the narrow scope reading of wh become possible when the non-interrogative clausal complement is scrambled rightward to the postverbal position?

There are two possible solutions to the first question. The first solution maximizes the parallelism between the complex argument and the simplex argument. If this solution is correct, Nishigauchi (1986) is basically correct in that the entire complex argument containing wh behaves as a simplex wh-phrase. The lack of wide-scope reading of wh for wh-containing a complex argument follows from the impossibility of the postverbal interrogative wh-phrase, as in the following.

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- (114) * John-wa t_i tabeta-no nani-o_i?
John-TOP ate-Q what-ACC
'What did John eat?'

The wide-scope reading is impossible because the derivation fails to converge at the PF. More particularly, the LCA is violated (the actual word order contradicts with the order that the LCA demands) if the system forces the wide-scope reading of *wh*.

The second solution capitalizes on the interaction between island and the PVP measure. When the complex argument is scrambled leftward to the sentence-initial position, the PVP measure calculates that the operation is costless. On the other hand, when the complex argument is scrambled rightward to the postverbal position, the PVP measure evaluates it as costly. Island and the PVP measure interact in the following way.

(115) Island-PVP Interaction

A complex argument that has undergone costly movement becomes an island for extraction.

Thus, the lack of wide-scope reading of *wh* in (110b) and (111b) is caused by the island effect in the LF.

Let us consider the second question. Relevant examples are reproduced.

- (116) a. [_{CP} John-ga nani-o tabeta to]_i Mary-wa t_i itta-no?
John-NOM what-ACC ate that Mary-TOP said-Q
'Did Mary say that John ate that thing?'
NOT 'Did Mary say what John ate?'
'What did Mary say John ate?'

- b. Mary-wa _i itta-no [_{CP} John-ga nani-o tabeta to]_i?
 Mary-TOP said-Q John-NOM what-ACC ate that
 ‘Did Mary say that John ate that thing?’
 ‘Did Mary say what John ate?’
 NOT ‘What did Mary say John ate?’

As for the interrogative *wh*-reading, the long-distance *wh*-movement is obligatory in (116a), whereas it is prohibited in (116b). Descriptively, when the embedded C is [-WH], and the clausal complement does not constitute an island, the matrix C [+WH] must attract the *wh*-phrase in the LF enabling the wide-scope reading of *wh*. On the other hand, when the embedded C is [-WH] and the clausal complement forms an island, the system attempts as a last resort to identify the embedded C *to* as bearing [+WH] enabling the narrow-scope reading of *wh*. In fact, the C *to* bears [+WH] in the Kagoshima dialect in Japanese.

- (117) a. John-wa na-yu tabeta-to?
 John-TOP what-ACC ate-Q
 ‘What did John eat?’
- b. Mary-wa [_{CP} John-ga na-yu tabeta-chi/*to] itta-to?
 Mary-TOP John-NOM what-ACC ate-that said-Q
 ‘What did Mary say John ate?’

As in (117a), the C *to* is Q, bearing [+WH]. What is interesting is that the phonetic realization *to* is ruled out as the embedded C [-WH]. I propose that the embedded C *to* as Q guarantees the narrow-scope reading of the *wh* under consideration.

3.3. Problem 3

3.3.1. Reconstruction asymmetry

There is evidence indicating that scrambling can be semantically significant. More specifically, scrambling exhibits the anti-reconstruction effect (Cf. Takahashi 1993, Abe 1997). Let us consider the following example (Cf. Saito 1989).

(118)

Mary-wa [_{CP} John-ga tosyokan-kara dono hon-o karidashita ka] shiritagatteiru.
Mary-TOP John-NOM library-from which book-ACC checked.out Q want.to.know
'Mary wants to know which book John checked out from the library.'

The Q in the embedded clause licenses the wh-phrase in the embedded clause. What will happen if the embedded-clause wh-phrase undergoes long-distance scrambling to the sentence-initial position? The prediction is as follows. Assume that the relevant Q must command the relevant wh-phrase. If scrambling were semantically significant, the sentence would be ruled out; i.e., the scrambled wh-phrase stays in the matrix clause, and the embedded-clause Q fails to command the wh-phrase. If scrambling were semantically insignificant, the sentence would be ruled in; i.e., the scrambled wh-phrase reconstructs (returns) to the original position in the embedded clause and the embedded-clause Q would command the wh-phrase. As Saito (1989) has noted, leftward long-distance scrambling turns out to be semantically insignificant. A reconstruction effect appears, as in the following example.

(119)

? dono hon-o_i Mary-wa [_{CP} John-ga tosyokan-kara t_i karidashita ka] shiritagatteiru.
 which book-ACC Mary-TOP John-NOM library-from checked.out Q want.to.know
 ‘Mary wants to know which book John checked out from the library.’
 (Saito 1989)

The *wh*-phrase that has undergone leftward long-distance scrambling reconstructs to the original trace position. The lower *Q* commands the *wh*-phrase. What will happen if the lower *wh*-phrase undergoes rightward long-distance scrambling to the postverbal position? If scrambling is semantically insignificant, it is predicted that rightward long-distance scrambling is possible; i.e., the scrambled *wh*-phrase would reconstruct to the original position and the lower *Q* would command the *wh*-phrase. That prediction is not born out, as in the following example.

(120)

*Mary-wa [_{CP} John-ga tosyokan-kara t_i karidashita ka] shiritagatteiru dono hon-o_i
 Mary-TOP John-NOM library-from checked.out Q want.to.know which book-ACC
 ‘Mary wants to know which book John checked out from the library.’

This example is not acceptable. The simplest possible account is that the postverbal *wh*-phrase remains at the landing site, and therefore, the lower *Q* fails to command the *wh*-phrase. It follows that scrambling is semantically significant. The following questions arise. Why is leftward long-distance scrambling semantically insignificant, but rightward long-distance scrambling semantically significant? Why does the system show such asymmetry?

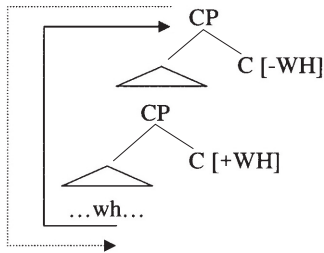
3.3.2. A solution

The PVP measure gives us a simple explanation. According to the PVP

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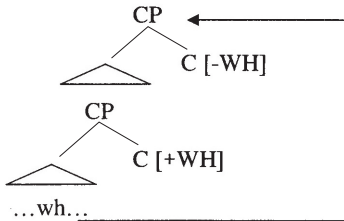
measure, in SOV languages, the leftward movement is costless (non-feature-driven), whereas the rightward movement is costly (feature-driven). A feature-driven movement is semantically significant. The following is the schematic structure of the example in (119).

(121) (= 119) Leftward long-distance scrambling: semantically insignificant



Saito (1989) is correct in that leftward long-distance scrambling is semantically insignificant. The scrambled wh-phrase reconstructs to the original position. The following is the schematic structure of (120).

(122) (= 120) Rightward long-distance scrambling: semantically significant



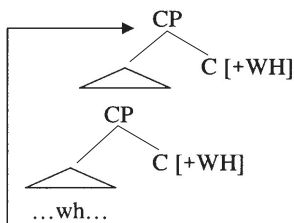
Saito (1989) is incorrect in that rightward long-distance scrambling is semantically significant. The scrambled wh-phrase does not reconstruct.

The semantic significance of scrambling has been observed in Takahashi (1993). Takahashi pointed out that when both the matrix and the embedded Qs bear [+WH], the leftward long-distance scrambling to the sentence-initial position is semantically significant, which contradicts Saito's (1989) observation.

- (123) a. John-wa [_{CP} Mary-ga nani-o tabeta ka] shiritagatteiru no?
 John-TOP Mary-NOM what-ACC ate Q want.to.know Q
 'Does John want to know what Mary ate?'
 OR 'What does John want to know whether Mary ate?'
- b. nani-o_i John-wa [_{CP} Mary-ga t_i tabeta ka] shiritagatteiru no?
 what-ACC John-TOP Mary-NOM ate Q want.to.know Q
 NOT 'Does John want to know what Mary ate?'
 'What does John want to know whether Mary ate?' (Takahashi 1993)

The schematic representation of the example in (123b) is the following.

(124) (= 123b)



Once the wh-phrase scrambles to the matrix CP in (124), the matrix C [+WH] becomes the closest head that checks, values and deletes the relevant formal features. Thus, the anti-reconstruction effect (the semantic significance) receives a simple account under the economy principle.

3.4. Problem 4

3.4.1. Multiple scrambling asymmetry

Another asymmetry is detected in Japanese multiple scrambling. First, consider the scope restriction in leftward multiple scrambling, originally observed in Hoji (1985).

- (125) dareka-ni_j daremo-o_i John-ga t_j t_i syookaishita.
 someone-DAT everyone-ACC John-NOM introduced (* $\forall > \exists$, $\exists > \forall$)
 ‘John introduced everyone to someone.’
 (Cf. Hoji 1985, Yatsushiro 1996, Kuno 2006)

The universally quantified phrase (UQP) is scrambled to the sentence-initial position, and the scrambling of the existentially quantified phrase (EQP) follows. The EQP must have wide scope over the UQP. It follows that the EQP must command the UQP in the scope calculation. Kuno (2006) proposed that the reconstruction obeys the attract-closest-type economy principle, as in the following.

- (126) Minimality condition on reconstruction (MCR)
 Reconstruct the closest. (Cf. Kuno 2006: 98)

The MCR blocks the EQP for reconstruction, that is, the intervening UQP is closer to the reconstruction site and the MCR forces the UQP to reconstruct in the LF. Thus, the EQP commands the UQP in the LF. However, rightward multiple scrambling does not obey the MCR, as in the following.

- (127) John-ga t_j t_i syookaishita daremo-o_i dareka-ni_j.
 John-NOM introduced everyone-ACC someone-DAT
 ‘John introduced everyone to someone.’ ($\forall > \exists$, $\exists > \forall$)

The MCR incorrectly predicts that the example lacks the wide-scope reading of the UQP. Why is it that rightward multiple scrambling disobeys the MCR?

A similar kind of asymmetry appears in multiple scrambling with remnant movement of an embedded clause. The following example obeys the MCR.

