JAPANESE LF-MOVEMENT AND VARIABLE BINDING*

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This paper deals with Japanese LF-movement and variable binding by a *wh*-expression (WH). The main theme is exactly to what position a WH moves at LF. It seems that this theme has not been dealt with in great detail, and it is grossly assumed that a WH is either adjoined to COMP or S' or is moved under COMP. This seems to me to be a gratuitous assumption, which is perhaps rooted in the thinking that nothing significant would come out by dwelling on the issue. However, it will be shown that the exact position of a moved WH has significant relevance to the problem of variable binding.

0. INTRODUCTION. As Chomsky 1981: 11 puts it, 'it is reasonable to suppose that the rules ... of the LF-component do not vary substantially

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The following abbreviations, among others, will be used:

- Nom.: Nominative Case-marker
- Acc. : Accusative Case-marker
- Dat. : Dative Case-marker
- Top. : Topic marker
- Pr. : Present (*or* Non-Past) marker
- Pt. : Past (*or* Perfect) marker
- Neg. : Negative
- NA : Nominal Adjective

from language to language ...' Following this suggestion, there has recently been much literature inquiring into the properties of LF-rules in languages other than English. Thus Huang 1982 argues that in Chinese, there is LF *wh*-movement even though there is no syntactic *wh*-movement analogous to that of English. Ohno 1983, in his important work on the properties of quantification in Japanese, also suggests the possibility of 'the abstract movement of the WH to the particle (i.e. *ka/mo*—M.S.) position in LF' (Ohno 1983: 17), although in expounding the concrete issues, he does not in explicit terms execute this idea. (See also Ohno 1985.) Nishigauchi 1985, 1986 explicitly argues that there is LF-movement in Japanese, exploring a number of its properties.

Japanese *wh*-expressions are what traditionally has been called indefinite pronouns in the subsystem of "*do*" in the so-called "*ko-so-a-do*" system in Japanese, such as *dare* ('(wh-)someone'), *dore* ('(wh-)something'), *dono*(+N) ('which(+N)'). Following Ohno and Nishigauchi, we also refer to these expressions as WHs.

In the unmarked case, WHs must be construed either with *ka* or *mo* ("licensing particle"—Q, henceforth) and it is not until they find Q in a certain, proper position that their grammaticality and interpretation are determined.¹ In some cases, however, they may appear without Q. Thus contrast the following:

- (1) a. *Dare-ga ki-ta (no) ka?*
 who Nom. come-Pt. (C) Q
 'Who (is it that) came?'
 b. *Dare-ga ki-ta no?*
 'Who came?'

In 1a, b, both have roughly the same meaning and are grammatical. But only in 1a is there found a Q element, *ka*, which, when attached to a clause containing its licensing WH, generally makes it an interrogative pronoun. In some of the literature, *no* in the clause final position in a sentence like 1b is assumed to be a marker of a (WH-)interrogative, but there is reason to believe that *no* in 1b is not a "substitute" for *ka*, but simply a nominal complementizer. First, 1a can be uttered without a rising intonation, just as in English *wh*-interrogatives, while 1b must be uttered with a special—typically rising—intonation. Second, as Nishi-

¹ See Ohno 1983 for a detailed discussion of the structural relation that must hold between WH and Q. For the "semantics" of WHs and their licensing particles (Q) *ka* and *mo* in the generative framework, see Kuroda 1965 and Ohno 1983, among others.

gauchi 1985: 101 fn. 4 points out, this type of sentence is possible only when used as a direct question, and it is never used as an indirect question; 1a, but not 1b, can be a complement to a predicate taking a *wh*-clause:

- (2) Dare-ga ki-ta no *(ka) sir-ana-i
know-Neg.-Pr.

‘(I) don’t know who came’

In 2, the presence of Q is obligatory. We simply assume that sentences of the type 1b are marked versions (which does not mean that they are not normally used at the performance level) of the “normal” case with Q, and exclude them from the present study.²

An example of a WH construed with another Q, *mo*, is 3:

- (3) Dare-ga ki-te mo, boku-wa uresi-i
come-ing I-Top. (be-)pleased-Pr.

