

## ON THE NATURE AND STRUCTURE OF PRINCIPLES AND PARAMETERS

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**Theoretical Comparative Syntax: Studies in Macroparameters**, by Naoki Fukui, Routledge, Abingdon, 2006, ix+422pp.

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### 1. Introduction

Naoki Fukui's *Theoretical Comparative Syntax* is a collection of articles that he wrote in the past twenty years. All of the articles of the book deal with comparative syntax in the principles-and-parameters model with a special focus on in-depth comparative analyses of English-type languages and Japanese-type languages. In this paper, I will first present a brief summary of each of the articles collected in this book. I will then discuss Fukui's theory of locality, focusing on crosslinguistic variations associated with island constraints in section 3. I will point out some observational inadequacies with his analysis, suggesting an alternative analysis/generalization. In section 4, I will discuss Fukui's theory of phrase structure and liner order. He proposes the Symmetric Principle of Derivation, which is an antisymmetric theory of the kind proposed by Kayne (1994). I will show that rightward positioning of adjuncts, which has been claimed to constitute an empirical challenge to antisymmetric theories, can be accommodated under the Symmetry Principle of Derivation. Section 5 makes concluding

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remarks.

## 2. An Overview of the Articles

This section presents a brief summary of each of the articles collected in this book. I will refer to the articles in the book by the chapter number with the year of the original publication in square brackets.

"Introduction" first sketches the development of comparative syntax and syntactic theory over the period in which the articles were written, and then gives a summary of the articles.

Chapter 1, "Specifiers and projection" [1986], written with Margaret Speas, proposes a system of phrase structure which departs from standard X' theory. They propose the "non-uniform bar level hypothesis" (called the relativized X' theory in later chapters), which claims that an asymmetry between lexical categories and functional categories plays an important role in determining the properties of phrase structure. It is shown that various desirable consequences like those concerning implicit argument and the principle of  $\theta$ -marking follow from this hypothesis. It also contains the parametric statement that Japanese lacks the class of active functional categories, from which various typological properties of Japanese follow.

Chapter 2, "LF Extraction of *naze*: some theoretical implications" [1988], and Chapter 3, "Strong and weak barriers: remarks on the proper characterization of barriers" [1991], extend the system of phrase structure discussed in Chapter 1 to the theory of locality. Chapter 2 shows that LF-extraction of *naze* 'why' in Japanese results in a gradation of acceptability judgments, which has to do with subjacency. This is in contrast with the general assumption in the literature that adjunct extractions are subject to the Empty Category Principle (ECP), whose violation always results in total ungrammaticality. Fukui proposes the notion of "L-containment" based on his system of phrase structure, arguing that it captures the quasi-complement status of *naze* 'why' with respect to the theory of locality. In Chapter 3, Fukui argues that the strength of a barrier depends on the "depth" of projection. It is claimed that given the lack of active functional categories in the language, Japanese lacks strong barriers, which accounts for the weaker effect of island constraints observed in the language.

Chapter 4, "Parameters and optionality" [1993], deals with scrambling in Japanese, which is generally considered to be an optional movement. Fukui proposes that optional movement should be allowed only if its application is "costless," where the cost of application is calculated by the "parameter

value preservation (PVP) measure.” According to the PVP measure, an application of movement whose resulting structure is consistent with the parameter setting for the language is “costless” while one that destroys the canonical structure of the language is “costly.” Fukui argues that a “costly” application of movement needs a driving force while a “costless” application does not need such a driving force and can be optional. Hence, optional scrambling is allowed in head-last Japanese, since the Japanese value for the head parameter, i.e. head-last, is maintained under the application of leftward scrambling.

Chapter 5, “A note on improper movement” [1993], claims that the standard account of improper movement in terms of Condition C of the Binding Theory cannot be maintained if we assume Chomsky and Lasnik’s (1993) version of the Uniformity Condition, and suggests two alternative accounts.

Chapter 6, “The principles-and-parameters approach: a comparative syntax of English and Japanese” [1995], presents Fukui’s general views on the theory of comparative syntax in a comprehensive fashion. In addition to specific parametric properties of Japanese like the head-last order and the lack of active functional categories, Fukui proposes the “functional parametrization hypothesis,” which states that only [+F] elements (functional elements) are subject to parametric variation. He also proposes that the “major functional categories” (Agr, T, D, and C) should be specified in terms of the primitive features [+/- N] and [+/- V], thereby constraining the class of possible functional elements in human language in a principled way. It is then shown that typological differences between English and Japanese can be explained in a deductive way from a single parameter or as the interactions of a couple of parameters.

Chapter 7, “Symmetry in syntax: Merge and Demerge” [1998], written with Yuji Takano, proposes the Symmetry Principle of Derivation, which claims that the computations in the overt component and the computations in the phonological component are “symmetric.” They argue that when coupled with a parametric statement about the nature of a light verb, the Symmetry Principle derives numerous cross-linguistic differences among a variety of languages in an elegant way.

Chapter 8, “Order in phrase structure and movement” [1998], written with Mamoru Saito, proposes a parametrized version of Merge, which incorporates the effect of the head-parameter. They argue that the traditional “adjunction” operations should be characterized as substitution, whereas classical cases of “substitution” involve adjunction. It is shown that a number of empirical consequences follow from this theory of phrase structure and

movement including the nature and distribution of optional movement and a unified account of subject and adjunct condition effects (two cases of Huang's (1982) Condition on Extraction Domain (CED)).

Chapter 9, "An A-over-A perspective on locality" [1999], proposes the feature version of the A-over-A principle, which explains the major portions of the classical island constraints, except for the CED cases for which an independent explanation is available (see Fukui (Ch. 8 [1998])). It is also claimed that the A-over-A principle can accommodate some problematic cases for the Proper Binding Condition without any stipulation.

Chapter 10, "The uniqueness parameter" [1999], proposes a macroparameter called the "uniqueness parameter," which claims that language can be regarded as a generative procedure for providing a "solution" to an equation defined by the legibility conditions imposed by the performance system. Fukui argues that the uniqueness of a solution is guaranteed in languages like English, whereas it is not in languages like Japanese, from which a variety of cases of nonuniqueness in Japanese-type languages follow.