- (128) *[[Mary-ga t_i yonda to]_j [sono hon-o_i [John-ga t_j itta]]].
 Mary-NOM read that the book-ACC John-NOM said
 ‘John said that Mary read the book.’ (Saito 1989)

The object DP in the embedded clause is first scrambled leftward and then the remnant embedded clause is scrambled. Saito (1989) argues that the example is ruled out by the proper binding condition (PBC), which states that traces must be bound. However, the PBC solution assumes that the scrambled remnant embedded clause must stay at the landing site. The scrambled CP not reconstructing remains a mystery. The MCR solves the mystery. The MCR requires that the remnant clause must remain at the landing site because of the intervening closer reconstructing term, i.e., the embedded-clause object that is scrambled first. Thus, the PBC accompanied with the MCR accounts for the ungrammaticality. However, the rightward multiple scrambling poses a problem to such an analysis. That is, the rightward multiple scrambling does not show the PBC violation, as in the following³⁰.

Flexible Command:

- (129) [[[John-ga t_j itta] sono hon-o_i] [Mary-ga t_i yonda to] _j].
John-NOM said the book-ACC Mary-NOM read that
'John said that Mary read the book.'

The PBC + MCR analysis incorrectly predicts that the example should be unacceptable; the outer adjunct (the scrambled remnant embedded clause) contains an unbound trace. If we want to maintain the PBC, it follows that the MCR is inoperative in rightward multiple scrambling. Why is it that rightward multiple scrambling disobeys the MCR?

Rightward multiple scrambling's disobedience to the MCR is also found in the bound variable reading of a pronoun, as the following contrast indicates.

- (130) a. * sono_i cyosya-ni_k subete-no hon_i-o_j John-wa t_k t_j watashita.
its author-DAT every-GEN book-ACC John-TOP handed
'John handed every book to its author.' (Cf. Mahajan 1997a: 107-109)
- b. John-wa t_k t_j watashita subete-no hon_i-o_j sono_i cyosya-ni_k
John-TOP handed its every-GEN book-ACC author-DAT
'John handed every book to its author.'

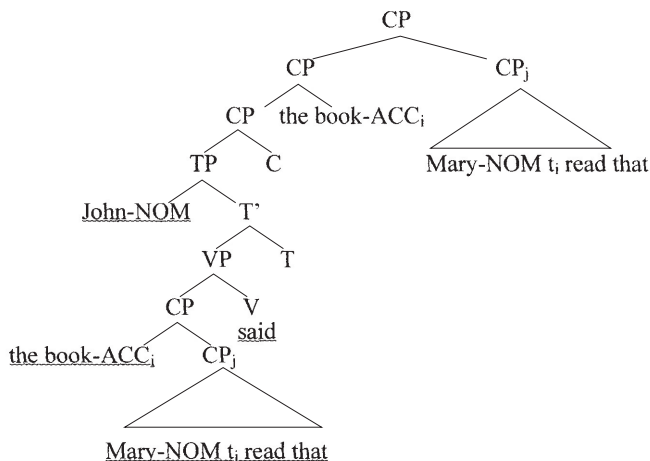
In the example in (130a), the pronominal variable *sono* 'its' cannot have the bound variable interpretation. The MCR prohibits the DP containing the pronominal variable to reconstruct; therefore, the UQP fails to bind the variable. The example in (130b) poses a problem for the MCR. The MCR incorrectly predicts that the example (130b) should also be ungrammatical because the variable in the frozen second adjunct would be unbound. Why is it that rightward multiple scrambling disobeys the MCR?

3.4.2. A solution

Given the PVP measure, in an SOV language, leftward scrambling is costless, whereas rightward scrambling is costly. The difference in the cost causes different levels of disconnection in the definition of command. More specifically, in cheap leftward multiple scrambling, the least disconnected level (the exclusion type) of command is chosen. The exclusion type of command does not have to consider the segment structure of the target. Thus, the computation is simpler, which invokes the simpler exclusion-type command. The outer adjunct commands the inner adjunct. The inner adjunct is closer to the reconstruction site. Therefore, the MCR prohibits the outer adjunct from reconstruction crossing the inner one. In expensive rightward scrambling, the movement is expensive (feature-driven according to the PVP measure), which causes selection of the most disconnected level of command. This level of command must consider every segment of the target. Under this definition of command, an adjunct commands nothing. It follows that the outer and inner adjuncts command nothing. The LCA orders the original copies. In (129), the sentence-final CP is the original copy, the object is the intermediate copy, and the sentence-initial CP is the original matrix CP.

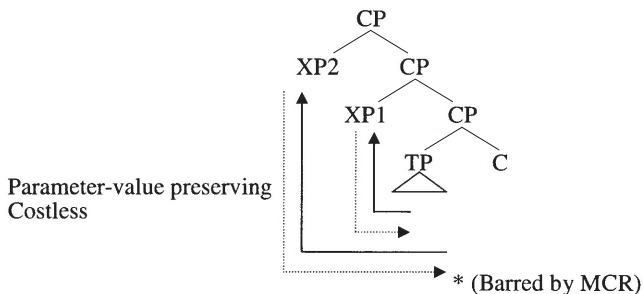
Flexible Command:

(131) (= (129))



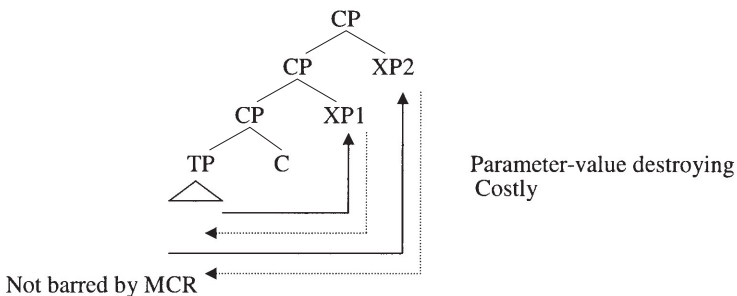
The embedded object first adjoins to the embedded CP, and adjoins to the matrix CP. The remnant embedded CP adjoins to the matrix CP. The embedded object and the embedded CP that are adjoined to the matrix CP are LCA-invisible; therefore equidistant for the MCR purpose. The wave-lines indicate the terms that are pronounced. It also constitutes evidence that the embedded object first adjoins to the embedded CP before it moves to the matrix level, respecting the Shortest Step Principle. Consequently, the distance is undetermined with respect to these two adjuncts. Therefore, these two adjuncts are equidistant from the reconstruction site. Thus, the MCR treats the two adjuncts as equally close to the reconstruction site, and either one can reconstruct. Let us schematize the relevant structure for leftward multiple scrambling.

(132-1) Leftward multiple scrambling



The costless movement triggers the costless definition of command (level a), which is the exclusion type that makes segment structure transparent for command relations. The outer adjunct XP2 excludes every other category. Therefore, XP2 commands XP1. XP1 is closer to the reconstruction site. The MCR requires that XP2 cannot skip XP1 in reconstruction. Leftward multiple scrambling obeys the MCR. Let us next schematize the relevant structure for rightward multiple scrambling³¹.

(132-2) Rightward multiple scrambling



The costly movement triggers the costly definition of command (level c),

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which makes segment structure opaque for command relations. A command relationship does not exist wherever there is a segment. Therefore, XP1 and XP2 command nothing. The distance between XP2/XP1 and the reconstruction site is undetermined. XP2 and XP1 are invisible to the MCR. Rightward multiple scrambling disobeys the MCR.

Turkish behaves like Japanese. Turkish leftward multiple scrambling yields unambiguous scope; the multiple scrambled $\langle \text{OB}, \text{SUB}, t_{\text{SUB}}, t_{\text{OB}}, \dots \text{V} \dots \rangle$ produces $\text{OB} > \text{SUB}$ scope only (Kural 1997, Takano 2007: 21-22).

Note that traces are invisible to the scope calculation in Turkish. OB reconstruction is blocked by the MCR. On the other hand, the rightward multiple scrambling yields ambiguous scope; the multiple scrambled $\langle t_{\text{SUB}}, t_{\text{OB}}, \dots, \text{V}, \text{OB}, \text{SUB} \rangle$ produces both $\text{SUB} > \text{OB}$ and $\text{OB} > \text{SUB}$ scope relations (ibid.). If the MCR blocked SUB reconstruction, $\text{OB} > \text{SUB}$ would be impossible. Since $\text{OB} > \text{SUB}$ exists, the MCR is inoperative. Thus, the MCR plus Flexible Command explain Turkish multiple scrambling.

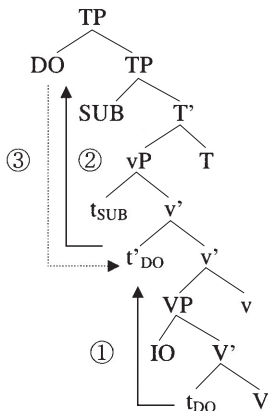
The flexible command analysis coupled with the MCR also accounts for the partial vs. full reconstruction mystery regarding anaphoric binding in Hindi-Urdu and Japanese. Leftward scrambling shows partial reconstruction in Hindi-Urdu as follows.

(133-1) [apnii/*_j kitaab]_k Raam_i-ne t_k' Mohan_j-ko t_k di-ii. [Hindi-Urdu]
self's book.f.Abs Ram-Erg Mohan-Dat gave.Pfv.f
'Ram gave Mohan self's book.' (Adapted from Mahajan 1990: 35-36)

The subject (SUB) binds the anaphor inside the direct object (DO) but the indirect object (IO) does not bind it. Mahajan explained this fact that the scrambled DO reconstructs down to the intermediate Case checking position but not all the way down to the original place of the DO. The sche-

matic tree is as follows.

(133-2) Partial reconstruction (= 133-1)



The movement ① is structural Case (ACC) checking of the DO in the NS (A-movement), ② scrambling in the NS (A'-movement), and ③ the A'-moved DO reconstructs to the Case checking position at LF. As a result, the anaphor in the DO is bound by SUB, but not by IO. Why does the DO reconstruct to the intermediate trace position?

Japanese leftward scrambling shows the same effect as Hindi-Urdu.

(133-3)

[otagai/*_j-no hihan-o]_k butsurigakusya-tachi_i-wa tetsugakusya-tachi_j-ni t_k hirooshita.
 each other-GEN criticism-ACC physicists-TOP philosophers-DAT announced
 'The physicists announced each other's criticism to the philosophers.'

The SUB binds the anaphor in the DO but the IO does not bind it. This fact is explained if we assume that the derivation of (133-3) is as in (133

Flexible Command:

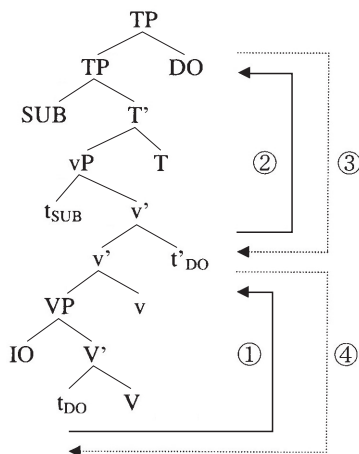
-2). However, the rightward scrambling poses a problem for this analysis. That is, Japanese rightward scrambling exhibits both partial and full reconstruction.