‘Whoever may come, I will be pleased’

In 3, *mo* is obligatory, due to the presence of *dare*. If *dare* is replaced by a non-WH such as a proper noun like *Hanako*, *mo* is not obligatory (although the presence of *mo* affects the meaning of the sentence):

- (4) a. Hanako-ga ki-te, boku-wa uresi-i
‘I am pleased, since Hanako came’
b. Hanako-ga ki-te mo, boku-wa uresi-i
‘I am pleased even if Hanako is coming’
‘I would also be pleased if Hanako came’³

In the framework of Nishigauchi, *dare* in sentences like 1–3 is moved at LF to the position where Q governs it—the WH is adjoined to S’ whose COMP is Q (1985) or directly to the COMP immediately dominating Q (1986).

In this paper, assuming that WHs are subject to LF-movement, we will examine exactly to what position they move. This is important, since the “landing site” for the moved WH has significant relevance to the binding of an element (not the trace of the WH) by this WH. But to pin

² It is very likely that there is in fact some feature in the same position that *ka* appears that licenses the presence of the WH in 1b, and this feature signals for the intonation specific to 1b. Thus, the only difference between 1a and 1b is that in 1a, *dare* is licensed by an overt element marking the entire sentence as an interrogative, while in 1b it is licensed by a covert element marking the sentence as an interrogative by a special intonation.

³ As the two glosses suggest, 4b seems ambiguous with regard to the interpretation of the clause with *mo*. This may be due to the ambiguity of the scope of the *mo*-clause with respect to the matrix predicate/clause.

down their landing sites, careful examination of the structures of various categories is required. This is another topic of this paper.

1. THE STRUCTURE OF CP. The general theoretical framework we will adopt is that of GB (Government-Binding), developed by Chomsky 1981 and subsequent work. In particular, we will essentially follow the basic proposals made by Chomsky 1986 (BRS, henceforth), adapting them to the particular issues to be dealt with in this paper.

In BRS, the maximal number of bars (in the sense of X-bar theory) of a category, whether it is lexical or not, is assumed to be two; hence *S'* consisting of COMP and *S*, which generally has been assumed to be a maximal category, must be recast into a two-bar projection of some category. BRS assumes it to be *C*, and its maximal projection CP (=C'') is what corresponds to the traditional *S'*. CP is expanded into its specifier and *C'*. *C'* is further expanded into *C*, the head of CP, and its complement, IP. IP is the maximal projection of I(NFL) and corresponds to what has hitherto been termed *S*. Before BRS, both a *wh*-phrase and a complementizer such as *that* had generally been assumed to occupy the same position, namely C(OMP), but in BRS, the former occupies (via *wh*-movement) the position of the specifier of CP, and only the latter occupies *C*. Thus:

- (5) a. John said [_{CP} [_{C'} [_C that] [_{IP} Mary kissed him]]]
 b. John didn't say [_{CP} [_{NP_i} who] [_{C'} [_C e] [_{IP} Mary kissed *t_i*]]]

In Japanese, there is good reason to believe that such a structure is the correct one. (For the moment, we will concentrate on the system of CP and continue to use the traditional symbol *S* in Japanese. We will return to this matter in section 3.) CP in Japanese, just like English CP, seems to be a combination of its specifier—a landing site for WH-movement (at LF)—and *C'*, which expands into *C* and *S*. To see this, consider first the following:

- (6) a. Taroo-wa [[Hanako-ga ku-ru _β] to _α] iw-ta
 Top. Nom. come-Pr. say-Pt.
 'Taro said that Hanako would come'
 b. Taroo-wa [[Hanako-ga ku-ru ka _β] to _α] kik-ta
 ask
 'Taro asked whether Hanako would come'
 c. Taroo-wa [[dare-ga ku-ru ka _β] to _α] kik-ta
 'Taro asked who would come'

In 6, *to* is a (quotative) complementizer, which may take a declarative

clause (6a) or an interrogative clause (6b, c). Thus under the traditional assumption that S and COMP make up a maximal category S', α and β in 6 are most naturally considered to be S' and S, respectively. But now consider the following:

- (7) a. Taroo-wa [[[dare-ga ku-ru β] to α] ka γ] iw-anak-atta
say-Neg.-Pt.