Chapter 11, "Nominal structure: An extension of the Symmetry Principle" [2000], written with Yuji Takano, applies the Symmetry Principle proposed in Fukui (Chapter 7 [1998]) to the analysis of nominal structures. It is shown that the Symmetry Principle, coupled with the parametric statement that N raises into D in English but not in Japanese, accounts for differences between English and Japanese regarding their nominal structures.

Chapter 12, "Phrase structure" [2001], discusses the development of the theory of phrase structure in generative grammar, while putting various proposals in his earlier work in the broader theoretical context.

Chapter 13, "The Visibility Guideline for functional categories: Verb-raising in Japanese and related issues" [2003], written with Hiromu Sakai, proposes the "Visibility Guideline for functional categories," which requires that functional elements should be (directly or indirectly) "detectable" in primary linguistic data. They argue that in the absence of compelling evidence for postulating a formal and mechanical "feature checking" in Japanese, the Visibility Guideline forces us to assume that Japanese lacks active functional categories. It is then shown that in place of formal and mechanical computations in narrow syntax, PF and semantic mechanisms are at work in Japanese grammar.

The Appendix, "On the nature of economy in language" [1996], argues that the economy principles in theoretical linguistics are comparable to the Principle of Least Action in physics. It is suggested that the economy

principles could be a reflection of natural laws that require computational efficiencies.

### 3. The Theory of Locality

This section discusses Fukui's theory of locality, focusing on crosslinguistic variations associated with island constraints. Section 3.1 presents Fukui's claim that Japanese island effects are weaker than those found in English. I will point out, however, that there are cases in Japanese which exhibit strong island effects, arguing that the asymmetry regarding the strength of island effects exists not between English and Japanese but between typical A'-movement like *wh*-movement and empty operator movement, on the one hand, and scrambling, on the other. Section 3.2 first presents Fukui's analysis of the Subject Condition effect. Fukui observes that English exhibits the Subject Condition effect, whereas Japanese does not, arguing that this difference between the two languages follows from his analysis. As pointed out by Chomsky (2005), however, there are cases even in English where extraction out of a subject position is allowed. I will suggest that a modified version of Chomsky's analysis, coupled with Fukui's parametric statement regarding verb raising, accounts for the presence/absence of the Subject Condition effect.

#### 3.1. The Strength of Island Effects

Fukui (Ch. 3 [1991]) observes that although Japanese exhibits island effects, they are weaker than those found in languages like English, citing Saito's (1985) examples (Fukui (Ch. 3 [1991]: 64–65)):

- (1) a. ??[ano hon]-o<sub>i</sub> John-ga [[*t<sub>i</sub>* katta] hito]]-o  
           that book-Acc John-Nom bought person-Acc  
           sagashiteiru rashii  
           is looking for seem  
           'It seems that John is looking for the person who bought that book.'
- b. ?[sono hon]-o<sub>i</sub> John-ga [Mary-ga *t<sub>i</sub>*  
           that/the book-Acc John-Nom Mary-Nom  
           yomi-oete kara] dekaketa (koto)  
           finish reading after went-out (fact)  
           'John went out after Mary finished reading that/the book.'

All of these examples involve scrambling out of islands. (1a) involves scrambling out of a complex NP; (1b) involves scrambling out of an adjunct

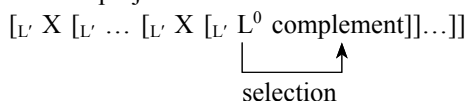
clause. They are not perfect, but they are better than normal island constraint violations like those involving English overt *wh*-movement (Cinque (1990: 1)):

- (2) a. \*To whom<sub>i</sub> have you found [someone who would speak *t<sub>i</sub>*]?  
 b. \*To whom<sub>i</sub> did you leave [without speaking *t<sub>i</sub>*]?

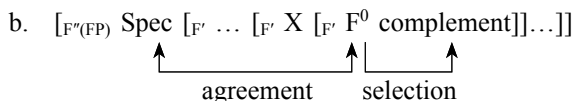
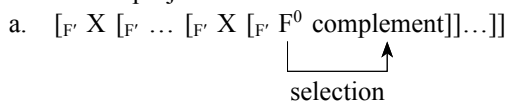
Fukui (Ch. 3 [1991]) argues that this difference between English and Japanese can be explained by his refined notion of barriers, which is based on the relativized X' theory advocated by Fukui (Ch. 1 [1986], Ch. 2 [1988], Ch. 3 [1991], Ch. 6 [1995], Ch. 12 [2001]).

The basic tenet of the relativized X' theory is that the difference between lexical categories and functional categories should be reflected in the ways they project in accordance with X' theory (cf. Fukui (Ch. 6 [1991]: 62)):

- (3) Lexical projection



- (4) Functional projection



As shown in (3), a lexical head  $L^0$  projects up to the single-bar level  $L'$ , taking a complement as its lexical property, and at that level, it allows free recursion; a lexical projection is never closed due to the lack of agreement relation. A functional head  $F^0$  also projects to the single-bar level  $F'$  in the same way as a lexical head, allowing free recursion. If a functional head induces agreement, as shown in (4b), it can project up to the double-bar level  $F''$  (FP), and its projection is closed. If a functional head does not induce agreement, as shown in (4a), its projection is not closed. The relativized X' theory differs from “standard” versions of X' theory such as that formulated in Chomsky (1986) in a number of respects. One crucial difference which is relevant to the present discussion is concerned with the notion of “maximal projection.” In the standard X' theory, the notion of “maximal projection” and the number of bars are closely connected. In Chomsky’s (1986) X' theory, for example, the maximal projection of  $X^0$  is, by definition, the double bar-level  $X''$  (XP) regardless of the property of  $X^0$ . In the relativized X' theory, on the other hand, the concept of “maximal projection”

and the number of bars are completely dissociated; the maximal projection is defined as being the top node of a given projection. Hence, the maximal projections of lexical heads are always  $L'$ , as in (3), while the maximal projections of functional heads are either  $F''$  (FP), as in (4b), or  $F'$ , as in (4a), depending on whether a given functional head induces agreement. Based on the relativized  $X'$  theory, Fukui claims that the strength of a barrier depends on the "depth" of projection. A single-bar maximal projection  $X'$  becomes a weak barrier if it is not L-marked, i.e. not a complement of a lexical head; when a maximal projection happens to be an XP, it becomes a strong barrier in the sense that its effect as a barrier is stronger than a non-L-marked single-bar maximal projection. Fukui also proposes the parametric statement that Japanese lacks the class of active functional categories which induce agreement. From this, it immediately follows that the phrasal projections of Japanese are never closed, projecting only up to the single-bar level. Hence, in Japanese, which has no XP projections, there are only weak barriers; this accounts for its weaker island effects.