(133-4)

butsurigakusya-tachi_i-wa tetsugakusya-tachi_j-ni _{t_k} hiroosita [otagai_{i/j}-no hihan-o]_k
 physicists-TOP philosophers-DAT announced each other-GEN criticism-ACC
 ‘The physicists announced each other’s criticism to the philosophers.’

Both SUB and IO bind the anaphor in the DO. Under Mahajan’s approach, the example in (133-4) shows the radical (full) reconstruction via the intermediate position.

(133-5) Radical (full) reconstruction (= 133-4)



A question arises as to why there is the step ④ in the rightward scrambling but not in the leftward scrambling. Kuno’s (2006) MCR offers the simplest possible explanation. That is, the DO copy at the intermediate

position is a commander in the leftward scrambling (133-2) whereas it is not in the rightward scrambling (133-5). Given the PVP measure, the rightward movement in an SOV language is relatively costly with respect to the computational load. This high cost is the trigger for selecting the disconnection level (c) (costly counting every segment) of the flexible command by which the intermediate DO copy fails to be a commander in (133-5). Given that only commanders enter into the distance competition, the intermediate copy does not count as the closer term for reconstruction. The MCR guarantees that both the intermediate and the original locations are equally close to the TP-adjoined DO in (133-5).

On the other hand, the leftward movement in an SOV language is relatively costless with respect to the computational load. This low cost is the trigger for selecting the disconnection level (a) (costless discounting segments) of the flexible command by which the intermediate DO copy becomes a commander in (133-2). Given that only commanders enter into the distance competition, the intermediate copy counts as the closer term for reconstruction. The MCR guarantees that the intermediate location is closer to the TP-adjoined DO in (133-2). The DO must reconstruct to the intermediate position.

3.5. Problem 5

3.5.1. Heavy NP shift mystery

English has a heavy NP (HNP) shift (HNPS) phenomenon in which a relatively heavy (complex) structure undergoes rightward dislocation, as in the following.

- (134-1) a. Susan always files t_i without reading e_i properly, [all the memos from the low level administration]_i. (Engdahl 1983)

Flexible Command:

- b. We believe t_i to have good judgment [everyone who took the time to analyze this phenomenon]_i. (Lasnik and Saito 1992: 112)

If rightward dislocation involves rightward adjunction to the matrix CP, the dislocated phrase is the highest commander. Therefore, the dislocated phrase binds (therefore, commands) the trace, satisfying the PBC. However, the LCA incorrectly predicts that the dislocated phrase must be pronounced at the beginning of the sentence, and therefore, these examples should be bad, contrary to the fact. Why is the highest commander pronounced at the end of the sentence in the HNPS phenomenon in apparent violation of the LCA, while the structure satisfies the PBC?

In addition, unlike *wh*-movement, HNPS is more restricted: it cannot apply successive-cyclically. The examples in (134-2a/b) are cited in Kasai (2008: 315).

(134-2)

- a. * I have expected that I would find t_i to Mary since 1939 [the treasure said to have been buried on that island]_i. (Postal 1974: 93)
- b. * It was believed that Mary bought t_i for her mother by everyone [an ornate fourteenth century gold ring]_i. (Rochemont and Culicover 1990: 136)
- c. * John said that Mary will solve t_i yesterday [all the phonology problems]_i. (Lasnik and Saito 1992: 199, en. 14)

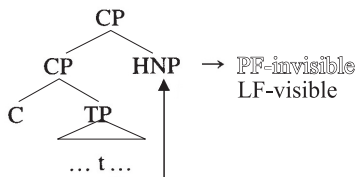
The HNPs move out of the embedded clause, and the examples are ungrammatical. Why is HNPS local? Ross (1967) postulated the Right Roof Constraint (RRC) to account for the locality. See Kasai (2008) for the relevant discussion, adopting the multiple leftward movement analysis (based on

Kayne 1994) and the goal (moved term)-projecting hypothesis (based on Chomsky 2000), which I reject. As Kasai acknowledges (*ibid.* 319, n. 5), his analysis incorrectly predicts that the HNPS example would be ruled out as a PBC violation; HNP fails to properly bind its trace.

3.5.2. A solution

According to the PVP measure, the rightward movement in an SVO language is costless, which is not feature-driven (no agreement). When agreement is absent, the PF system chooses the most disconnected type of command (level c). Therefore, the dislocated phrase commands nothing. The phrase is invisible to the LCA. As a last resort, the PF orders the original copy of the dislocated phrase, which is in a lower position. This is the reason for the dislocated phrase to be pronounced at the end of the sentence. The LF, on the other hand, generally chooses the least disconnected level (exclusion type) of command (level a). Thus, the dislocated phrase commands the rest in the LF, thereby satisfying the PBC.

(135)



In (135), the HNP commands nothing in the PF. Therefore, the LCA cannot see the HNP. As a last resort, the LCA orders the original lower copy, which is phonetically realized as the final term in the sentence. In the

Flexible Command:

LF, in contrast the HNP commands the rest. As a result, the HNP properly binds the trace, satisfying the PBC.

As to the locality (non-successive cyclic property) of HNPS, the Flexible Command solves the problem in a simple way. In a head-initial language, the rightward movement is not feature-driven, i.e., it lacks agreement. The absence of agreement forces the PF system to choose the most disconnected level of command (disconnection level (c)), in which command does not hold for segment structures. Suppose that the HNP has partially moved to the edge of the embedded clause, and that the matrix clause is constructed. The example in (134-2a) has the following structure.

(134-3) [I have expected [_{CP} [_{CP} that I would find *t_i* to Mary] HNP₁] since 1939]

At the PF, the HNP is not a commander. Therefore, the PF system has to go back to the original HNP, and move it to the matrix-clause edge in one fell swoop, skipping the intermediate position. The operation violates the Phase Impenetrability Condition (Chomsky 2000: 108), requiring a moving term to drop by at an edge of every phase (vP or CP).

3.6. Problem 6

3.6.1. English-type T vs. French-type T

Consider the following contrast (Emonds 1978/1985, Pollock 1989, Chomsky 1991, Lasnik 2000: 187–196).

- (136) a. John often kisses Mary. (Cf. * John kisses often Mary.)
b. John embrasse souvent Marie. (Cf. * John souvent embrasse Marie.)
John kiss.sig.m.often Marie.
'John often kisses Mary.'

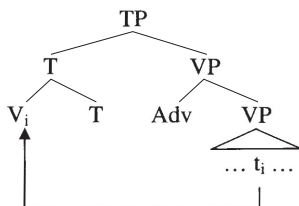
The standard analysis is that V adjoins to T in French, whereas it does not do so in English. The difference is attributed to the feature strength of T. The French T bears a strong (formal) feature that must be erased in the NS (before Spell-Out). T attracts V to check/delete the relevant structural feature, and the erasure of the feature affects the PF. By the LCA, the French V under T is higher, therefore precedes the adverb located at the VP boundary. On the other hand, the English T bears a weak (formal) feature that need not be erased (is therefore not erased by the economy principle, i.e., if you do not have to do it, do not do it) in the NS. The erasure of the feature does not exist in the NS; therefore, it does not affect the PF. Therefore, nothing happens to T and V. The English V remains in situ. By the LCA, the English adverb is higher, therefore precedes the V. Why is T's formal feature strong in French, while weak in English? One possible account is the following. English has poor agreement, given that only one set of ϕ -feature (3rd person and singular, gender being inactive) is phonetically realized. On the other hand, French has rich agreement with various ϕ phonetically realized. Rich agreement indicates a strong formal feature, and poor agreement indicates a weak formal feature. Still, the question remains: why does French have rich agreement and English poor agreement? It seems ad hoc and tautologous to claim that French has strong features because the language shows rich agreement and that English has weak features because the language shows poor agreement. I propose an alternative in the following section.

3.6.2. A solution

Assume that V adjoins to T in the NS universally, satisfying the Stray Affix Filter. The relevant structure is the following.

Flexible Command:

(137)



Provided that the LF system in general chooses the most costless computation (the exclusion type) for command calculation, V commands the trace in the LF. More specifically, according to the exclusion type of command, V commands the trace in the VP. That is, the first node that dominates V is TP, the TP dominates the trace, and V excludes the trace. Therefore, the chain condition (the head of a chain must command the foot of the chain) is satisfied in the LF.

In the PF, on the other hand, we find variation. In French, T and V agree in the NS. The presence of agreement in the NS forces the PF system to choose the least disconnected level (a) of command (the exclusion type). In French, V asymmetrically commands the T and the adverb, and the T asymmetrically commands the adverb. These command relationships yield the relevant <V, T, Adv> order.

In English, T and V do not agree in the NS. The absence of agreement in the NS forces the PF system to choose the most disconnected level (c) of command (any segment structure is excluded). In English, the raised V does not command the T and the adverb. The ordering of the raised V and T/Adv is not determined. As a last resort, the LCA (a PF axiom) sees the original copy of the V in the VP. The LCA produces the relevant order <Adv, V>. Given that the English V is a bare stem, unlike the French

V, which is a feature bundle, the English V and T are combined in the PF, as proposed in Lasnik (2000). Thus, the flexible command accounts for the otherwise mysterious French vs. English ordering contrast. Feature strength is dispensable. That is, the command type is different for the chain condition working in the LF and for the LCA working in the PF.

For the chain condition in the LF, the system chooses the least disconnected (least costly) type of command (the exclusion type). For the LCA in the PF, the system chooses the least disconnected type if the NS sends information of the presence of agreement to the PF, whereas the PF system chooses the most disconnected (most costly) type of command if the NS sends information of a lack of agreement to the PF. The PF is pickier with respect to the types of command.

Now, do the following examples pose a problem?

- (138) a. * John reads often books.
b. John reads often to his children. (Chomsky 1995: 330)

In (138a), the V cannot appear higher than the adverb, whereas in (138b), the V can appear higher than the adverb as in French. Is (138b) a counterexample to the analysis above?