'Taro didn't say (such as) who would come'

- b. Taroo-wa [[[dare-ga ku-ru β] to α] mo γ] iw-anak-atta
'Taro didn't say that anyone would come'

In 7, the WH *dare* is licensed by *ka* or *mo* appearing outside α . Note that since Q must c-command WH at S-structure (see Harada 1972, Ohno 1983, 1985 for relevant discussions), it is most natural to assume that *ka/mo* attaches to α , making a constituent γ , as in 7, rather than assuming that it attaches to *to*, creating a "branching COMP". What, then, is the status of γ ? The most natural assumption is that it is a projection of α , where now γ and not α is a maximal category. Under the BRS framework, γ must be a CP expanding into its specifier Q (*ka/mo*) and C'= α , and α is further expanded into its head C (=to) and S= β . Note that this analysis is not only in conformity with the strict version of X-bar theory as sketched in BRS, but also empirically natural; in (standard) Japanese, "deletion" of *to* is not allowed, just like complementizers of other languages such as French *que*:

- (8) a. Taroo-wa Hanako-ga ku-ru *(to) iw-ta
b. Taro a dit *(que) Hanako venait
has said that came

This is natural in view of the fact that C is the head of CP and "head-deletion" may well be considered a marked phenomenon. (In this respect, "deletion" of English complementizers such as *that* should be a marked case.) In contrast, in a number of categories their specifiers may be absent; thus if there is no WH element in CP, no Q element is required in the specifier position of CP (as in 6a), and the presence of Q affects the meaning (cf. 3, 4):⁴

- (9) a. Taroo-wa Hanako-ga ku-ru to (ka) iw-anak-atta
'Taro didn't say (such as) Hanako would come'
b. Taroo-wa Hanako-ga ku-ru to (mo) iw-anak-atta

⁴ The same is true of the specifier position of IP=S. Thus in 6, β is an IP whose specifier may be absent (6a) or present (6b, c). See section 3 for a detailed discussion of the structure of IP.

'Taro didn't say (either) that Hanako would come'

That the appearance of Q is grammatically determined (in this case, by the presence of a WH, or by the meaning of the sentence) is natural if it is a specifier, since specifiers generally have such properties; cf. **(the) only man*, *(the) men*, etc. Thus, both theoretical and empirical considerations support our analysis of the Japanese CP system.

Now, WHs such as *dare* are subject to LF-movement. One of the loci of moved WHs is the specifier position of CP, as claimed in BRS for English. We assume that this movement is effected by Chomsky-adjunction of WH to Q. Thus S-structure 10a is mapped onto its LF-representation 10b:

- (10) a. [[[dare-ga ku-ru]_S] [to c]_l c]_l [{ $\left. \begin{smallmatrix} ka \\ mo \end{smallmatrix} \right\}$ } Q]_{CP}]
- b. [[[t_i-ga ku-ru]_S] [to c]_l c]_l [[dare_i [{ $\left. \begin{smallmatrix} ka \\ mo \end{smallmatrix} \right\}$ } Q] Q]_{CP}]

In 10b, under the definition of c-command and the notion of domination which will be stated in section 2 (see 17), *dare* c-commands its coindexed trace, meeting the condition on proper binding (cf. May 1977: 9).

Above we have seen LF-movement of WH induced by *ka* or *mo*. But there are also cases where such movement is already "lexicalized". These are seen in such words as *dare-ka* ('someone'), *dore-ka* ('something'), *doko-ka* ('somewhere'), etc., on the one hand and *dare-mo* ('everyone'), *dore-mo* ('everything'), *doko-mo* ('everywhere'), etc., on the other. Since these words are already "licensed" by the adjacent Q, namely *ka* or *mo* (which is almost a suffix, and it may no longer be a specifier of the phrasal category headed by WH), no Q is required elsewhere and sentences like the following are grammatical whether or not Q is present in the specifier position of CP:

- (11) a. Taroo-wa [dare-{ka/mo}-ga ku-ru to (ka)_{CP}] iw-anak-atta
'Taro didn't say (such as) {someone/everyone} would come'
- b. Taroo-wa [dare-{ka/mo}-ga ku-ru to (mo)_{CP}] iw-anak-atta
'Taro didn't say (either) that {someone/everyone} would come'

The only relevant difference between 10b and 11 is that in the former a certain relation between a WH and a Q is built up at LF while in the latter the same relation is already established in the lexicon. The theoretical implication for this may be that it is possible for the output of LF to be input into the lexicon. (That is, it may appear in the derivation of new

words.)⁵ Or, inversely and less radically, lexical items may be a “model” for LF-movement.