I will show, however, that there are cases in Japanese which exhibit strong island effects, arguing that the asymmetry regarding the strength of island effects exists not between English and Japanese but between typical  $A'$ -movement and scrambling. There are several constructions in Japanese which have been assumed to involve empty operator movement. First, according to Hoji (1990), the cleft construction with an NP-Case or PP focus necessarily involves empty operator movement (Hoji (1990 Ch. 5: 32–33)):

(5) The Cleft Construction with an NP-Case Focus

Yamada-ga    hihanshita no    wa    Tanaka-o    da  
 Yamada-Nom criticized Comp Top Tanaka-Acc be  
 'It was Tanaka that Yamada criticized.'

(6) The Cleft Construction with a PP Focus

Yamada-ga    atta no    wa    Russell-ni    da  
 Yamada-Nom met Comp Top Russell-Dat be  
 'It was with Russell that Yamada met.'

(6), for example, is assigned structure (7):<sup>1</sup>

(7)  $[[Op_i [Yamada-ga \ t_i \ atta]] \ no] \text{-}wa \quad Russell_i \text{-}ni \ da$   
      Yamada-Nom    met    Comp Top    Russell-Dat    be

<sup>1</sup> Following Kikuchi (1987) and Hoji (1990), we assume that an empty operator moves leftward to the clause-initial position, though the present discussion holds regardless of the directionality of empty operator movement.

In (7), the empty operator *Op* moves from its original position to the Spec of C, where it is associated with the PP focus *Russell-ni* 'Russell-Dat' through predication.

Second, Takezawa (1987) argues that some *tough* constructions involve empty operator movement. Among four types of the *tough* constructions presented by Inoue (1978), he only deals with Type IV, which exhibits different syntactic behaviors than the other types (see Kuroda (1978) and Saito (1982)). Takezawa argues that the *tough* construction with a PP subject necessarily involves empty operator movement:

- (8) Imooto-kara-ga John-nitotte okane-o kari  
 sister-from-Nom John-for money-Acc borrow  
 yasui (koto)  
 easy (fact)  
 'It is easy for John to borrow money from his sister.'

(8) is assigned structure (9):

- (9) [Imooto-kara<sub>i</sub>-ga [John<sub>j</sub>-nitotte [*Op*<sub>i</sub> [*e*<sub>j</sub> *t*<sub>i</sub> okane-o  
 sister-from-Nom John-for money-Acc  
 kari]] yasui]]  
 borrow easy

In (9), the empty operator *Op* in the Spec of C is associated with the PP subject *imooto-kara* 'from his sister.'

Third, Kikuchi (1987) and Ishii (1991) argue that the comparative deletion construction involves empty operator movement. Although they differ as to the categorial status of the empty operator involved in this construction, I will assume Kikuchi's analysis for expository purposes. Under Kikuchi's analysis, (10) is assigned structure (11) (Kikuchi (1987: 4)):

- (10) John-ga tabeta yorimo Tom-wa keki-o takusan  
 John-Nom ate than Tom-Top cake-Acc many  
 tabeta  
 ate  
 'Tom ate more cakes than John ate.'

- (11) [*Op*<sub>i</sub> [John-ga *t*<sub>i</sub> tabeta] yorimo] Tom-wa keki-o takusan tabeta

It has been observed (see the references cited above) that long-distance empty operator movement is possible in these constructions. What is noteworthy is that exactly like overt *wh*-movement in English, the empty operator movement involved in these constructions exhibits strong island effects:



## (12) Complex NP Constraint

## a. The Cleft Construction

\*? $[Op_i$  [John-ga  $[[e_j t_i$  atta-koto-ga aru]

John-Nom have met

nihonjin<sub>j</sub>]-o ozei shitte iru] no ]-wa

Japanese-Acc many know Comp Top

Russell<sub>i</sub>-ni da

Russell-Dat be

Lit. 'It is with Russell<sub>i</sub> that John knows many Japanese that have met  $e_i$ .' (Hoji (1990 Ch 5: 31))

b. The *Tough* Construction

\*[[anna taipu-no jousei-to]<sub>j</sub>]-ga

that type of woman-with-Nom

[(John<sub>j</sub>-nitotte)  $[Op_i$  [ $e_j$  [ $e_k t_i$  kekkon shite iru]

John-for marry

otoko<sub>k</sub>]-to hanasi]] nikui]] (koto)

man-with talk hard (fact)

Lit. '[With that type of woman]<sub>i</sub> is hard (for John) to talk to the man who marries  $e_i$ .' (Takezawa (1987: 215))

## c. The Comparative Deletion Construction

\* $[Op_i$  [[[ $e$  sono tsukue-de  $t_i$  yondeita]

that table-on was reading

hito]-o John-ga nagutta] yorimo] Paul-wa

person-Acc John-Nom hit than Paul-Top

takusan hon-o yondeita

many book-Acc read

Lit. 'Paul read more books than John hit a person who was reading at that table' (Kikuchi (1987: 13))

## (13) Adjunct Condition

## a. The Cleft Construction

\* $[Op_i$  [John-ga [Mary-ga  $t_i$  yomi-oete

John-Nom Mary-Nom finish-reading

kara] dekaketa no ] -wa sono hon-o da

after went-out Comp Top that/the book-Acc be

Lit. 'It is that/the book<sub>i</sub> that John went out after Mary finished reading  $e_i$ .'

b. The *Tough* Construction

\*[[kono taipu-no hashigo-kara]<sub>j</sub>]-ga [(shoboshi<sub>j</sub>-

this type of ladder-from-Nom fireman

nitotte) [*Op<sub>i</sub>* [*e<sub>j</sub>* [*e<sub>j</sub>* *t<sub>i</sub>* *ashi-o humihazusa-zu*]  
 for miss their footing-without  
*biru-kara hito-o kyushutsushi*]] *yasui*]]  
 building-from person-Acc rescue easy  
 (koto)  
 (fact)

Lit. '[from this type of ladder]<sub>i</sub> is easy for firemen to rescue persons from the building without missing their footing *e<sub>i</sub>*.'