A solution follows. For (138a), the example is ruled out because the V fails to check off the structural Case (a formal feature) of the object [ACC] due to the intervening adverb. There is an alternative analysis. The V in (138a) does check [ACC] off, whereas the V in (138b) does not. A term that has checked off a formal feature freezes in the checking position. The V in (138a) is supposed to be frozen in situ in the VP. Moving a frozen element as in (138a) has a cost. The high cost rules (138a) out. More specifically, a costly movement chooses the most costly type of command (disconnec-

Flexible Command:

tion level c). According to the level-(c) command, the adjoined V cannot become an asymmetrical commander for the trace, thereby violating the Chain Condition at the LF. At the PF, on the other hand, the adjoined V cannot asymmetrically command the adverb. Therefore, there is no way for the LCA to produce the ordering $\langle V, Adv \rangle$ at the PF. The derivation crashes both at the LF and the PF.

On the other hand, without the object of V, the V in (138b) does not check off a formal feature. Therefore, the V is not supposed to be frozen in situ in the VP. The low cost makes (138b) acceptable. More specifically, a costless movement chooses the most costless type of command (level a), the exclusion type. According to the level-(a) command, the adjoined V becomes an asymmetrical commander for the trace, thereby respecting the Chain Condition at the LF. At the PF, on the other hand, the adjoined V asymmetrically commands the adverb. Therefore, the LCA produces the ordering $\langle V, Adv \rangle$ at the PF. The derivation converges both at the LF and the PF.

4. A Concluding Remark

I proposed a flexible command—this is a fresh look at command, which is a measurement for scaling two points in a sentence structure. Flexible command measures equilibrium between the connection and disconnection of two nodes in a given tree. The disconnection condition consists of three levels of disconnection that the system chooses according to the computational cost. Flexible command accounts for various phenotypes that are observed in human natural language. Empirical evidence verifies the existence of flexible command. I have shown that adjunction structure provides a good test case. Flexible command has logical necessity. Given that flexible command has logical necessity, we must ask a question concern-

ing its biological necessity. Why has Mother Nature created the computational system that uses a scale such as flexible command? Although the problem is too difficult to solve at this point, one possibility is that flexible command reflects the fluctuation that characterizes complex systems like the human brain. Fluctuation is a characteristic of any chaos system. The human brain is a chaos system that consists of (a) universal principles that are determined by natural laws (i.e., the economy principle) and human genes, and (b) unset parameters (i.e., possibly about 10 switches) that become set by the linguistic environment around a human fetus/baby. A tiny variation in switch setting causes the initial state S_0 of the language system to undergo a radical change to S_n (the final stage) within the first several years of the mother tongue acquisition of the freak creature (us).

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Notes

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¹ Following Uriagereka (1998), I use the terminology *command* for *c-command* unless there is a need to clarify the kinds of commands. Reinhart (1979) has proposed this definition, which EGKK (1998) calls a representational *c-command*.

(i) A Representational Definition of C-command

A C-commands B iff:

- i . The first branching node dominating A dominates B,
- and ii . A does not dominate B,
- and iii . A does not equal B. (Reinhart 1979)

EGKK argues against it, and argues for a derivational definition of command.

(ii) A Derivational C-Command

X C-commands all and only the terms of the category Y with which X was paired/concatenated by Merge or by Move in the course of the derivation.

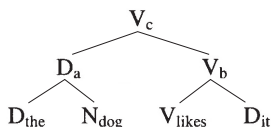
(EGKK 1998: 32)

Concatenate (distinct from the mathematical counterpart) creates sisters. *Concatenate* includes *Merge and Move* (= *Copy and Rmerge*). Category Y must be visible at the exact stage when concatenation takes place in the

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derivation. Y includes Y and everything that Y dominates. EGKK provides the following demonstration that the representational command is incorrect, and that the derivational command is correct. Consider the following structure.

(iii)



Note that it is crucial that the intermediate projection V_b is invisible to C_{HL} when V_c is formed, given that C_{HL} sees minimal and maximal projections only. According to the representational command, V_{likes} and D_{it} asymmetrically commands D_{the} and N_{dog} . It leads LCA to predict incorrectly that the string *likes it* must precede the string *the dog*. According to the derivational command, at the point when V_{likes} and D_{it} were concatenated, they command each other and nothing else. At the point when D_a and V_b are concatenated (V_c is formed simultaneously), D_a is visible because it is a maximal projection, but V_b is invisible because it is neither maximal nor minimal. Thus, D_a (and the members) command(s) V_{likes} and D_{it} , a desired result.

However, the derivational command does not work well for adjunction. Adjunction does not create sisters. *Concatenate* does not include *Adjoin*. The derivational command cannot deal with the fact that an adjoined term becomes a commander. Suppose we modified the derivational command to allow an adjunct to become a commander. It then fails to deal with the fact that a certain adjunct cannot become a commander.

More traditionally, Langacker (1969: 167) defined *command* (representational) as follows.

- (iv) A node α commands another node β if
- a. neither α nor β dominates the other, and
 - b. the S-node that most immediately dominates α also dominates β .

The condition (iv-a) expresses disconnection, and (iv-b) connection. What is not noted is that α and β are accessible to C_{HL} . Condition (iv-b) makes an incorrect prediction that the following examples must be acceptable.

(v) a. * $John_i$'s daughters criticized himself.

b. * $John_i$ -no musume-tachi-wa jibunjishin_i-o hihan-shita.
 John-GEN daughter-pl-TOP self-ACC criticism-did
 'John's daughters criticized himself.'

By condition (iv-b), *John* binds the anaphor, an unwanted result.

² Although EGKK (1998: 40) wants to deduce command (Reinhart's last will) from the derivational First Law equipped with the derivational command (ibid. 32), Reinhart's first-branching-node type command shares the essence with EGKK's derivational command in that the concatenation point is crucial. The definition of derivational command is as follows (EGKK 1998: 32).

(i) Derivational C-Command

X C-Commands all and only the terms of the category Y with which X was paired/concatenated by Merge or by Move in the course of the derivation.

In a nutshell, X commands Y and everything inside Y if and only if X is concatenated with Y. The node which is created by X + Y concatenation is inevitably the first branching node dominating X and Y. Concatenating α with K creates the sister relation of α and K. Chomsky (2000: 116) defines c-command as follows.

(ii) α c-commands β if α is the sister of K that contains β .

But the definition of sister yields complications for adjunction.

³ The condition (21b) of the definition of the LCA is irrelevant because there is no term γ . However, if we take $\gamma = \alpha$, *he* and *will* are ordered; *he* pre-

cedes *will* and *he* dominates *he*. Thus, contrary to what Nunes and Thompson assert, condition (21b) of the LCA, hence, the LCA with the given disjunctive definition, allows the reflexive property of domination. However, we can avoid this undesirable result by adding $\gamma \neq \alpha$ to condition (21b).

⁴ Section A.2.4. in Nunes and Thompson (1998) explains the reasoning. An ordered pair $\langle \alpha, \beta \rangle$ is defined as a set $A = \{\{\alpha\}, \{\alpha, \beta\}\}$ in which $\{\alpha\}$ is the label (information of major property) of A. More informally, α and β merge and the target α projects. Now an ordered pair $\langle \alpha, \alpha \rangle$ is defined as a set $B = \{\{\alpha\}, \{\alpha, \alpha\}\}$ in which $\{\alpha\}$ is the label of B. Given that $\{\alpha, \alpha\}$ is equal to $\{\alpha\}$, $B = \{\{\alpha\}, \{\alpha, \alpha\}\} = \{\{\alpha\}, \{\alpha\}\} = \{\{\alpha\}\}$. A label is not a term.

⁵ In SOV languages, the right dislocation of non-wh phrases is relatively unrestricted whereas that of wh-phrases is restricted. Hindi-Urdu, like Japanese, disallows a wh-phrase in the postverbal position when the wh-phrase is interpreted as the normal interrogative meaning (directly demanding the value for the variable x) but allows it when interpreted as an echo question (re-asking) (Cf. Mahajan (1997b), Bhatt (2003b), Simpson and Bhattacharya (2003: fn.3) via Manetta (2010: 7)).

- (i) Ram-ne kitaab di-i kis-ko?
 Ram-Erg book.f give-Pfr.f who-Dat
 ‘Ram gave a book to WHO?’ (Bhatt 2003b: 10)

A similar effect is observed in Japanese. Suppose that A dialogues with B.

- (ii) A: Mary-wa cyuuibukaku t_i mita-yo, \dots -o. (The \dots part is not hearable.)
 Mary-TOP carefully saw-SP \dots -ACC
 ‘Mary carefully look at \dots (I’m sure about it.)’

- B: Mary-ga t_i mita nani-o?
 Mary-NOM saw what-ACC
 ‘Mary looked at WHAT?’

I propose that the echo-questioned wh-phrase, like a non-wh phrase, remains in situ and receives the marked interpretation at LF.

The postverbal wh-phrase is permitted also when the example is interpreted as a rhetorical question (the value for the variable x is known). The following examples are adapted from Bhatt (2003b: 10).

- (iii) a. us-ne tumhe kyaa di-yaa? (normal interrogative question)
 he-Erg you.Dat what give-Pfv.MSg
 ‘What did he give you?’
- b. us-ne tumhe t_i di-yaa kyaa_i?! (rhetorical question)
 he-Erg you.Dat give-Pfv.MSg what
 ‘What did he ever give you … ?!’

A similar effect is observed in Japanese.

- (iv) a. kare-wa kimi-ni nani-o ageta-no? (normal interrogative question)
 he-TOP you-DAT what-ACC gave-Q
 ‘What did he give you?’
- b. kare-wa kimi-ni t_i ageta-no ittai nani-o_i?! (rhetorical question)
 he-TOP you-DAT gave-Q the hell what-ACC
 ‘What the hell did he ever give you … ?!’

My hunch is that the rhetorical wh-phrase remains in situ and receives the marked interpretation at LF.

What is interesting is that the order change between the auxiliary verb (AUX) and the wh-phrase makes the example acceptable with the normal interrogative reading (Cf. Mahajan 1997, Bhatt and Dayal 2007: 290-291).

- (v) Sita-ne dhyaan-se t_i dekh-aa kis-ko_i thaa?
 Sita-ERG care-with look-PERF.PAST who-ACC was
 ‘Who had Sita looked at carefully?’
 (Who is x, x a human, such that Sita had looked at x carefully?)

The *wh*-phrase appears between the verb and the auxiliary, and the example is acceptable with the normal interrogative reading (directly demanding the value for the variable *x*). If the *wh*-phrase appears after the auxiliary, i.e., at the very end, the sentence becomes unacceptable. The sentence-final *wh*-phrase makes the example unacceptable. The simplest possible analysis is to assume that the *wh*-phrase is in the matrix CP Spec, the auxiliary in the C head, and the rest adjoining to the CP.

