

Weak Crossover and Projection Theory

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Abstract

The purpose of this paper is to present an analysis of the fact that Japanese, unlike English, does not exhibit an adjunct/argument asymmetry with weak crossover effects. In the following pages, an attempt will be made to show that the adoption of Stowell's (1987) slash-indexing analysis of Weak Crossover and a system of category projection proposed in Fukui (1986; 1988 a; 1988 b), Fukui and Speas (1986), and Speas (1986) would provide a compelling account of that difference in the two languages. This study can also be construed as presenting further evidence in support of Fukui's parameter that distinguishes Japanese from English-type languages: Japanese lacks a class of functional categories.

0. Introduction

This paper will deal with the comparison between English and Japanese concerning an adjunct/argument (a)symmetry with weak crossover effects. We will argue that the adoption of Stowell's (1987) slash-indexing analysis of Weak Crossover and a system of category projection proposed in Fukui (1986; 1988 a; 1988 b), Fukui and Speas (1986), and Speas (1986) would offer a way of accounting for that difference in the two languages. The organization of this paper is as follows. Section one will be devoted to explicating Stowell's (1987) slash-indexing analysis of an adjunct/argument asymmetry with weak crossover effects in English. Section two will point out the lack of such an asymmetry in Japanese. Section three will show that this fact can be accounted for if we adopt a system of category projection proposed by Fukui and Speas where they argue that category projections in Japanese stop at the single-bar level and hence Japanese lacks real adjunct positions.

I. Adjuncts and Weak Crossover in English

This section will review Stowell's (1987) analysis of an adjunct/argument asymmetry with weak crossover effects in English.

First consider the contrast between (1) and (2):

- (1) a. Everyone_i loves his_i mother
b. Who_i loves his_i mother
(2) a. ?*His_i mother loves everyone_i
b. ?*Who_i does his_i mother love

In (2), unlike in (1), *his* cannot be construed as a variable bound by *everyone* or *who*. This effect — the blocking of the bound variable reading in (2) — is known as Weak Crossover. Comparing the LF-representations of (1) and (2), which are

given in (3) and (4) respectively, we observe that t c-commands his in (3) while in (4) neither t nor his c-commands the otherⁱ:

- (3) a. [everyone_i [t_i [loves his_i mother]]]
 b. [who_i [t_i [loves his_i mother]]]
 (4) a. [everyone_i [his_i mother [loves t_i]]]
 b. [who_i [does [his_i mother [love t_i]]]]

Thus, what is crucial in determining the availability of the bound variable interpretation of a pronoun seems to be its c-command relation with the variable. This generalization can be captured in terms of the condition (5) holding at LF²:

(5) A variable cannot be the antecedent of a pronoun that it does not c-command.

(Cf. Reinhart (1976))

Stowell (1987) points out, however, that there is a structurally definable set of contexts in which a bound variable is permitted in violation of condition (5), as in (6):

- (6) a. Who_i, [despite his_i having helped you], did you gossip about t_i
 (Stowell, 1987, p. 3)
 b. Who_i did Mary say [t_i was a fool] [after staying with him_i]
 c. Who_i, [after she had stayed with him_i], did Mary say [t_i was a fool]
 (Stowell, 1987, p. 5)

In (6) (a), the pronoun occurs within a VP-external adjunct clause, and the variable occurs within VP. In (6) (b) and (c), the variables occur in embedded clauses, and the pronouns occur in adjuncts construed with matrix clauses. In either case no c-command relation holds between the variables and pronouns. Despite this, the pronouns in (6) may be construed as bound variables. Hence, the contrast between (2) and (6) indicates that condition (5) is too strong.

Observations of this sort have led Stowell (1987) to reject the theories of Weak Crossover that accept the correctness of condition (5) and seek to derive it from more basic principles, such as Higginbotham's (1983) Linking Theory, Koopman and Sportich's (1982) Bijection Principle and Safir's (1984) Parallelism Constraint on Operator Binding. He instead extends the slash-indexing account of Weak Crossover, which was originally proposed in Haik (1984) and Safir (1984). His modified version of the slash-indexing analysis of Weak Crossover suggests that an NP under the scope of QP acquires the index of QP if it contains a variable bound by QP. The NP then bears two indices: its own index and the index of the quantifier, which is represented as a slash-index. According to his analysis, therefore, weak crossover configurations such as (2) (b) and (7) would have LF-representations (8) and (9) respectively:

- (2) b. ?*Who_i does his_i mother love
 (7) ?*Who_i does his_i mother think that Mary loves
 (8) ?*Who_i does [[his_i mother]_{k/i} love t_i]
 (9) ?*Who_i does [[his mother]_{k/i} think [that Mary loves t_i]]

In (8), the trace is locally A-bound by the slash-index assigned to the subject

NP. Let us assume the theory of functional determination of empty categories, which is proposed in Chomsky (1982):

- (10) a. An empty category is a variable if it is in an A-position and is locally \bar{A} -bound
 b. An empty category in an A-position that is not a variable is an anaphor
 c. An empty category that is not a variable is a pronominal if it is A-free or locally A-bound by an antecedent with an independent θ -role
 (Chomsky, 1982, p. 35)

By (10)(a), the trace in (8) is not a variable, because it is not locally \bar{A} -bound by an operator. (10)(b), then, automatically assigns the trace [+anaphor]. Finally, by (10)(c), the trace is [+pronominal], since even though it is not A-free, it is locally A-bound by an antecedent with an independent θ -role. Hence (8) violates Condition B of the binding theory,

(11) Binding Theory

- (A) An anaphor is A-bound in its governing category
 (B) A pronominal is A-free in its governing category
 (C) An R-expression is A-free
 (Chomsky, 1981, p. 188)

(12) Governing Category

- α is the governing category for β if and only if α is the minimal category containing β and a governor of β , where $\alpha = \text{NP}$ or S
 (Chomsky, 1981, p. 188)

since the trace is [+pronominal] (as well as [+anaphor]) and is A-bound in its Governing Category³. Turning now to (9), the trace is not locally \bar{A} -bound: its nearest binder is not an operator in an \bar{A} -position but instead is the slash-index assigned to the matrix subject NP. By (10)(a), the trace is therefore not a variable. Automatically, it is [+anaphor], given (10)(b). Finally, by (10)(c), the trace is [+pronominal], since even though it is not A-free, it is locally A-bound by an antecedent with an independent θ -role. Hence (9) violates Condition (A) of the binding theory, since the trace is [+anaphor] (as well as [+pronominal]) and is not A-bound in its Governing Category. Under Stowell's (1987) analysis, then, the standard weak crossover configurations would fall out as special cases of Strong Crossover, typical examples of which are given below:

- (13) a. *Who_i does he_i like t_i
 b. *Who_i does he_i think that Mary loves t_i

The fact that weak crossover effects are weaker than strong crossover effects could be handled by assuming that if a trace is locally A-bound by a slash-index, this results in a weaker perception of the crossover violation than when the trace is locally A-bound by an intrinsic index.

Let us now see how this theory of Weak Crossover could account for the contrast between (2) and (6). Stowell (1987) observes that the crucial difference

between the examples in (2) and those in (6) is that the offending pronouns in (2) are contained in arguments whereas in (6) the pronouns are contained within adjuncts. In order for a bound pronoun in an adjunct to incur a Weak Crossover violation, the adjunct would be required to be slash-indexed with the index of the QP binding a pronoun within it, as in (14):

- (14) a. Who_i, [despite his_i having helped you]_{k/i}, did you gossip about *t*₁
 b. Who_i did Mary say [*t*_i was a fool] [after staying with him_i]_{k/i}

Furthermore, it would be necessary for the adjunct to count as an A-position with respect to the binding of the trace. Otherwise, the traces in (14)(a) and (b) would be locally \bar{A} -bound by Wh-phrases and therefore would be identified as variables; there would be no violation of the binding theory. He argues, however, that there is evidence that adjuncts do not enter into A-binding relations. Consider the examples in (15):

- (15) a. John said last week that he was busy last week
 b. John said on that island that he wanted to live on that island

(16) a. Who_i, [despite his_i having helped you] (Stowell, 1987, p. 14)

If adjuncts counted as A-positions for the binding theory, then *last week* and *on that island* in the embedded clauses would be A-bound by *last week* and *on that island* in the matrix clauses respectively, and sentences (15)(a) and (b) would therefore be ruled out by Condition C of the binding condition, but they are not. These facts suggest that adjuncts do not count as A-positions for the purpose of the binding theory. If this conjecture is correct, Stowell's (1987) analysis would correctly predict that no weak crossover effect will arise in configurations like (14). This is because the indices assigned to the adjunct are irrelevant with respect to A-binding and thus the trace is not A-bound by the slash-index assigned to the adjunct; there is no violation of Binding Conditions.

To recapitulate this section, we have shown that Stowell's (1987) slash-indexing analysis could account for an adjunct/argument asymmetry with weak crossover effects in English. The next section will illustrate that there does not exist such an asymmetry in Japanese.