(Ishii (1997: 185))

c. The Comparative Deletion Construction

\*[*Op<sub>i</sub>* [[*John-ga t<sub>i</sub>* *yondeita toki-ni*]  
           John-Nom was reading time-at  
*jishin-ga okita yorimo*] Paul-wa  
 earthquake-Nom happened than Paul-Top  
*harukani takusan-no hon-o yondeita*  
 far many-Gen book-Acc read

Lit. 'Paul read more books than an earthquake happened when John was reading.'

(Kikuchi (1987: 14))

It should be noted that (12) and (13) are as severely deviant as the CNPC and Adjunct Condition violations induced by overt *wh*-movement in English. These facts show that unlike scrambling, empty operator movement, which is a typical A'-movement, exhibits strong island effects even in Japanese. The asymmetry regarding the strength of the island effects exists not between English and Japanese, but between typical A'-movement like overt *wh*-movement and empty operator movement, on the one hand, and scrambling, on the other. We may, therefore, reasonably conclude that the weaker island effects in Japanese exemplified by (1) are not due to Japanese phrase structure, but to the property of scrambling, though it remains an unsettled question why scrambling does not exhibit normal island violations.<sup>2, 3</sup>

<sup>2</sup> Ishii (1997) argues that this asymmetry in the strength of island effects between these two types of movement straightforwardly follows from his theory of phrase structure if we assume following Fukui (Chapter 4 [1993], Chapter 8 [1998]) that Japanese scrambling is not feature-driven. See Ishii (1997) for detailed discussion.

<sup>3</sup> There are procedural difficulties in comparing the acceptability of an example in Japanese and that of its English counterpart. First, since it is in principle impossible to compare identical examples in the two languages, we cannot but deal with structures/constructions "similar enough" to be compared. Second, as pointed out by an anonymous *EL* reviewer, even if we deal with structures/constructions "similar enough" to be compared, it is impossible for one native speaker to make acceptability judgments on those

### 3.2. The Presence/Absence of the Subject Condition Effects

Fukui (Ch. 6 [1995], Ch. 8 [1998], Ch. 9 [1999], Ch. 12 [2001]) also points out another difference between English and Japanese regarding island constraints, i.e., while English exhibits the Subject Condition effect, Japanese does not, as shown below (Fukui (Ch. 8 [1998]: 197, 201)).<sup>4</sup>

(14)\*?Who<sub>i</sub> did [pictures of *t<sub>i</sub>*] please John?

(15) ?Nani-o<sub>i</sub> [John-ga [[Mary-ga *t<sub>i</sub>* katta] koto]-ga  
       what-Acc John-Nom Mary-Nom bought fact-Acc  
       mondai-da to] omotteru] no  
       problem-is that think Q  
       Lit. 'What<sub>i</sub>, John thinks that [the fact that Mary bought *t<sub>i</sub>*] is a  
       problem.'

In (14), the *wh*-phrase *who* is extracted out of the subject phrase by means of *wh*-movement, exhibiting the Subject Condition effect. In (15), *nani-o* 'what-Acc' is scrambled out of the subject phrase. The result is slightly degraded since it involves extraction out of the complex NP. Crucially, there is no subject-object asymmetry with respect to extractability; if a phrase is scrambled out of an object phrase, as in (16), the result is as degraded as that of extraction out of a subject phrase (Fukui (Ch. 8 [1998]: 201)):

(16) ?Nani-o<sub>i</sub> [John-ga [[Mary-ga *t<sub>i</sub>* katta] koto]-o  
       what-Acc John-Nom Mary-Nom bought fact-Acc  
       mondai-ni shiteiru] no?  
       problem-into making Q  
       Lit. 'What<sub>i</sub>, John is making an issue out of [the fact that Mary  
       bought *t<sub>i</sub>*].'

These facts show that subjects do not constitute islands in Japanese.

examples unless we ask a "perfect" English/Japanese bilingual speaker to do it (if such really exists). Hence, strictly speaking, under the present circumstances where we do not have any experimental design which would enable us to measure the acceptability of an example in an objective way, there is no principled way of comparing the acceptability judgments on examples in different languages. It is still true, however, that the contrast between fully acceptable examples and examples involving scrambling out of islands like (1a, b) is very subtle to many native speakers of Japanese; the contrast between fully acceptable examples and examples involving A'-movement out of islands has been widely assumed to be clear. It is then reasonable to suppose that this contrast between scrambling and A'-movement regarding island effects needs an explanation, though we should seek to establish an objective experimental design on acceptability judgments. I leave this important issue concerning an objective experimental design for future research. I would like to thank an *EL* reviewer for bringing my attention to this subject.

<sup>4</sup> This fact is also pointed out by Kayne (1983).

Fukui (Ch. 8 [1998]) argues that this difference between English and Japanese follows from the parametrized version of Merge proposed in Fukui (Ch. 8 [1998]). According to the parametrized version of Merge, the head parameter is incorporated into the bare phrase structure theory by replacing the set notation  $\{\alpha, \beta\}$  in Chomsky's (1995) original formulation of Merge by an ordered pair  $\langle\alpha, \beta\rangle$ :

- (17) Chomsky's Merge

$$K = \{\alpha, \{\alpha, \beta\}\}$$

(Chomsky (1995: 243))

- (18) Parametrized Merge

$$K = \{\gamma, \langle\alpha, \beta\rangle\}, \text{ where } \gamma \in \{\alpha, \beta\}.$$

a.  $\gamma = \alpha$ : head-initial, left-headed

b.  $\gamma = \beta$ : head-final, right-headed (Fukui (Ch. 8 [1998]: 190))