⁶ For the hypothesis that focus feature [Foc] as a formal (structural) feature [FF], see Watanabe 2005, Miyagawa (1997, 2001, 2003, 2005, 2010). For the hypothesis that [Foc] drives scrambling, see Miyagawa (1994, 1997), Bailyn (1999, 2001, 2003), Karimi 1999. If [Foc] resides in the T-C system, the issue may be related to the hypothesis that structural Case [FF] is uninterpretable T feature [uT] (Pesetsky and Torrego 2001). In fact, there is a hypothesis that the DP in the cleft focus position receives two distinct structural Cases, i.e., [NOM] from the T, and [Foc] from the C (cf. Nakayama 1989, Sadakane and Koizumi 1995).

- (i) a. [_{CP} e_i osushi-o tabe-ta-no]-wa John_i-(**ga*) da.
 sushi-ACC eat-past-that-TOP John-(NOM) is
 ‘It is John who ate sushi.’
- b. [_{CP} John-ga e_i tabe-ta-no]-wa osushi_i-(?**o*) da.
 John-NOM eat-past-that-TOP sushi-(ACC) is
 ‘It is sushi that John ate.’
- (ii) a. [_{CP} e_i osushi-o tabe-ta-no]-wa dare_i-(**ga*) da?
 sushi-ACC eat-past-that-TOP who(-NOM) is
 ‘Who is *x* such that it is *x* who ate sushi?’
- b. [_{CP} John-ga e_i tabe-ta-no]-wa nan(i)_i-(?**o*) da?
 John-NOM eat-past-that-TOP what(-ACC) is
 ‘What is *x* such that it is *x* that John ate?’

A non-structural Case as the postposition P does not compete with [Foc]. In fact, the P must appear.

- (iii) [_{CP} John-ga e_i osushi-o tabe-ta-no]-wa [_{FP} ohashi-*(de)]_i da.
 John-NOM sushi-ACC eat-past-that-TOP chopstick-with is
 ‘It is with chopstick that John ate sushi.’

I assume that the P enters into the semantic feature calculation and therefore cannot be deleted (forced by the Full Interpretation). However, it is crucial that we understand the nature of the phonologically null category *e*. There is evidence indicating that the term is externally merged (base-generated) in the focus position. That is, *e* and the focused term cannot be connected via movement (internal merge). The NPI cannot be *e*.

- (iv) a. * [_{CP} John-ga e_i tabe-mo-shi-na-katta-no]-wa nani-o_i da.
 John-NOM eat -even-do-NEG-past -that-TOP anything-ACC is
 ‘(Lit.) It is anything that John did not even eat.’
- b. * [_{CP} John-ga e_i tabe-na-katta-no]-wa nanimo-o_i da.
 John-NOM eat-NEG-past-that-TOP anything is
 ‘(Lit.) It is anything that John did not eat.’
- c. * [_{CP} John-ga e_i tabe-na-katta-no]-wa osushi-shika da.
 John-NOM eat-NEG-past-that-TOP sushi-only is
 ‘(Lit.) It is nothing but sushi that John ate.’

The moved NPI and the trace are connected via movement (internal merge = copy + remerge).

- (v) a. nanimo-o_i John-wa t_i tabe-na-katta.
 anything John-TOP eat-NEG-past
 ‘John did not eat anything.’
- b. John-wa t_i tabe-na-katta nanimo-o_i.
 John-TOP eat-NEG-past anything
 ‘John did not eat anything.’

If the term in the focus position is base-generated in the cleft sentence, it must be the case that the structural Case is not checked and deleted

by the copular *da* ‘be.’ Therefore, the examples in (i) and (ii) cannot be used as the evidence for the two-FF-conflict hypothesis.

⁷ Ross (1967) assumes that a postverbal constituent adjoins to the right of the S (CP) node. In the case of long-distance right dislocation, it takes place successive cyclically, obeying Ross’s Right Roof Condition (a constituent cannot move across the S). Kayne (1979) assumes that a postverbal constituent adjoins to the right of the VP. Choe (1987) and Simon (1989) show that the rightward scrambling obeys the Subjacency condition, i.e., it is possible to dislocate rightward out of a clausal complement, but not out of a complex NP. Kornfilt (2005: 177, n.8) assumes that the Turkish rightward scrambling to a postverbal position does not form “a genuine syntactic hierarchical structure,” and that it is not feature driven.

⁸ See Takano (2010: 6) for a concise review and evaluation of previous analyses on Japanese postposing. Takita (to appear) classifies four types of Japanese right dislocation (JRD): (a) rightward movement, (b) double preposing, (c) repetition + deletion, and (d) base-generation. In (b), the dislocated term first undergoes leftward scrambling and then the clausal structure undergoes remnant movement. In (c), the dislocated term undergoes leftward scrambling in the second clause, the first clause containing the coindexed pro. For (a) and (b), the gap is a trace, and for (c) and (d), it is a pro. The approach (c) assumes a bi-clausal structure. I adopt (a), which is the simplest and preserves symmetry with leftward scrambling. According to the more-than-one-sentence analysis (c) (clause repetition + leftward movement + deletion) (e.g., Kuno 1978), the example as in (i) will have the structure as in (ii).

(i) John-wa tabe-na-katta nanimo.
 John-TOP eat-NEG-PAST anything
 ‘John did not eat anything.’

(ii) [John-wa pro tabe-na-katta] [nanimo, [~~John-wa t_i tabe-na-katta~~]]
 John-TOP eat-NEG-PAST anything John-TOP eat-NEG-PAST

Assume that an NPI must be commanded by NEG at LF. In the second

sentence in (ii), the NPI cannot reconstruct because the reconstruction site is deleted. The NPI cannot reconstruct to the object position of the first sentence; the object position is occupied by *pro* and, in any case, it is unclear how the NPI in the second sentence reconstructs to the first sentence. The example in (i) poses a problem for base-generation analysis (d) and more-than-one-sentence analysis (c). In addition, they cannot account for the island effect of rightward dislocation that is observed by Choe (1987) and Simon (1989). The rightward scrambling analysis (a) with the object trace provides the simplest account of (i): the NPI reconstructs to the base position, where it is commanded by the NEG.

⁹ The scope relationship $\forall > \exists$ entails $\exists > \forall$ but not vice versa. If it is established that for every *x* such that *x* loves *y*, then there is at least one *y* such that *y* is loved by *x*. But if it is established that there is at least one *y* such that *y* is loved by *x*, it does not follow from this that it is established that for every *x* such that *x* loves *y*. Therefore, one must start with the string $\langle \exists, \forall \rangle$ (unambiguous scope) and test the string $\langle \forall, \exists, t_v \rangle$ as to whether it has ambiguous scope. See Kuno (2006) for pointing out this reasoning.

The examples of long-distance scrambling provide further support for the claim that the postverbal constituent has undergone movement (Sabel 2005: 319).

- (i) a. John-ga [_{CP} daremo-ni_i dareka-ga t_i kiss-shita to] omotteiru.
 John-NOM everyone-DAT someone-NOM kiss-ed that thinks
 ‘John thinks that someone kissed everyone.’ ($\exists > \forall, \forall > \exists$)
- b. daremo-ni_i John-ga [_{CP} t_i’ dareka-ga t_i kiss-shita to] omotteiru.
 everyone-DAT John-NOM someone-NOM kiss-ed that thinks
 ‘John thinks that someone kissed everyone.’ ($\exists > \forall, \forall > \exists$)
- c. John-ga [_{CP} t_i’ dareka-ga t_i kiss-shita to] omotteiru daremo-ni.
 John-NOM someone-NOM kiss-ed that thinks everyone-DAT
 ‘John thinks that someone kissed everyone.’ ($\exists > \forall, \forall > \exists$)

In (ib), the wide scope reading of the universally-quantified DP (UQP) is

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established at the intermediate trace position at the beginning of the embedded clause. Similarly, in (ic), the wide scope reading of the UQP is established at the intermediate trace position at the beginning of the embedded clause, which constitutes evidence for movement analysis of the postverbal element.

Turkish behaves like Japanese except that the trace does not enter into scope calculation in the former (Kural 1997, Takano 2007: 20-21). That is, Turkish postverbal constituent (PVC) always takes scope over a preverbal term, which indicates that the PVC asymmetrically commands the preverbal terms.

Mahajan (1997b: 199) and Bhatt (2003a: 9) report that leftward and rightward scrambling behave differently with respect to scope calculation in Hindi-Urdu. Like Japanese, Hindi-Urdu shows rigidity effect in which the surface order determines the scope relationship.

- (ii) *kisii chhaaṭr-ne har teacher-ko card bhej-aa.*
some student-Erg every teacher-Dat card.m send-Pfv.m
'Some student sent every teacher a card.' (some>every, *every>some)

Leftward scrambling causes scope ambiguity.

- (iii) *har teacher-ko_i kisii chhaaṭr-ne t_i card bhej-aa.*
every teacher-Dat some student-Erg card.m send-Pfv.m
'Some student sent every teacher a card.' (some>every, every>some)

Rightward scrambling however does not produce scope ambiguity.

- (iv) *kisii chhaaṭr-ne t_i card bhej-aa har teacher-ko_i.*
some student-Erg card.m send-Pfv.m every teacher-Dat
'Some student sent every teacher a card.' (some>every, *every>some)

Japanese leftward and rightward scrambling on the other hand behave alike.

(v)

- a. dono gakusee-ka-ga dono sensee-ni-mo card-o okutta.
 which student-Q-NOM which teacher-DAT-also card-ACC sent
 ‘Some student sent every teacher a card.’ (some>every, *every>some)
- b. dono sensee-ni-mo_i dono gakusee-ka-ga t_i card-o okutta.
 which teacher-DAT-also which student-Q-NOM card-ACC sent
 ‘Some student sent every teacher a card.’ (some>every, every>some)
- c. dono gakusee-ka-ga t_i card-o okutta dono sensee-ni-mo_i.
 which student-Q-NOM card-ACC sent which teacher-DAT-also
 ‘Some student sent every teacher a card.’ (some>every, every>some)

Crucially, the rightward scrambling produces scope ambiguity as in (v-c). It is unclear as to why the rightward scrambling in Hindi-Urdu and Japanese/Turkish differ in this way.

¹⁰ Tanaka (2001: 567, (39a)) independently observes the same phenomenon.

- (i) [otagai_i -no sensee -ga] t_j baka-ni shita yo, [[John-to Mary]_i-o]_j.
 each-other GEN teacher-NOM made-fun-of John and Mary-ACC
 ‘Each other’s teachers made fun of them, John and Mary.’