Turning to the main issue, what is the relation that we have assumed to be required to hold between a WH and a Q? Intuitively, both must be as “close” as possible; the most typical case is the lexicalized case where a WH and a Q are both structurally and linearly adjacent. In the case of LF-movement, this kind of adjacency is not obtained until a WH is adjoined to a Q at LF. Furthermore, we will see in section 2 cases where linear adjacency between a WH and a Q does not seem to be required in the case of LF-movement and only some kind of structural closeness suffices. As noted above, Nishigauchi 1985, 1986 assumes that the required relation that must be satisfied at LF is that of government, although he does not make clear what definition of government he adopts. We also follow this basic idea and assume that WH must be governed by Q, where government is understood in the “narrowest” sense as follows:

(12) α governs β if α is a zero-level category and α and β are sisters. Thus whether it is a lexicalized case or a case of LF-movement, Q governs WH as required, since Q is a zero-level category and Q and WH are sisters (either at the level of lexical structure or at that of LF-representation).⁶

2. THE LOCI OF MOVED WHs. We have assumed that there is a requirement on the relation between a WH and a Q that the former must be governed by the latter, at least at LF. Thus, if at S-structure a WH is not governed by a Q, the WH must be moved at LF to a position where the government relation is established. We assumed that this position—the landing site of a WH—is the specifier position (following BRS) where there is a Q. However, there is no a priori reason to assume that this position is the only one where the government requirement is satisfied. Suppose that a WH is Chomsky-adjoined to a CP whose specifier

⁵ Suppose this is indeed the case. Then one might wonder why there are no such words as {*ka/mo*}-*dare*, where Q precedes WH, on the assumption that at LF only hierarchical information is “visible”. The reason is that in deriving new words in the lexicon from outputs of LF, “linearization” of the LF-outputs must obey the (language-particular) X-bar schemata. Since Japanese is a head-final language and therefore specifiers (tend to) follow heads (cf. the discussion below 27), specifiers like *ka/mo* should follow WH heads like *dare*, resulting in words like *dare*-{*ka/mo*}.

⁶ The reason why we require the relation of sisterhood between WH and Q will become clear in section 4, where the structure of PP is discussed. See fn. 11.

role.

With this difference in mind, consider the interpretation of the pronominal *kare* in 14. *Kare* in 14a can be interpreted as a variable bound by the WH *dare*, which is impossible in 14b. Note that the impossibility of a bound variable interpretation of *kare* in 14b does not seem to be due to some semantic anomaly; it is no less possible to ask each individual whether he (=the individual) will come or not than to want to meet whoever turns out to come. Why, then, is the bound variable interpretation possible only in 14a? If semantics is not the proper place to account for this fact, it must be the syntax of LF that is responsible for the difference. As noted above, since α in 14a is a clausal adjunct to the main clause, let us assume it to be adjoined to the latter as a sort of modifier, as in the following:⁷

(15) [[[[dare-ga ku-ru s_1] no c_i] ka c_P] [hayaku kare-ni ai-ta-i s_1] s_0]
If *dare* moves at LF and *adjoins to CP*, the result is:

(16) [[[[[t_i -ga ku-ru s_1] no c_i] ka c_P] dare $_i$ c_P] [... kare-ni ... s_1] s_0]
In 16, *dare* c-commands and thus binds t_i . Moreover, it can also c-command and bind *kare*, if we interpret the notions “c-command” and “domination” as follows:

- (17) a. α c-commands β iff α does not dominate β and every γ that dominates α dominates β . (BRS: 8)
b. α is dominated by β only if it is dominated by every segment of β . (BRS: 7, citing May 1985)

⁷ That α in 14a is a CP rather than an NP with *no* as its head N is indicated by the impossibility of GA-NO Conversion, which typically applies to a *ga*-marked NP within a prenominal clause of a complex NP. Thus *ga* after *dare* in 14a cannot be converted to *no*:

(i) *Dare-*no* ku-ru no ka ...