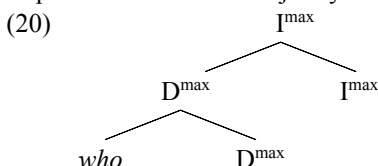
If  $\gamma$  takes the value  $\alpha$ , we have a head-initial language such as English, whereas if  $\gamma = \beta$ , a head-last language like Japanese is defined. In head-initial English, elements can be merged only on the right side of a head, whereas in head-last Japanese, Merge can only occur on the left side of a head. If something is to be introduced on the opposite side of a head, i.e. on the left side of a head in English and on the right side of a head in Japanese, it must be adjoined to the target, creating a multisegment structure. This leads to a difference in the status of subjects in these languages. The subject in English is in an adjoined position, since it appears on the left side of a head and thus never induces projection of the target. The subject in Japanese, on the other hand, is introduced on the left side of a head in terms of Merge, since it is in accordance with the "head parameter value" of Merge specified in (18b). The subject in Japanese is not in an adjoined position, but rather introduced into structure by substitution in the sense that it is introduced into a position completely inside a projection of the target.

Fukui (Ch. 8 [1998]) argues that this difference in the status of subjects between English and Japanese enables us to account for the asymmetry between these languages regarding the Subject Condition effect if we follow Takahashi's (1994) analysis of the Subject Condition effect in English. Takahashi proposes to derive the Subject Condition effect in English from the Minimal Link Condition (MLC) and the impossibility of adjunction to a subject. Let us consider (14) as an example. The MLC requires that movement should go through every possible landing site (see Chomsky and Lasnik (1993)). Given that any maximal projection dominating the moved element is a potential landing site in the case of A'-movement, the *wh*-phrase *who* must adjoin to every maximal projection that

intervenes between its original position and its final landing site. Crucially, *who* must adjoin to the subject phrase, which is a maximal projection. If adjunction to a subject is impossible (Chomsky (1986)), however, *who* must skip a possible landing site. This violates the MLC; (14) is deviant. Fukui claims that under the parametrized version of Merge, the impossibility of adjunction to a subject in English straightforwardly follows from the following condition on adjunction, which is an instance of the general uniqueness condition on the licensing of nonroot elements in a phrase structure (Fukui (Ch. 8 [1998]: 198)):

(19) An adjunction site must be unique.

Given that the subject in English is in an adjoined position, adjunction of the *wh*-phrase *who* to the subject yields the following configuration:



According to the definition of adjunction (21), *who* is adjoined simultaneously to  $D^{\max}$  and  $I^{\max}$  (Fukui (Ch. 8 [1988]: 198)):

(21)  $\alpha$  is adjoined to  $\beta =_{\text{def}}$  neither  $\alpha$  nor  $\beta$  dominates the other and  $\alpha$  does not exclude  $\beta$ .

The configuration (20) is excluded by the condition of adjunction (19); the impossibility of adjunction of a subject in English follows.<sup>5</sup> Given this analysis of the Subject Condition effect in English, the absence of its effect in Japanese straightforwardly follows, since a subject in Japanese is not in an adjoined position, but in a position completely inside a projection of the target.

Fukui's analysis is based on the observation that English exhibits the Subject Condition effect, whereas Japanese does not. As pointed out by Chomsky (2005), however, there are cases in English where extraction out of a subject position is allowed (Chomsky (2005: 14)):

- (22) a. \*[Of which car]<sub>i</sub> did [the driver  $t_i$ ] cause a scandal?  
 b. [Of which car]<sub>i</sub> was [the driver  $t_i$ ] awarded a prize?

<sup>5</sup> Fukui (Ch. 8 [1998]) claims that his analysis of the Subject Condition can also accommodate the Adjunct Condition effects, which are widely assumed to be universal, thereby opening up a new way of unifying the two cases of Huang's (1982) Condition on Extraction Domain (CED).

(22a) is a standard example of the Subject Condition. (22b), on the other hand, does not exhibit any Subject Condition effect despite the fact that the *wh*-phrase *of which car* is extracted out of the subject phrase. Chomsky (2005) accounts for the contrast between (22a) and (22b) in terms of the notion of phase. Chomsky (2001, 2004, 2005) assumes that the phases are CP and  $v^*P$ , where  $v^*$  is the functional head associated with full argument structure, i.e. the one in the transitive and experiencer constructions. Let us first consider (22a). Its base structure is represented below:

- (23) C [T [ $_{v^*P}$  [the driver of which car] [ $v^*$  [cause a scandal]]]]

Chomsky claims that C has two probes, i.e. an edge-feature and an Agree-feature ( $\phi$ -features). In (23), the edge-feature of C probes the *wh*-phrase *of which car*, whereas the Agree-feature of C, which is inherited by T, attracts the subject phrase *the driver of which car* to the Spec of T. These two operations are assumed to proceed in parallel. The edge-feature of C, however, cannot access the *wh*-phrase *of which car*, which is within the external argument of  $v^*$ . This is because the *wh*-phrase *of which car* is embedded in the lower phase  $v^*P$ , which has already been passed in the derivation, and searching into the phase already passed is costly. It should be noted that the external argument of  $v^*$  itself is accessible from outside the  $v^*P$  phase. If the *wh*-phrase *of which car* could be extracted to the edge of  $v^*P$ , it would be accessible to the edge-feature of C. This extraction is not allowed, however, since *of which car* is not in the search domain (c-command domain) of  $v^*$ . Hence, there is no way to derive (22a); (22a) is deviant. Let us next consider (22b), whose base structure is represented below:

- (24) C [T [ $_{vP}$  [ $v$  [awarded [the driver of which car] a prize]]]]

In (24), since the light verb  $v$  is unaccusative/passive, its maximal projection  $vP$  does not constitute a phase. The edge-feature of C raises the *wh*-phrase *of which car* to the Spec of C, and its Agree-feature, inherited by T, raises *the driver of which car* to the Spec of T. Hence, (22b) is acceptable.

I claim that Chomsky's (2005) analysis of the Subject Condition in English can be extended to account for the absence of the Subject Condition effect in Japanese if we assume Fukui's (Ch. 7 [1998], Ch. 11 [2000]) parametric statement regarding the property of a light verb  $v$ , which will be taken up in detail in section 4 (Fukui (Ch. 7 [1998]: 148)):

- (25)  $v$  has the property of attracting V in English, but not in Japanese.