Tanaka (2001) argues that the above example consists of two sentences, an analysis which I reject.

Unlike Japanese, Hindi-Urdu anaphor seems to behave differently. The following examples are adapted from Bhatt and Dayal (2007: 289).

- (ii) a. ??? [ek dusre_i ke baccoN]-ne [anu aur ramaa]_i-ko dekhaa. SOV
 each other’s kids-Erg Anu and Rama-Acc see-Pfv.pst
 ‘(Lit.) Each other’s kids saw Anu and Rama.’
- b. [anu aur ramaa]_i-ko_j [ek dusre_i ke baccoN]-ne t_j dekhaa. OSV
 Anu-and Rama-Acc each other’s kids-Erg see-Pfv.pst
 ‘(Lit.) Each other’s kids saw Anu and Rama.’

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- c. ??? [ek dusre_i ke baccoN]-ne t_j dekhaa [anu aur ramaa]_i-ko_j. SVO
each other's kids see-Pfv.pst Anu and Rama-Acc
'(Lit.) Each other's kids saw Anu and Rama.'

Unlike Japanese, the example in (iic) is unacceptable. It is unclear as to what causes the difference between (i) and (iic).

In addition, Tanaka reports that the long-distance environment makes the example worse.

- (iii) ?? [otagai_i -no sensee -ga [Mary-ga t_j aishiteiru-to] itta yo], [[John-to Bill]_i-o]_j.
each other-GEN teacher-NOM Mary-NOM love COMP said John and Bill-ACC
'Each other's teachers said that Mary loved them, John and Bill.'

I argue that the nature of command alters in a complex syntactic environment, causing the postverbal embedded object to become a non-commander.

Cecchetto (1999: 79) relying on Rosen (1996) for grammaticality reaction claims that (55c) is unacceptable. Cecchetto relying on native speakers' judgment assumes that the following is acceptable.

- (iv) t_i otagai_j-no sensee-o hihanshita karera_j-ga.
each other-GEN teacher-ACC criticized they-NOM
'They criticized each other's teachers.'

Based on this acceptable example, Cecchetto argues against the double topicalization analysis (Mahajan 1997) of Japanese right dislocation. That is, the analysis incorrectly predicts that (iv) should also be bad as (55c); the trace is not properly bound in violation of the proper binding condition. I also think that both (55c) and (iv) are acceptable, which naturally argues against the double topicalization analysis.

However, the double topicalization analysis seems to provide a simple solution for the problem 1 ((47c)/(49-1c) vs. (46c=49-1b/49-1a)). A non-wh phrase can be dislocated rightward, whereas a wh-phrase cannot. Under the double topicalization, a non-wh phrase moves to the TP Spec, and then

the remnant VP moves to the CP Spec. A wh-phrase on the other hand moves to the CP Spec under wh-agreement. There is no higher place for the remnant VP to move to. It follows that we have a non-null counterpart of Watanabe's (1992) hypothesis; not only a null wh operator but also a non-null wh operator moves to the matrix CP Spec in the NS before spell-out in Japanese. That is, wh-movement is identical between Japanese and English. In fact, there is evidence that wh-feature checking takes place in the NS before spell-out in Japanese. That is, unlike non-wh phrases, wh-phrases resist Case particle omission.

- (v) a. John-(ga) naNI-(o) tabe-ta.
 John-NOM whachamacallit-ACC eat-past
 'John ate that thing.'
- b. dare-*(ga) NAni-???(o) tabe-ta-no?
 who-NOM what-ACC eat-past-Q
 'Who ate what?'

The fact that Case particles must be pronounced with wh-phrases in (v-b) suggests that wh-feature checking takes place in the NS before spell-out in Japanese.

¹¹ In the test, the pronominal bound variable *kare* 'he' should be sufficiently de-stressed as [kr], not [kare]. I assume that the de-stressed *kare* is a well-behaved pronominal bound variable, unlike the stressed *KARE* [kare], which behaves as an R-expression. I think that the lack of careful prosodic distinction is responsible for the persistent problem of the native speakers disagreeing with respect to the acceptability judgment (in fact brain reaction) regarding the binding condition (C) related examples. For example, Cecchetto (1996: 80, n. 38) expresses frustration that the native speakers disagree on the grammaticality reaction. Rosen (1996) and Ogawa (1996) report that an example as (56-4c) is acceptable, but Abe (1998) and Inagaki (1998) consider it unacceptable. Kitahara (2002: 169) claims that Abe's (1993) conclusion concerning grammaticality judgment (reaction) is incorrect and that the correct one is as follows.

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- (i) a. * *kare_i-ga Masao_i-no hahaoya-o aishiteiru*
he-NOM Masao-GEN mother-ACC love
'He loves Masao's mother.'
- b. ?* [*Masao_i-no hahaoya*]_{-o_k} *kare_i-ga t_k aishiteiru*
Masao-GEN mother-ACC he-NOM love
'He loves Masao's mother.'

Unlike Kitahara's reaction, I think that (ib) is much better than that in (ia) if the pronoun *kare* 'he' is de-stressed. If (ib) is better, it poses a problem for Kitahara's "different-timing-of-binding" analysis, which argues that in (ib) the binding condition (C) violation is established when the scrambled object is in vP Spec being bound by the pronominal subject in TP Spec (where the subject is Case-valued). The example in (ib) is crucial for Kitahara, who argues against Saito's (1992) "different-timing-of-Case-marking" analysis in accounting for the following examples.

- (ii) a. ? *karera_i-o_k [otagai_i-no sensee]-ga t_k hihanshita*
they-ACC each other-GEN teacher-NOM criticized
'Each other's teachers criticized them.'
- b. [*otagai_i-no sensee*]_{-o_k} *karera_i-ga t_k hihanshita*
each other-GEN teacher-ACC they-NOM criticized
'Each other's teachers criticized them.'

The example in (iib) has been a problem because one must conclude that a clause-internal scrambling, which is typically an A-movement, can sometimes be an A-bar movement. Saito (1992) assumes that the binding relation is established when the binder is Case-marked. The object in (iia) is Case-marked in TP Spec with V raising to T, whereas the object in (iib) is Case-marked in the original position before V raises to T (the different-timing-of-Case-marking analysis). For Kitahara, in (iia), the binding relation is established when the object is in vP Spec where the object is Case-marked, whereas the binding relation is established when the object is Case-marked in vP Spec, where the object is bound by the subject pro-

noun in TP Spec. Saito's analysis makes a correct prediction regarding (iib). However, Saito's analysis also presents problems. First, why does Case-marking sometimes take place at the launching site and sometimes at the landing site (a Procrastinate violation)? Second, why is the object Case-marked before it moves (a violation of Look-ahead prohibition)? Third, what is the motivation for different timing of Case-marking (ad-hoc)?

Rosen (1996: 30-35) uses the binding condition (C)-related (anti-) reconstruction effect to maintain that Japanese right dislocation is a syntactic phenomenon. The examples are adapted from Rosen (1996). Crucially, the pronoun *kare* 'he' must be de-stressed to allow the bound variable interpretation. That is a necessary idealization in this experiment.

- (iii) a. * *kare_i-ga* [*John_i-no tomodachi-o*] *semeta*.
 He-NOM John-GEN friend-ACC blamed
 'He blamed John's friend.'
- b. [*John_i-no tomodachi-o*] *kare_i-ga t semeta*.
 John-GEN friend-ACC he-NOM blamed
 'He blamed John's friend.'
- c. ? *kare_i-ga t semeta* [*John_i-no tomodachi-o*].
 he-NOM blamed John's friend-ACC
 'He blamed John's friend.'
- d. ? *kare_i-ga t semeta* [*John_i-ga hon-o ageta tomodachi-o*].
 he-NOM blamed John-NOM book-ACC gave friend-ACC
 'He blamed the friend to whom John gave the book.'

The example (iiia) exhibits a condition (C) violation in which the R-expression is not free. The example (iiib) shows an anti-reconstruction effect and respects the condition (C); the R-expression in the scrambled object is free. Rosen reports that (iiic) is not acceptable. Under the de-stressed pronunciation of the pronoun, however, the example is relatively acceptable as (iiid). If the postverbal object adjoins to the CP and become the highest

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commander in the LF, the acceptability is predicted; the object undergoes feature-checking-driven movement and shows anti-reconstruction effect. According to Rosen, (iiid) is better than (iiic), which Rosen attributes to the late-merge hypothesis; the relative clause (adjunct) in (iiid) is absent at the time when the condition (C) applies. My analysis does not need the late-merge hypothesis.

¹² Bhatt (2003a: 7) citing examples from Mahajan (1997b: 192) claims that “rightward scrambling does not take a phrase higher.”

- (i) a. Ram-ne har-ek aadmii-ko t_j lauTaa-ii us-ki kitaab_j.
Ram-Erg every-on man-Dat return-Pfv.f he-Gen.f book.f
'Ram returned every man his book.'
- b. Mona-ne [Hrithik-aur Saif]_i-ko t_j dikhaa-ii [ek-duusre]_i-ki tasviire.
Mona-Erg Hrithik-and Saif-Dat show-Pfv.f each-other-Gen.f picture.f
'Mona showed Hrithik and Saif each other's pictures.'

A possible analysis is that the variable inside the right-dislocated phrase is bound at the launching site. It follows that the binding calculation takes place at the launching site or at the landing site. It is unclear what causes the distinction. I leave the issue for future research.

¹³ Abe (1998) and Inagaki (1998) react to examples like (57c) as unacceptable. I think that sufficient idealization is necessary for reliable experiment. It is extremely important that the bound variable *soko* 'it' in these examples should be de-stressed as [sk]. A stress on the pronoun makes it an R-expression, a completely distinct element. An arbitrary addition of stress and pause causes the structure alteration. A lack of careful prosodic consideration causes serious confusion. In fact, regarding BP (C)-related examples, Cecchetto (1999: 80, n. 38) shows frustration by saying that “I will not use them in this paper, due to the big variability among Japanese native speakers when they are asked to give this kind of judgments.”

Mahajan (1997b: 189) reports that the Hindi-Urdu counterpart is unacceptable: the WCO violation is not amnestied by rightward dislocation. (Cf.

Bhatt 2003a: 6).