The same is true of α in 14b, where *ga* in *dare-ga* cannot be converted to *no*, either, in spite of the fact that α in 14b can be followed by a Case-marker, *o*. As is often noted in the literature, that an element be marked by a Case-marker is not a sufficient condition for the N(P)-hood of the element. Consider (ii) below, where α is plausibly a PP but is followed by accusative *o* and nominative *ga*:

(ii) a. [Kono basyo {kara/made} α] o sakai to su-ru
this place from/to border make-Pr.
'(We) make {from/to} this place the border'
b. Uta-nara [ano butai de α] ga utai-yasu-i
song-if that stage at sing-easy-Pr.
'As for singing, on that stage is easy to sing'

Therefore, *no* in sentences like 14, just like *no* in 1, is best regarded as a (nominal) complementizer, that is, the head of a CP.

By 17b, *dare* is *not* dominated by CP in 16; it is dominated only by one of its segments. Thus, S_0 is the only possible category that dominates *dare*. Since S_0 also dominates *kare*, *dare* c-commands *kare*, making the latter a variable bound by the former under coindexation.

Why, then, is the same process blocked in 14b? Recall that α in 14b, is, unlike 14a, an argument. As claimed in BRS, an argument is not a possible adjunction site, possibly because, if an element were adjoined to an argument, it would make the argument "invisible" to θ -marking, leading to a (possible) violation of the θ -criterion. If adjunction to α of *dare* is impossible in 14b, the only possible landing site for it meeting the government requirement is the specifier position of α =CP, giving:

- (18) [[[t_i -ga ku-ru s_j] no c_j] [$dare_i$ [ka Q] Q] CP^*] ... kare ...

In 18, however, although *dare* c-commands its trace (since it is dominated by CP^* , which dominates t_i , and it is *not* dominated by Q), it cannot c-command, hence bind, *kare*, since CP^* dominating *dare* does not dominate *kare*. Hence the impossibility of a bound variable interpretation of the pronominal.

Now consider the following, which differs from sentences like 14 in that *mo* rather than *ka* appears:

- (19) [[Dare-ga ku-ru s_j] no mo a_j] komar-u
be-bothered-Pr.

'Whoever may come, (I) will be bothered'

In this case, unlike 14, α is an NP, for GA-NO Conversion can apply, giving the grammatical sentence *Dare-no ku-ru no mo komar-u*. See fn. 7. Therefore, *no* in 19 must be the head N, rather than C, preceded by a pronominal clause. Furthermore, α , being an NP that is potentially Case-marked (cf. *Taroo-ga ku-ru no-ga komar-u*), must be an argument, receiving its θ -role from the matrix predicate. If it is an argument, *dare* cannot be adjoined to α but must be directly adjoined to Q =*mo*, giving the following LF-representation for α :

- (20) [[[t_i -ga ku-ru s_j] [no N_j N_j] [$dare_i$ [mo Q] Q] NP]

Since adjunction to α of WH is not an option in a case like this, no pronominal element outside α can be c-commanded by WH within α at LF, with the result that it cannot receive a bound variable interpretation. This prediction is born out by a sentence like the following:

- (21) [Dare-ga ik-u no mo a_j] kare-o komar-ase-ru
go-Pr. he-Acc. be-bothered-cause-Pr.

'Whoever may go(, it) bothers him'

In 21, *kare* cannot be interpreted as a variable bound by *dare*; *kare* must

be taken as referring to someone understood in the discourse. Notice that this fact is, again, not due to some semantic anomaly: Suppose there are three people (say, Taro, Jiro, and Saburo) who are candidates for going somewhere. Then we can say 22, but not 21 as a means of “summarizing” the statements:

- (22) Taroo-ga ik-u no mo kare(=Taroo)-o komar-ase-ru
 Ziroo-ga ik-u no mo kare(=Ziroo)-o komar-ase-ru
 Saburoo-ga ik-u no mo kare(=Saburoo)-o komar-ase-ru
 ‘That {Taro/Jiro/Saburo}_i will go, also bothers him_i’

Furthermore, there is in fact a sentence allowing a bound variable interpretation that is otherwise synonymous with 21; consider 23:

- (23) [Dare-ga it-te mo α] kare-o komar-ase-ru
 go-ing

In 23, *kare* can be interpreted as a variable bound by *dare*, unlike *kare* in 21. Thus 23 can be a statement “summarizing” the statements corresponding to 22 with *it-te mo* instead of *ik-u no mo*. The availability of the interpretation in question in 23 comes from the non-argument status of α , a topic of section 3.