Recall that Chomsky (2001, 2004, 2005) defines  $v^*$  as the functional head associated with full argument structure. Let us revise this definition, claim-

ing that  $v^*$  should be defined as the functional head which is associated with full argument structure and has the property of attracting V. Then, since a Japanese light verb does not have the property of attracting V, it never counts as  $v^*$ , not forming a phase exactly like an unaccusative/passive light verb in English. It follows that extraction out of a subject position is always allowed in Japanese. As we shall see later in section 4, (25) accounts for the difference between the SVO order in languages like English and the SOV order in languages like Japanese. Hence, the suggested analysis of the Subject Condition can also accommodate the generalization that the Subject Condition effect does not exist in SOV languages, though further consequences of the lack of  $v^*P$  phase in SOV languages remain to be seen.

#### 4. The Theory of Phrase Structure and Linear Order

This section reviews Fukui's (Ch. 7 [1998], Ch. 11 [2000]) discussion about the theory of phrase structure and linear order. I will first present his Symmetry Principle of Derivation, an antisymmetric theory of the kind proposed by Kayne (1994). I will then suggest a way of accommodating under the Symmetric Principle rightward positioning of adjuncts, which has been claimed to pose a challenge to antisymmetric theories.

Fukui (Ch. 7 [1998], Ch. 11 [2000]) proposes the Symmetry Principle of Derivation (Fukui (Ch. 7 [1998]: 140)):

(26) The Symmetry Principle of Derivation

Computations in the overt (pre-Spell-Out) component and computations in the phonological component are symmetric.

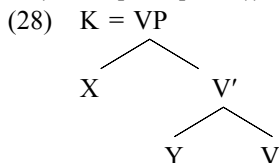
Given the "standard" view advocated by Chomsky (1995) that Merge, an operation that combines two syntactic objects forming a larger syntactic object, is the basic operation of the overt (pre-Spell-Out) component of a derivation, the Symmetry Principle of Derivation states that the basic operation in the phonological component is characterized as an operation reversing the effects of Merge, i.e. breaking a single syntactic object into two syntactic objects. Fukui proposes that in the pre-Morphological portion of the phonological component, the process of Linearization takes place (Fukui (Ch. 7 [1998]: 144)):

(27) Linearization

Applied to  $\Sigma$ , Demerge yields  $\{\alpha, \{\Sigma - \alpha\}\}$ , an  $X^{\max}$  constituent of  $\Sigma$ , and Concatenate turns  $\{\alpha, \{\Sigma - \alpha\}\}$  into  $\alpha + (\Sigma - \alpha)$ .

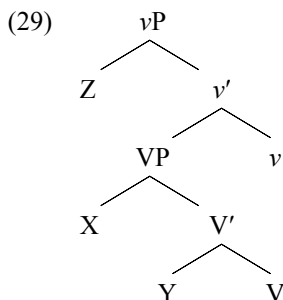
Demerger is a "reverse" operation of Merge, applying to the structure  $\Sigma$  in a top-down fashion and breaking it into two roots, both of which are maxi-

mal projections. Concatenate then applies to assign the linear order of the maximal projections made available by Demerge. As an illustration, let us consider the following structure, where X and Y are maximal projections (Fukui (Ch. 7 [1998]: 142)):



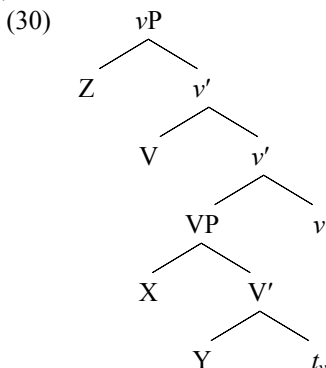
Given that Linearization is a top-down process, it applies to the root K (=VP). Demerge breaks K into two root nodes, i.e. X and V'. Concatenate then applies to these two root nodes, determining linear order between them based on the asymmetric property inherent to the relation between them. Fukui assumes that only maximal projections are visible to Demerge as well as Merge. Then, X is already a maximal projection and hence visible when Demerge applies, whereas V' becomes a visible maximal projection as a result of an application of Demerge. Hence, X becomes available for Concatenate before V'; X "precedes" V' in becoming available for Concatenate. If Concatenate retains this abstract "precedence relation" in the computation to a temporal precedence relation, X and V' are put in a sequence (X+V'). Next, Demerge applies to V', which is a maximal projection at this stage, yielding two root nodes, i.e. Y and V. Concatenate puts them in a sequence (Y+V). As a result, the output of Linearization applying to K in (28) is the sequence (X+Y+V), where X and Y are traditionally called Specifier (S) and Complement (C) of the head (H) V, respectively. Therefore, Fukui's Symmetry Principle of Derivation predicts that S-C-H (particularly S-O-V) is the basic word order.

Fukui (Ch. 7 [1998], Ch. 11 [2000]) claims that the S-H-C/S-V-O order is derived by movement. Let us look at the core proposition of a ditransitive structure assumed in Fukui's analysis (Fukui (Ch. 7 [1998]: 145)):





In (29), Z is an external argument, X is an indirect internal argument, and Y is a direct internal argument. If Linearization applies to (29), it assigns the surface order (Z+X+Y+V+v). This is how Fukui's analysis gets the S-C-H/S-O-V order in languages like Japanese. In languages like English, on the other hand, V-raising applies to (29), yielding (30) (Fukui (Ch. 7 [1998]: 147)):



Fukui (Ch. 7 [1998], Ch. 11 [2000]) assumes that head movement should be analyzed as substitution into Spec rather than adjunction to head. In (30), V raises to the Spec of  $v$  in terms of head movement. Linearization applies to (30), giving rise to the surface order (Z+V+X+Y+t<sub>v</sub>+v), where t<sub>v</sub> and v are invisible. This is what happens in SHC/SVO languages like English. Hence, under Fukui's analysis, the fundamental difference between head-initial languages like English and head-last languages like Japanese arises from a parameter associated with the functional head  $v$  (Fukui (Ch. 7 [1998]: 148)):

(31)  $v$  has the property of attracting V in English but not in Japanese. It should be noted that (31) is consistent with the functional parametrization hypothesis advocated in Fukui (Chapter 6 [1995]), a restrictive theory of parameters which claims that only [+F] elements (functional elements) are subject to parametric variation.