(i) a. Base sentence, WCO:

* us_i -ke bhaai-ne har-ek aadmii_i-ko maar-aa.
 he-Gen.Obl brother-Erg every-one man-Acc hit-Pfv
 ‘??? His_i brother hit every man_i.’

b. Leftward scrambling, WCO amnesty:

har-ek aadmii_i-ko_j us_i -ke bhaai-ne t_j maar-aa.
 every-one man-Acc he-Gen.Obl brother-Erg hit-Pfv
 ‘Every man’s brother hit him.’ (Lit. ‘??? His_i brother hit every man_i.’)

c. Rightward scrambling, WCO is not amnestied:

* us_i -ke bhaai-ne t_j maar-aa har-ek aadmii_i-ko_j.
 he-Gen.Obl brother-Erg hit-Pfv every-one man-Acc
 ‘??? His_i brother hit every man_i.’

Unlike Japanese, (ic) is unacceptable; the WCO violation is not remedied. It is extremely important to ask whether the prosody of the pronoun *us* ‘he’ affects the acceptability. More specifically, does the example in (ic) become improve with the de-stressed pronoun? I leave the issue for the future research.

¹⁴ Cecchetto (1999) relies on data from Rosen (1996) and Simon (1989). Cecchetto contains rather complicated (insufficiently idealized) and sometimes inaccurate examples. I will test examples that are more natural and simpler (sufficiently idealized).

¹⁵ Idealizations and adjustments are necessary for appropriate experiments. For example, the verbs in both the embedded and matrix clauses are carefully chosen so that they naturally involve persons. If one verb is for things and the other for persons, the argument-predicate connection is fixed by the choice of verbs at the outset. By carefully avoiding such irrelevant factors, we can abstract relatively pure syntactic effect in movement.

¹⁶ Takano (2007: 18–19) takes up three tests to prove that Turkish right dislocation is a syntactic phenomenon.

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- (i) a. Island sensitivity
- b. Multiple scrambling availability
- c. Negative polarity item (NPI) scramblability

Leftward scrambling, assumed to be a syntactic phenomenon, shows all the properties in (i). Takano claims that if rightward scrambling shows all the properties in (i) in a language, it also must be a syntactic phenomenon. For example, English topicalization, distinct from scrambling, does not show the properties in (i-b) and (i-c) (ibid. 19).

- (ii) a. * The book, to Mary, John gave.
- b. * Anyone, I didn't see.

As for the property in (i-a), English topicalization seems to show island sensitivity as scrambling. The example is adapted from Chomsky 1977.

- (iii) * This book_i, I accept [_{DP} the argument [_{CP} that John should read e_i]].

Thus, scrambling and topicalization do not completely differ.

¹⁷ It follows that, for SOV language, a sentence is a CP when the final copy undergoes leftward scrambling, while a sentence is a DP when the final copy undergoes rightward scrambling. The opposite situation holds for SVO languages, which seems counterintuitive. However, provided that DP and CP (a clause) have the same basic architecture that consists of Spec, complement and head, the result is not entirely outlandish.

¹⁸ Three notes are in order. First, the analysis requires a particular type of command. The exclusion type of command incorrectly predicts that the PP would command the outermost CP: there is no node that dominates both the PP and the CP, therefore the connection condition (every node dominating the PP dominates the CP) is vacuously satisfied, and the disconnection condition is also satisfied (the PP excludes the CP). To make this PBC analysis work, one must adopt the most disconnected (most costly) version of command, which has the disconnection condition (α and β are disconnected iff neither is a segment of a category that contains the

other). The lack of agreement in scrambling causes the choice of the most disconnected version of command.

Second, to make this analysis work for (68b), one must adopt Kuno's (2006) assertion, which attributes the unavailability of reconstruction for the second (outer) adjunct to the minimality condition for reconstruction (MCR).

The MCR states: Attract the closest. The first (inner) adjunct is closer to the reconstruction site. The MCR reinforces the PBC account.

Third, the PBC could be irrelevant to the phenomenon. The example in (68b) could be ruled out by the Extension (Cyclic) Condition; the second application of leftward scrambling goes too far back into the embedded clause.

¹⁹ One must be careful about the type of command. The exclusion type of command incorrectly predicts that the sentence-initial adjunct PP commands the postverbal adjunct CP, thereby satisfying the PBC; the example should be acceptable.

²⁰ An alternative analysis might be possible if we adopt pair-merge vs. set-merge distinction as in Cecchetto (1999: 68–69), which capitalizes on Chomsky (1998, 2000) and Saito and Fukui (1998). Cecchetto reverses Chomsky's definition. That is, pair-merge determines the label plus the sister, and extends the structure. Set-merge does not determine the label or the sister, and does not extend the structure.

Let us consider how this alternative works for the problem 1. A *wh*-phrase pair-merges with the matrix CP. The *wh*-phrase becomes the sister of the CP and commands the entire CP structure. The LCA requires the *wh*-phrase be pronounced first, which is not realized in (85). Note that Cecchetto's analysis incorrectly allows (85) because the *wh*-phrase pair-merging with the CP at the root can project without violating the selectional condition. Cecchetto needs something like the LCA and exclusion-type command to rule out (85).

A non-*wh* for example as in (49-1c) (a pronominal *wh* possibly D head) on the other hand set-merges with the matrix C head. The D is not the sister of the C and fails to become a commander. The D is invisible to the LCA. The LCA searches the lower copy for pronunciation.

It is worth noting that Takano (2007: 27) independently proposed that the postverbal constituent (PVC) in Turkish, which is strictly head-final, is derived by the same mechanism; in Takano's term 'complement-forming movement,' a set-merge in Chomsky's (1998, 2000) sense. That is, in the case of Turkish rightward scrambling, the PVC tucks into the C system as the sister of C (Richards 1997, 2001). Provided that the V remains in situ and that the C is phonetically null in Turkish, the complement-forming movement derives Turkish PVC. Thus, [PVC + C] forms a constituent. How plausible is the complement-forming- movement hypothesis for explaining PVC in SOV languages? I leave the issue for future research. See Chomsky (2000: 136–137) for restricting such complement-forming movement (the second merge respecting locality) to head-adjunction, the sisterhood (hence *c*-command) relation of which is contingent on how the notion is defined for head-adjunction (*ibid.*, 150, n. 106). However, Chomsky (2000: 137) notes that the complement-forming movement (Local Merge) respecting the Locality Condition rather than the Extension Condition may be possible for the third Merge, the sisterhood and *c*-command relations being preserved for the head. Chomsky (2000: 150, n. 107) refers to Richards 1997, arguing for Local Merge (tucking-in as an inner Spec) for multiple Move. Chomsky also notes that a "postcyclic" QR disobeys the Extension Condition.

Note that the set-merge in Cecchetto's (1999) sense is similar to the exclusion type command in that segments are invisible to it. This is the ground for Cecchetto assuming that the D commands into the TP. However, if the D commands the TP, the analysis incorrectly predicts that (49-1c) should be unacceptable because of the LCA violation. If we want to maintain Cecchetto's version of pair-merge vs. set-merge hypothesis, we need some condition guaranteeing the D not to become a commander.

²¹ As for the multiple *wh*-phrase example, Takita (to appear) independently observes the phenomenon. As Takita acknowledges, the phenomenon poses a problem for his proposal (bi-clausal argument ellipsis analysis), with which I disagree. Takita observes that leftward scrambling is different in that it does not tolerate double pronunciation of the copy. However,

I think the symmetry is preserved, as indicated by the following example.

- (i) *nani-o* John-*wa* *nani-o* *tabe-ta-no* ?
 what-ACC John-TOP what-ACC eat-PAST-Q
 ‘What did John eat?’

²² Note that Saito’s (1994) free-ride hypothesis makes an incorrect prediction that there should be no amelioration; the *wh*-phrase inside the embedded clause must escape the island to reach the matrix *wh* and the island violation should arise. See Cecchetto (1999: 66) for argument for the free-ride hypothesis working in Japanese right dislocation. Cecchetto argues that the apparent multiple right dislocation is in fact a single right adjunction to the matrix CP; one phrase adjoins to the other phrase *in situ* forming a single label-free constituent and it adjoins to the root (the matrix CP).

²³ Chomsky (2000: 147, n. 78) speculates that some cases of scrambling take place when a scrambling feature induces pied-piping even after Case assignment, the pied-piped element being “attracted” by a higher probe. For Kitahara (2002: 173), FF (SCR) is EPP; scrambling is a Match-driven movement that is forced by the EPP feature (general edge-forming feature that is a driving force of structure building). For Sabel (2001, 2005), FF (SCR) is Σ , which exists in the AGR feature-set of v^0 and T^0 .

²⁴ Suggesting the possibility that *wh* and focus are connected, Richards (2010: 195) still distinguishes between the two. However, the fact that both *wh* and focus resist appearing in the postverbal position in SOV languages indicates that the two should be treated in the same way. Despite that, it seems that the prosodic *wh*-domain analysis has more explanatory power in many respects. First, the *wh* *in situ* *nani* (HL) and the relevant C to its right create the simplest possible prosodic *wh*-domain. The *wh* and the C to its left cannot create a good *wh*-domain. Second, the pronominal *nani* (LH) can appear in the postverbal position because *wh*-domain formation is irrelevant. Third, when two copies of *wh* are pronounced, the *wh*-copy *in situ* to the left of the C is prosodically dominant

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(higher pitch), which indicates that the *wh* in situ and the *C* create an acceptable *wh*-domain.

- (i) John-wa nani-o tabeta-no nani-o?
John-TOP what-ACC ate-Q what-ACC
'(Lit.) What did John eat, what?'

²⁵ Maruyama (1999: 59-60, n. 3) agrees with Abe (1998), who reports that the example remains unacceptable with the resumptive pronoun. Maruyama speculates that the Subjacency violation is caused in such examples by movement of a phonologically null element, as null operator movement in Japanese *wh*-questions (Watanabe 1992). However, I think that the presence of the resumptive pronoun improves the sentence considerably. The resumptive pronoun must be pronounced without stresses and pauses.

- (i) a. * [Mary-wa Susan-ni [t_i mikaketa-atode] denwa-sita] John-o.
Mary-TOP Susan-DAT happened to see-after phone-did John-ACC
'Mary was calling Susan after she happened to see John.'
- b. ? [Mary-wa Susan-ni [kare_i-o mikaketa-atode] denwa-sita] John-o.
Mary-TOP Susan-DAT he-ACC happened to see-after phone-did John-ACC
'Mary was calling Susan after she happened to see John.'

If this is the fact, the contrast constitutes a well-behaved Subjacency vs. non-Subjacency effect. There is no need to postulate movement of a phonologically null element.

²⁶ The interrogative clausal complement (the *C* phonetically realized as *ka* (Q)) is self-sufficient in that the *wh*-phrase is licensed within the embedded clause.