Summarizing this section, WH can not only move to the specifier position of CP/NP, but it can also adjoin to CP, an option constrained by the argumenthood of CP.

3. THE STRUCTURE OF IP. We now consider a sentence like 3, repeated below as 24:

- (24) [Dare-ga ki-te mo] boku-wa ures-i
 ‘Whoever may come, I will be pleased’

In 24, *mo* is preceded by an inflected verb *ki-te*, the *te*-form of *ku(-ru)* (‘come(-Pr.)’; the vowel after *k* mutates). This kind of *te*-form is what Bloch 1946, etc. called the Gerund(ive form). In a generative framework, *te* seems to have been assumed to be a complementizer, on a par with *to*. Cf. Harada 1972: 181–2, Arai 1980. On some inspection, however, it will be clear that the behaviors of *to* and *te* are quite different, especially from a morphological point of view. *To* takes a “full-fledged” clause (just like English complementizer *that*) whose predicate is inflected. In contrast, *te* never takes an inflected predicate but rather attaches to the *stem* of a predicate, forming together an inflected predicate. In short, a clause governed by *to* is an inflected one, while a “clause” governed by *te* is one yet to be inflected—it is “smaller” than the former. Since *te*-forms are inflected, it is entirely possible for the *to* complementizer to take a clause

(25) Taroo-wa Hanako-ni ki-te to iw-ta

Dat. say-Pt.

Although it is conceivable that some “helping verb” (so-called “hojo dooshi” in Japanese) such as *kure* (‘give’) which takes a *te*-form as its “main” predicate is “deleted” after *ki-te* in 25, the point is that the predicate of a clause governed by *to* must be inflected and in this sense the governed clause is “full-fledged”; *to* cannot take a “clause” whose predicate is not inflected. Thus the version of 25 in which *te* is absent is completely ungrammatical. Assuming that complementizers (in Japanese) generally take a “full-fledged” clause, *te* cannot be a complementizer but should be what corresponds to I(NFL) in English—*te* is a form of I, just as the present marker (*r*)*u*, the past *ta*, etc., which also attach to the stem of a predicate.

In English, I takes a VP (whose head V is yet to be inflected). In Japanese, I takes not only a VP but also an AP, since both V and A conjugate in Japanese. (An inflected adjective behaves just like an inflected verb in that both can be the main predicate of an independent sentence.) Consider for example the following pair of sentences, which are nearly synonymous:

(26) a. Boku-wa Taroo-o nikum-u

Top. Acc. hate-Pr.

‘I hate Taro’

b. Boku-wa Taroo-ga niku-i

Nom. hateful-Pr.

‘Taro is hateful to me’

The structures for 26a, b are respectively as in the following (Topic/Case-markers ignored):

(27) a. [[[boku]_{NP}] [Taroo]_{NP}] [nikum]_V]_{VP}] [(r)u]_I]_{I'}] (Spec.)_{IP}

b. [[[boku_{NP}] [Taroo_{NP}] [niku_A] _{AP}] [i_I] _{I'}] (Spec.) _{IP}]

There is one important difference between the Japanese IP and the English IP, besides the fact that I can take AP in Japanese but not in English, and the order of (Spec-)head-complement, which is parameterized. This is that in English, the subject NP is considered to be the specifier of IP (cf. BRS), while there is no reason to believe such to be the case in Japanese. But this is not surprising, since specifiers of head-initial languages like English generally precede heads, while those of head-final languages like Japanese generally follow them. This

tendency probably derives from some principle of X-bar theory and cannot be ignored. If a subject in Japanese were the specifier of IP, then the result would be a head-final and specifier-initial IP. Compare this (hypothetical) situation 28a with 28b, an instance of the English IP:

In 28b, the specifier of IP, namely the subject NP, and the head I are adjacent. But if the structure for 26a were something like 28a, there could be no adjacency between the specifier and the head, and the above-mentioned tendency would not be observed. If, on the other hand, the structure for sentences like 26 is something like 27, this Spec.-Head adjacency is well observed. We therefore conclude that the correct structure for IP in Japanese is something like 27, where “subject” is relegated to a complement of the head predicate V/A. (However, we are neutral with respect to the exact inner structure of VP/AP; i.e., whether it is completely “flat” as claimed by Farmer 1984, for example.) This is compatible with Mikami’s claim (Mikami 1963, etc.) that there is no “subject” in Japanese in the same sense as in English; what has traditionally been called “subject” in Japanese is really a complement, on a par with “object”.