II. Adjuncts and Weak Crossover in Japanese

It has been pointed out in various studies, notably Hoji (1985), Saito (1985), and Saito and Hoji (1983), that *zibun* 'self' and null pronouns, but not overt pronouns, can be interpreted as bound variables in Japanese. As an illustration, let us look at the following contrast between null pronouns and *kare* 'he':

- (16) a. John_i-ga [[[e_i/kare_i-ga [e_j kaita]] ronbun]_j]-o
 NOM he wrote paper ACC
 gomibako -ni suteta] (koto)
 trash box into threw away fact
 'John_i threw away the paper that he_i wrote into a trash box'
 b. Daremo_i -ga [[[e_i/*kare_i-ga [e_j kaita]] ronbun]_j]-o
 everyone

gomibako-ni suteta] (koto)

'Everyone_i threw away the paper that he_i wrote into a trash box'

c. Dare_i-ga [[[e_i/*kare_i-ga [e_j kaita] ronbun_j]-o gomibako-ni

who

suteta] no

Q

'Who_i threw away the paper that he_i wrote into a trash box'

On the supposition that there exists a node that dominates the object, but not the subject, in Japanese, as advocated in Fukui (1986), Hoji (1985), Kuroda (1980 ; 1983 ; 1988), Saito (1985), and Saito and Hoji (1983), we should expect that weak crossover effects show up with null pronouns, as with English overt pronouns. This prediction is borne out :

(17) a. [[e_i hitome e_j mita] hito_i]-ga [Bill_j-o sukininatta]

one glance saw person fell in love

(koto)

'The person that took a glance at him_j fell in love with Bill_j'

b. ?*[[e_i hitome e_j mita] hito_i]-ga [daremo_i -o/dareka_i-o

everyone/someone

sukininatta] (koto)

'The person that took a glance at him_j fell in love with everyone_j/someone_j'

c. ?*[[e_i hitome e_j mita] hito_i]-ga [dare_j-o sukininatta] no

'Who_j did the person that took a glance at him_j fell in love with'

(Hoji, 1985, p. 51)

Japanese, unlike English, does not exhibit an adjunct/argument asymmetry with weak crossover effects ; null pronouns in adjuncts cannot be construed as bound variables if no c-command relation holds between pronouns and variables, as exemplified below :

(18) a. John-ga [kaisha-ha e_i kubinisita] atode Bill_i-o nagusameta

company fired after consoled

(koto)

'John consoled Bill_i after the company had fired him_i'

(Hoji, 1985, p. 52)

b. ?*John-ga [kaisha-ga e_i kubinisita]-atode daremo_i-o/dareka_i-o

nagusameta (koto)

'John consoled everyone_i/someone_i after the company had fired him_i'

c. ?*Kimi-wa [kaisha-ga e_i kubinisita]-atode dare_i-o nagusameta

you TOPIC

no

'who_i did you console after the company had fired him_i'

(Hoji, 1985, p. 53)

The next section will argue that the fact that English exhibits an adjunct/

argument asymmetry with weak crossover effects while Japanese does not could be accounted for by positing Stowell's (1987) slash-index analysis of Weak Crossover and a system of category projection proposed by Fukui and Speas.

III. Weak Crossover and Projection Theory

Fukui (1986; 1988 a; 1988 b), Fukui and Speas (1986), and Speas (1986) propose a system of category projection the most provocative claim of which concerns an asymmetry between lexical categories and functional categories. Lexical categories are those which bear the categorial features ([+/-N] and [+/-V]) and have θ -grids as part of their lexical entries, i. e. N, V, A, and P; functional categories are those which neither bear categorial features nor have θ -grids as their lexical entries, i. e. DET, COMP, and INFL. They claim that the difference between the two resides in the fact that functional categories project up to a double-bar level ($\bar{\bar{X}}$ or XP) taking a unique specifier and a unique complement while lexical categories project up to a single-bar level (\bar{X}) allowing free recursion at that level.