Fukui's (Ch. 7 [1998], Ch. 11 [2000]) approach to phrase structure and linear order is along the same line as Kayne's (1994) Linear Correspondence Axiom (LCA) approach in that both of them assume the antisymmetric hypothesis, which states that what is structurally higher necessarily precedes what is lower. Fukui's approach, however, differs from Kayne's (1994) LCA approach in that the former claims that S-C-H/S-O-V is the basic word order, whereas the latter claims that there is a universal S-H-C/S-V-O word order, with the other S-C-H/S-O-V word order being derived by

movement. Kayne's approach has to assume a functional head in S-C-H/S-O-V languages like Japanese which always forces the complement/object to move overtly to its Spec, crossing the head/verb. Fukui (Ch. 7 [1998], Ch. 11 [2000]) argues that the exact nature of the postulated functional head that Kayne suggests for languages like Japanese is not clear, and the motivations for required overt movement are quite obscure. Fukui's Symmetry Principle of Derivation, on the other hand, can account for the word order variation without postulating dubious functional heads in languages like Japanese, while implying further desirable consequences regarding language variation and typology.

In the rest of this section, I will investigate the linear order of adjuncts, and rightward positioning of adjuncts in particular. I will first present Takano's (2003) arguments that rightward merger is necessary to account for rightward positioning of adjuncts, and hence the antisymmetric hypothesis should be "weakened" in the sense that adjuncts are not subject to the hypothesis. I will then suggest a way of accommodating rightward adjuncts under the Symmetry Principle of Derivation without recourse to rightward merger, thereby keeping to the antisymmetric hypothesis.

It has been claimed that adjuncts can appear rightward on the surface order while located in a structurally high position:

- (32) a. \*He<sub>i</sub> was hit on the head [before the lecturer<sub>i</sub> had a chance to say anything]. (Reinhart (1976: 26))
- b. The chairman hit him<sub>i</sub> on the head [before the lecturer<sub>i</sub> had a chance to say anything]. (Reinhart (1976: 23))
- (33) a. ?John twice intentionally knocked the door.
- b. ??John intentionally twice knocked the door. (Andrew (1983: 696))
- (34) a. John knocked the door intentionally twice.
- b. John knocked the door twice intentionally. (Andrew (1983: 695))

(32a) is deviant on the coreference reading between *he* and *the lecturer*. This fact can be accounted for by Condition C of the Binding Theory if the subject is located structurally higher than the rightward adjunct clause and thus the R-expression *the lecturer* is c-commanded by the pronoun *he*. In (32b), on the other hand, the coreference reading is possible. This indicates that the rightward adjunct clause is located structurally higher than the object. In (33a, b), the preceding adjunct has scope over the following adjunct. In (34a, b), on the other hand, the following adjunct has scope over the preceding adjunct. (33a) and (34a) involve two

instances of intentional knocking, whereas (33b) and (34b) involve one intentional instance of knocking twice. Given that scope relations between adjuncts are determined by their c-command relations, it follows that the preceding adjunct c-commands the following adjunct in (33), whereas the following adjunct c-commands the preceding adjunct in (34).

(32b), (34a) and (34b) can be accounted for by rightward merger of adjuncts. Under the rightward merger analysis, (34a), for example, would be assigned the following structure:

- (35) John [[[knocked the door] intentionally] twice]

As pointed out by, among others, Cinque (1999) and Takano (2003), however, rightward merger is not the only way to derive the above facts. (34a), for example, can be derived by movement of *knocked the door intentionally* around *twice*, as shown below:

- (36) a. John twice [knocked the door intentionally].  
b. John [<sub>a</sub> knocked the door intentionally] twice *t<sub>a</sub>*.

In (36), *twice* is structurally higher than *intentionally* before movement; this yields the interpretation that the former has scope over the latter. (32b), (34a) and (34b), therefore, do not constitute decisive evidence for rightward merger.

Takano argues that a convincing argument that rightward merger is necessary to account for rightward adjuncts can be made on the basis of the following facts (Branigan (1992: 45)):

- (37) a. John paints pictures at all well only rarely.  
b. Jay tells jokes with any gusto only occasionally.

In (37), the NPIs *at all* and *with any gusto* are licensed by the rightmost adjuncts *only rarely* and *only occasionally*, respectively. This indicates that the rightmost adjuncts are located structurally higher than the NPIs. Takano then points out that NPIs cannot be licensed under reconstruction, as observed by, among others, Laka (1990) and Phillips (1996):

- (38) a. \*[Buy any records]<sub>i</sub> she didn't *t<sub>i</sub>*. (Laka (1990: 195))  
b. \*[Whose theory about anything]<sub>i</sub> does John not like *t<sub>i</sub>*?  
(Phillips (1996: 53))

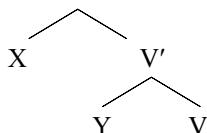
Given this property of NPIs, (37a, b) cannot involve derivations similar to (36). (37a), for example, cannot be derived by generating the licensing rightmost adjunct *only rarely* in a structurally higher position than *paints pictures at all*, and moving *paints pictures at all* over *only rarely*, as shown below:

- (39) a. John only rarely [paints pictures at all well].  
b. John [<sub>a</sub> paints pictures at all well] only rarely *t<sub>a</sub>*.

Takano claims that the rightmost licensing adjunct in (37) must be merged rightward in a structurally higher position than the preceding NPI.