- (i) a. Mary-wa [_{CP} John-ga nani-o tabeta-ka] itta-no?
 Mary-TOP John-NOM what-ACC ate Q said-Q
 ‘Did Mary say that John ate that thing?’
 ‘Did Mary say what John ate?’
 NOT ‘What did Mary say John ate?’
- b. Mary-wa t_i itta-no [_{CP} John-ga nani-o tabeta-ka]_i?
 Mary-TOP said-Q John-NOM what-ACC ate Q
 ‘Did Mary say that John ate that thing?’
 ‘Did Mary say what John ate?’
 NOT ‘What did Mary say John ate?’

These examples preserve symmetry in that the example with the postverbal clausal complement has the same meaning as the one with the complement in the base order. Symmetry is broken in the case of non-interrogative clausal complements.

²⁷ The example is marginally acceptable with the *wh*-phrase meaning ‘why on earth’ at the matrix level, i.e., ‘Why on earth did Mary say John ate it?!’

²⁸ The ungrammaticality of the following example reinforces the conclusion.

- (i) * osushi-o_j [_{CP} Mary-wa t_i itta-no [_{CP} John-ga t_j tabeta to]_i]?
 sushi-ACC Mary-TOP said-Q John-NOM ate that
 ‘Did Mary say that John ate sushi?’

²⁹ In Hindi-Urdu, unlike non-finite complements, finite complements must appear in postverbal positions. The examples are adapted from Bhatt (2003a).

- (i) a. Mona jaan-tii hai [(ki) Rohit chanT hai]
 Mona.f know-Hab.f be.Prs.Sg that Rohit.m cunning be.Prs.Sg.
 ‘Mona knows that Rohit is cunning.’
- b. * Mona [(ki) Rohit chanT hai] jaan-tii hai
 Mona.f that Rohit.m cunning be.Prs.Sg. know-Hab.f be.Prs.Sg
 ‘Mona knows that Rohit is cunning.’

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In contrast, unlike Hindi-Urdu and like Japanese, Bengali finite complements can appear both pre- and post-verbally but with different complementizers in different positions, unlike Japanese. Bhatt cites Bengali examples from Bayer (1995).

- (ii) a. chele-Ta [[or baba aS-be] bOle] Sune-che
boy-CL his father come-Fut Comp1 hear-Pst
'The boy has heard that his father will come.'
- b. chele-Ta Sune-che [je [or baba aS-be]]
boy-CL hear-Pst Comp2 his father come-Fut
'The boy has heard that his father will come.'
- (iii) a. * chele-Ta [je [or baba aS-be]] Sune-che
boy-CL Comp2 his father come-Fut hear-Pst
'The boy has heard that his father will come.'
- b. * chele-Ta Sune-che [[or baba aS-be] bOle]
boy-CL hear-Pst his father come-Fut Comp1
'The boy has heard that his father will come.'

The head-final Comp1 *bOle* cannot appear in the postverbal finite complement as in (iiib), whereas the head-initial Comp2 *je* cannot appear in the preverbal finite complement as in (iiia).

In Hindi-Urdu, there are two strategies to get the wide scope reading of the wh-phrase in the postverbal complement clause: (i) to move the wh-phrase to the matrix clause, or (ii) to insert the wh-expletive *kyaa* 'what' into the matrix clause. In the corresponding Japanese example with the wh-phrase in the postverbal clausal complement, the first strategy (to move the wh-phrase to the matrix clause) does not work; instead, it leads to an island effect (NS-island effect). When the clausal complement is in the base position, the wh-phrase can scramble to the matrix clause with no island effect.

Turkish shows similar effects to Hindi-Urdu (Kornfilt 2005: 164-166). In Turkish, there are two types of postverbal clausal complement: preverbally

-base-generated and postverbally-base-generated. Let us consider how the scope-bearing element *sadace* ‘only’ interacts with the clausal complement and its subject. There are three cases. First, when the clausal complement is in the base-generated preverbal position, the scope relation is ambiguous: *sadace* takes wide scope over either the clausal complement or its subject. Second, when the clausal complement is moved to the postverbal position, *sadace* cannot interact with the embedded subject (therefore, it cannot appear). Kornfilt assumes that the clausal complement adjoins to the IP or the CP in this case. Third, when the clausal complement is base-generated in the postverbal position (the complementizer is *ki* ‘that’ in this case), the reading is preferred in which *sadace* takes scope over the clausal complement. We can argue that the Hindi-Urdu clausal complement is base-generated in the postverbal position as in the third type in Turkish. However, it is difficult to explain the reason why the *wh*-phrase in the postverbally-base-generated clausal complement shows the NS/LF-island effect in Hindi-Urdu.

³⁰ Tanaka (2001: 569, (42)) independently provides a similar example.

- (i) John-ga t_i itta yo, [Mary-ga t_j yonda-tte] $_i$ LGB-o.
 NOM said NOM read COMP ACC
 ‘John said so, that Mary read it, LGB.’

The PBC is satisfied before the outer adjunct reconstructs. Tanaka (2001) assumes the two-clause analysis, which I reject.

³¹ Cecchetto (1999: 65-67) argues against multiple rightward dislocation and maintains that Japanese right dislocation targets the root node only. That is, when *x* and *y* appear after *V* in this order, *x* adjoins to the left of (set-merges with) *y* in the base position and the [*x* + *y*] constituent undergoes right dislocation. The constituent *y* has completed all the business related to projection, so *x* set-merges with *y*, not pair-merge in the sense of Cecchetto’s definitions of Set-Merge and Pair-Merge. Cecchetto relies on Saito’s (1994) saving mechanism for *wh*-adjunct (the free-ride analysis) that has an independent ground. That is, a *wh*-adjunct *x* adjoins to (free-rides on) the left of a *wh*-argument *y* in the base position and the

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[x + y] constituent undergoes wh-movement without an ECP violation. I point out two problems of the free-ride analysis of Japanese right dislocation. First, it cannot account for the scope ambiguity between x and y. That is, x set-merges with y, in which no sister relationship, no command, or no ordering is determined under Cecchetto's definition of Set-Merge. The LCA cannot see terms lacking command relationship. The analysis incorrectly predicts that x and y cannot enter into scope calculation. Second, the free-ride analysis require x and y be clause mate. Cecchetto (1999: 67) claims that the following examples are bad because x and y are not clause mate. Therefore x cannot free-ride on y and the [x + y] amalgamation cannot be formed; [x + y] cannot be right dislocated.

(i) a. * t_{NP} [_{CP} Bill-ga t_{PP} *sundeiru to*] *omotteiru*, [_{PP} *sono mura-ni*] [_{NP} *John-ga*]
Bill-NOM live that believe the village-in John-NOM
'John believes that Bill lives in the village.'

b. * *John-ga* t_{PP} [_{CP} *Mary-ga* t_{PP} *sundeiru to*] *itta*], [_{PP} *sono mura-ni*] [_{PP} *Bill-ni*]
John-NOM Mary-NOM live that said the village-in Bill-to
'John said to Bill that Mary lives in the village.'

In (ia), the embedded-clause PP cannot free-ride on the matrix-clause subject because they are not clause mate. In (iib), the embedded-clause PP cannot free-ride on the matrix-clause PP because they are not clause mate. The problem is that these examples are in fact acceptable. Therefore, one cannot exclude the possibility that these examples involve multiple rightward scrambling.

Flexible Command: A Solution to the Symmetry Problem of Adjunction, Scrambling, and Dislocation

Koji ARIKAWA

The computational procedure of human natural language (C_{HL} ; only humans have it) produces sound information that instructs the sensory-motor (physical) system (every animal has it) on how to use it, and meaning information that instructs the thought (cognitive) system (every animal has it) on how to use it. One mystery of C_{HL} is that there is a third type of information that C_{HL} computes: this is structural information, which is neither sound nor meaning. We observe structural information in forms such as Case particles and inflections. Structural information is responsible for building a sentence structure (tree graph). The sensory-motor system reads off sound information hanging on the tree, while the thought system reads off meaning information hanging on the tree.

Structural information is like a virus in that it is checked, matched and deleted within the C_{HL} , a virus check system created by Mother Nature. It must be erased within C_{HL} because there is no external system that uses it. If structural information flowed into the sensory-motor system or the thought system, these external systems would freeze because they do not know what to do with the unknown information.

Mother Nature has created a computational system (a language organ) that is cancer-like, in that it multiplies a binary-branching structure. Human language (C_{HL}) has evolved from the mutated brain of Homo Habilis about

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two million years ago, and what the system does is aimlessly multiply a binary-branching structure (two-membered-set building). This is similar to crystallization processes like snowflake development. Human language has not evolved for the purpose of communication as demonstrated by the fact that Homo Sapiens (us) as a species have disclosed the worst quality of communicative competence: the key words for understanding our species are lie (fraud) and war (murder).

This study analyzes measurements for the structural relationship between two nodes in a tree graph that C_{HL} produces. I will focus specifically on two measures: domination and command. From the beginning of the biolinguistics (generative syntax) project, domination and command have been used for measuring node relations. Linguists have always sought precise and useful domination and command rulers. Adjunction structure provides an excellent object of study for obtaining precise measurements. Adjunction structure is observed in the phenotype called scrambling (a word permutation phenomenon). Scrambling is an excellent natural object for us to study the symmetry problem in C_{HL} : what information is lost or preserved when words are permuted.

I propose a new approach to examining command: command measuring the equilibrium of connection and disconnection relationships between two nodes in a given tree. Capitalizing on Chomsky's (1995) insights, I propose flexible command, which is more precise than the previous definitions of command. Flexible command measures different levels of disconnection determined by differences in computational cost. Flexible command accounts for many empirically observed phenomena.

Many related conceptual problems are discussed. Does self-domination exist? Does self-command exist? What is the demonstration that domination is irreflexive? What is the demonstration that command is irreflexive?

Discussions of several related empirical problems follow. What is the structure of a sentence with a postverbal term in SOV languages? Specifically, what is the structure of the permuted order of SVO in SOV languages? Is O included within the same minimal sentence? What is the structural location of O? Does it undergo rightward dislocation? Does it asymmetrically command other terms? Why are *wh* and focus-phrases prohibited from appearing in the postverbal position in SOV languages? Why are non-*wh*/focus-phrases allowed to appear in the same position? Why does the island effect appear in the LF when the island (complex structure) is dislocated rightward after the verb? Why is the highest asymmetrical shifted heavy NP pronounced at the end, in violation of the LCA? Why does V appear before an adverb in French but after it in English? How does flexible command measure the relevant structural relations?