Fukui (1986; 1988 a; 1988 b) claims that Japanese, unlike English, lacks in its core lexicon all the functional categories DET, COMP, and INFL. Hence category projections in Japanese stop at the single-bar level, but they never reach the double-bar level. He argues that apart from deducing the following major typological differences between the two languages:

- (19) The existence of obligatory syntactic wh-movement
 - a. English has syntactic wh-movement
 - b. Japanese has no syntactic wh-movement
- (20) The existence of overt expletive elements
 - a. English has overt expletive elements
 - b. Japanese has no overt expletive elements
- (21) The existence of scrambling
 - a. English has no scrambling
 - b. Japanese has scrambling
- (22) The existence of multiple subject constructions
 - a. English has no multiple subject constructions
 - b. Japanese has multiple subject constructions
- (23) The existence of subject-Aux inversion
 - a. English has subject-Aux inversion
 - b. Japanese has no subject-Aux inversion
- (24) The existence of productive complex predicate formation
 - a. English has no productive complex predicate formation
 - b. Japanese has productive complex predicate formation

this parametric difference concerning category projection between English and Japanese would predict that there does not exist any D-structure real adjunct position, i. e. D-structure \bar{A} -position, in Japanese. This is because given the characterization of D-structure non-adjunct positions, i. e. D-structure non- \bar{A} -

positions (25), every position in Japanese is either L-marked or L-covered and thus identified as a non-adjunct position, i. e. non- \bar{A} -position :

(25) α is a non-adjunct position, i. e. a non- \bar{A} -position position, iff (i) or (ii) :

(i) α is L-marked

(ii) α is L-covered

(Cf. Fukui, 1988 a, p. 523)

(26) L-marking

α L-marks β iff α is a lexical category that θ -governs β

(Chomsky, 1986, p. 15)

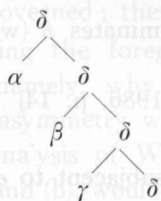
(27) θ -government

α θ -governs β iff α is a zero-level category that θ -governs β , and α , β are sisters

(Chomsky, 1986, p. 15)

(28) L-covering

A category δ covers α , β , and γ if δ is an immediate projection of a lexical head, namely, \bar{Y} (X lexical)



(Fukui, 1988 a, pp. 522-523)

According to this characterization, then non-adjunct positions, i. e. non- \bar{A} -positions, include not only real complements, which are L-marked, but also other elements appearing in L-covered positions. This claim makes much intuitive sense, since it is generally assumed that XPs constitute upper boundaries for government by their lexical heads from inside, and that adjuncts are characterized as elements that are not governed by lexical heads.

Fukui (1988 a) argues that evidence supporting this position that Japanese lacks real adjunct positions, i. e. \bar{A} -positions, is observed in the fact that LF extraction of *naze* 'why' in Japanese, unlike extraction of *why* in English, is not subject to the ECP, but to a gradation of acceptability (perhaps the subjacency condition), as exemplified below⁴:

(29) ECP

A nonpronominal empty category must be properly governed

(Chomsky, 1986, p. 17)

(30) Proper Government

α properly governs β iff α L-marks, L-covers, or antecedent-governs β

(31) Government

α governs β iff α m-commands β and there is no γ , γ a barrier for β , such that γ excludes α

(Chomsky, 1986, p. 8)

- (32) M-command
 α m-commands β iff α does not dominate β and every γ , γ a maximal projection, that dominates α dominates β
 (Chomsky, 1986, p. 8)
- (33) Exclusion
 α excludes β if no segment of α dominates β
 (Chomsky, 1986, p. 9)
- (34) Domination
 α is dominated by β only if it is dominated by every segment of β
 (Chomsky, 1986, p. 7)
- (35) Barrier
 γ is a barrier for β iff (i) or (ii):
 (i) γ immediately dominates δ , δ a BC for β
 (ii) γ is a BC for β , $\gamma \neq \text{IP}$
 (Chomsky, 1986, p. 14)
- (36) Blocking Category
 γ is a BC for β iff γ is not L-marked and γ dominates β (where γ is a maximal projection)
 (Chomsky, 1986, p. 14)
- (37) Subjacency Condition
 If (α_i, α_{i+1}) is a link of a chain, then α_{i+1} is m-subjacent to α_i
 (i) Subjacency: $m=1$
 (ii) Weak Subjacency: $m=0$
- (38) β is n-subjacent to α iff there are less than $n+1$ barriers for β that excludes α
 (Chomsky, 1986, p. 30)
- (39) Extraction out of Nonbridge Verb Complements
 a. *Why_i did Bill mutter [that Tom was playing too much poker t_i]
 (Nakajima, 1985, p. 239)
 b. ??Bill-wa [John-ga naze kubi-ni natta tte] sasayaita no
 why was fired COMP whispered
 (Fukui, 1988 a, p. 508)
- (40) Extraction out of Noun-complement Constructions
 a. *Why_i do you believe [the claim [that John left t_i]]
 b. *?Kimi-wa [[Taroo-ga girlfriend-to naze wakareta] koto]-ni
 broke up at
 sonnani odoroitte-iru no
 so much be surprised
 (Fukui, 1988 a, p. 509)
- (41) Extraction out of Relative Clauses
 a. *Why_i did you see [the girl [John kicked t_i]]
 (Nakajima, 1985, p. 241)