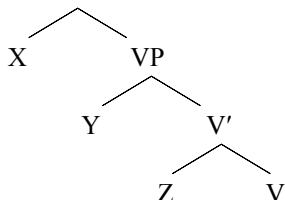
I claim, however, that there exists a way of accommodating rightward adjuncts within the Symmetry Principle of Derivation without recourse to rightward merger. Recall that according to the Symmetry Principle, Demerge first applies to the root, breaking it into two root nodes, and Concatenate then applies to these two root nodes, determining their linear order. In (28) (repeated here as (40)), for example, Demerge applies to the root node  $K (=VP)$ , breaking it into  $X$  and  $V'$ . Concatenate then puts them in a sequence ( $X+V'$ ) based on the asymmetric property inherent to the relation between  $X$  and  $V'$ , i.e.,  $X$  is already a maximal projection and hence visible when Demerge applies, whereas  $V'$  becomes a visible maximal projection as a result of an application of Demerge:

(40)  $K = VP$



In adjunction structures, however, there does not exist such an asymmetry regarding the maximal projection property. As an illustration, let us consider VP-adjunction structure (41), where  $X$ ,  $Y$ , and  $Z$  are maximal projections:

(41)  $K = VP$



Demerge applies to the root node  $K (=VP)$ , breaking it into  $X$  and  $VP$ . It should be noted that both  $X$  and  $VP$  are already maximal projections and hence visible when Demerge applies. This is in accord with Chomsky's (1995, 2004) view that when  $\alpha$  is adjoined to  $\beta$ , it forms the ordered pair  $\langle \alpha, \beta \rangle$  with the three terms  $\alpha$ ,  $\beta$ , and  $\langle \alpha, \beta \rangle$ , and each of these terms is a category that is visible. Hence, in the present case,  $X$ ,  $VP (=the\ lower\ VP)$ , and  $\langle X, VP \rangle (=K, the\ higher\ VP)$  are categories which are visible. Since there does not exist any asymmetry between  $X$  and  $VP$ , it is plausible to assume that Concatenate puts  $X$  and  $VP$  in either a sequence ( $X+VP$ ) or a sequence ( $VP+X$ ).

Given this analysis of adjuncts, let us first consider (33a) and (34a) (re-

peated here as (42a, b) as examples:

- (42) a. ?John twice intentionally knocked the door.  
b. John knocked the door intentionally twice.

Both (42a) and (42b) are assigned the following structure:

- (43) John [<sub>VP</sub> twice [<sub>VP</sub> intentionally [<sub>VP</sub> knock the door]]]

When we come to the stage where Demerge applies to the largest VP, the largest VP is broken up into the two root nodes, i.e. the adjunct *twice* and the VP *intentionally knock the door*. Since the adjunct and the VP are both maximal projections, Concatenate puts them in either surface order:

- (44) a. (*twice + intentionally knock the door*)  
b. (*intentionally knock the door + twice*)

Demerge then applies to the VP *intentionally knock the door*, breaking it up into the adjunct *intentionally* and the VP *knock the door*. Since both the adjunct *intentionally* and the VP *knock the door* are maximal projections, they surface in either order:

- (45) a. (*intentionally + knock the door*)  
b. (*knock the door + intentionally*)

If we choose (44a) and (45a), we obtain a sequence (*twice + intentionally + knock the door*); this yields (42a). If we choose (44b) and (45b), on the other hand, we obtain the surface order (*knock the door + intentionally + twice*); this yields (42b). Since both (42a) and (42b) have the same structure (43), where *twice* c-commands *intentionally*, we can correctly predict that in both (42a) and (42b), *twice* has scope over *intentionally*; (42a) and (42b) involve two instances of intentional knocking.

This analysis also accounts for the fact that when the two adjuncts appear on either side of the verb, the resulting sentences are ambiguous, as shown below (Andrew (1983: 696)):

- (46) a. John twice knocked the door intentionally.  
b. John intentionally knocked the door twice.

Let us consider (46a) as an example. (46a) is assigned either of the following structures:

- (47) a. John [<sub>VP</sub> twice [<sub>VP</sub> intentionally [<sub>VP</sub> knock the door]]]  
b. John [<sub>VP</sub> intentionally [<sub>VP</sub> twice [<sub>VP</sub> knock the door]]]

In the case of (47a), Demerge applies to the VP *twice intentionally knock the door*, breaking it into the adjunct *twice* and the VP *intentionally knock the door*. Concatenate may put them in either surface order. Suppose that it puts them in following sequence:

- (48) (*twice + intentionally knock the door*)

Suppose further that Linearization applies to the VP *intentionally knock the*

*door*, yielding the following sequence:

- (49) (*knock the door + intentionally*)

This derivation yields (46a), where *twice* has scope over *intentionally*. In the case of (47b), on the other hand, suppose that Linearization applies to the VP *intentionally twice knock the door*, and yields the following sequence:

- (50) (*twice knock the door, intentionally*)

Suppose further that Linearization applies to the VP *twice knock the door*, yielding the following surface order:

- (51) (*twice + knock the door*)

This derivation yields (46a), where *intentionally* has scope over *twice*. (46b) can be explained in the same way. Hence, our modified analysis can also account for the ambiguity of (46a, b).

To summarize, this section has first presented Fukui's Symmetry Principle of Derivation, and then shown that rightward adjuncts can be accommodated under the Symmetry Principle without recourse to rightward merger.

## 5. Conclusion

This paper has first presented a summary of each of the articles collected in Naoki Fukui's *Theoretical Comparative Syntax*. I have then discussed Fukui's theory of locality, focusing on crosslinguistic variations associated with island constraints. I have pointed out some observational inadequacies with his analysis, claiming that the asymmetry regarding the strength of the island effects exists not between English and Japanese, but between typical A'-movement like overt *wh*-movement and empty operator movement, on the one hand, and scrambling, on the other. It was also shown that the presence/absence of the Subject Condition effect in English and Japanese can be accounted for in terms of the property of a light verb. I have next discussed Fukui's Symmetric Principle of Derivation, which is an antisymmetric theory of the kind proposed by Kayne (1994). I have suggested that rightward positioning of adjuncts, which has been claimed to constitute an empirical challenge to antisymmetric theories, can be accommodated under the Symmetry Principle of Derivation without recourse to rightward merger.

The book under review presents illuminating proposals and explicit analyses pertaining to issues of comparative syntax and syntactic theory, especially the issues of what the possible parameters permitted in UG are and how they are organized in such a way to derive the typological differences among languages by interacting with invariant principles of UG. This col-

lection is a good illustration of how one can make a contribution to developing comparative syntax and syntactic theory.

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