- b. *Kimi-wa [[Taroo-ga naze wakareta] onnanoko]-ni kinoo
 girl yesterday
 party-de atta-no
 at met

(Fukui, 1988 a, p. 509)

(42) Extraction out of Adjuncts

- a. *Why_i did you angry [because Mary bought it t_i]
 b. *?Kimi-wa [[Mary-ga naze sore-o katta] kara] sonnani
 it bought because
 okotteru no
 angry

(Fukui, 1988 a, p. 512)

On the supposition that non-adjunct positions, i. e. non- \bar{A} -positions, which include not only L-marked positions but also L-covered positions, are properly governed in the sense relevant to the ECP, this would follow from the fact that due to the nonexistence of XPs in Japanese, *naze* 'why' is always L-covered and thus properly governed; there would be no violation of the ECP.

Keeping the foregoing discussion in mind, let us return to the original question, namely, why Japanese, unlike English, does not exhibit an adjunct/argument asymmetry with weak crossover effects. Under Stowell's (1987) slash-indexing analysis of Weak Crossover, sentences (18) (b) and (c), repeated here as (43) (a) and (b), would be assigned LF-representations (44) (a) and (b) respectively :

- (43) a. ?*John-ga [kaisha-ga e_i kubinisita]-atode daremo_i-o/dareka_i-o
 nagusameta (koto)

- b. ?*Kimi-wa [kaisha-ga e_i kubinisita]-atode dare_i-o nagusameta no

- (44) a. [daremo_i-o/dareka_i-o [John-ga [[kaisha-ga e_i kubinisita]-atode]_{k/i} t_i
 nagusameta] (koto)]
 a. [dare_i-o [Kimi-wa [[kaisha-ga e_i kubinisita]-atode]_{k/i} t_i nagusameta]
 no]

Recall that adjuncts in English, which are adjoined to XP, do not count as A-positions for the purpose of the binding theory and therefore the indices assigned to the adjuncts are irrelevant with respect to A-binding; an adjunct/argument asymmetry with weak crossover effects would follow. In Japanese, on the contrary, there does not exist any real adjunct position i. e. \bar{A} -position, as was argued above. Let us suppose that adjuncts in Japanese, being adjoined to \bar{X} (X lexical) and thus L-covered, count as A-positions for the purpose of the binding theory. If this conjecture is true, we would correctly predict that sentences such as (43) (a) and (b) are ill-formed and that Japanese does not exhibit an adjunct/argument asymmetry with weak crossover effects. By (10) (a), the traces in the LF-representations in (44) are not variables, because they are not locally \bar{A} -bound by operators. (10) (b), then, automatically assigns the traces [+anaphor]. Finally, by (10) (c), the traces are [+pronominal], since even though they are not A-free, they are locally A-bound by the slash-indices assigned to

the adjuncts. Hence the LF-representations in (44) violate Condition B of the binding theory, since the traces are [+pronominal] (as well as [+anaphor]) and are A-bound in its Governing Category.

IV. Conclusion

This paper has attempted to provide an account of the fact that while English exhibits an adjunct/argument asymmetry with weak crossover effects, Japanese does not. We argued that the adoption of Stowell's (1987) slash-indexing analysis of Weak Crossover and a system of category projection proposed by Fukui and Speas would yield an insightful analysis of that difference in the two languages. Furthermore, this study can be construed as presenting further evidence in support of Fukui's (1986; 1988 a; 1988 b) parameter that distinguishes Japanese from English-type languages: Japanese lacks a class of functional categories.

NOTES

1. The definition of "c-command" adopted here is Reinhart's (1976) first-branching definition:

(i) X c-commands Y iff neither X nor Y dominates the other and the first branching node that dominates X also dominates Y.

2. What is implicit in this argument is the assumption that a pronoun in English cannot take a quantifier (quantifier or wh-phrase) as its direct antecedent. What is meant by "X is the direct antecedent of Y" is equivalent to "Y is linked to X" in the sense of Higginbotham (1983).

3. Alternatively, given the validity of the theory of intrinsic determination of empty categories where Wh-trace, being a variable, is assumed to be subject to Condition C of the binding theory, (7) violates Condition C of the binding theory, since the trace is A-bound by the slash-index assigned to the subject NP.

4. Fukui (1988 a), though, is noncommittal with respect to whether the subadjacency condition applies at LF.

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