Thus, in Japanese, but not in English, I takes a “small clause” with a “subject”; the complement to I (i.e. VP/AP) is, unlike English, a “complete functional complex”.

If a “subject” is not the specifier of IP in Japanese, what can occupy the IP-specifier position? My claim is that, paralleling the previous discussion of the structures of CP and NP, it can be occupied by *Q ka/mo*, and it can be a landing site for LF-movement of WH. (See 6c and fn. 4.) Thus the S-structure 29a below for sentence 24 is mapped onto its LF-representation 29b:

- (29) a. [[[dare-ga ki_{VP}] te_I] [mo_Q] IP] boku-wa uresi-i
 b. [[[t_i-ga ki_{VP}] te_I] [dare_i [mo_Q] Q] IP] boku-wa ...

Notice, however, that IP in 29, being concessive, is clearly a non-argument. Therefore it should also be possible for *dare* to be adjoined to IP. Indeed, this must be an option, for consider 30:

- (30) [Dono sakana-o tabe-te mo_{IP}] sore-o modosi-te simaw-ta
 which fish-Acc. eat it-Acc. vomit end-Pt.
 'Whichever fish (I) ate, (I) ended up vomiting it'

In 30, *sore* can be interpreted as a variable bound by *dono sakana*. Therefore, the latter must be able to c-command the former at LF in this interpretation. But if *dono sakana* is moved to the specifier position of the IP headed by *te*, it cannot c-command *sore*, since the IP, which dominates the moved WH phrase, does not dominate *sore*. If, however, *dono sakana* is adjoined to the IP, it is no longer dominated by the IP and it turns out that every category dominating it also dominates *sore*, as can be seen in 31:

- (31) [[[[[*t_i*-o tabe_{VP}] *te*_I] mo_{IP}] [*dono sakana*_i] _{IP}] [*sore-o* modosi-te
 simaw-ta_β] _α]

Therefore, in 31 *dono sakana* c-commands *sore*, and the latter is interpreted as a variable bound by the former under coindexation.⁸ If the coindexed *sore(-o)* is suppressed, *dono sakana* can bind an empty category coindexed with it occurring in place of *sore(-o)*, making the empty category a bound variable, for the most natural interpretation of 30 without *sore(-o)* is the same as that where *sore* is taken as a bound variable.⁹

Since *mo* can appear in the specifier position of IP, *ka* is also expected to appear in the same position. Consider now the following, which differs from 30 only in the selection of a Q:

- (32) [Dono sakana-o tabe-te *ka*_{IP}] sore-o modosi-te simaw-ta
 '(Because I) ate which fish, I ended up vomiting it'

In this case, too, the bound variable interpretation of *sore* seems possible; *sore* can be bound by *dono sakana* at LF, since in 32 the IP whose specifier is *ka* is an adjunct (hence a non-argument) to the main clause and thus adjunction of the WH to this IP is possible. However, for some reason this bound variable interpretation seems less easy to get than in 30. Even if *sore-o* is replaced by an empty category, as in the following,

- (33) [Dono sakana-o tabe-te *ka*_{IP}] [*e*_α] modosi-te simaw-ta

the bound variable interpretation of *α* in 33 is, although not impossible, similarly harder to get than in the version of 30 in which *sore-o* is replaced by an empty category, suggesting the choice between an overt pro-

⁸ Exactly the same account holds for 23.

⁹ An example similar to 30 is noted in Nishigauchi 1986: fn. 13, but without explanation for why the WH expression can bind the pronominal element.

nominal and covert, empty element is irrelevant.

It seems that the selection of a WH expression is relevant to the issue. Note the domain of the variable is rather severely restricted in the case of *dono sakana*; it must be the set of fish. Now consider *dore* ('which'). The domain of a variable bound by this WH is restricted as well, but in this case the restriction is much looser than in the case of *dono sakana*; the domain is only the set of things about which we are talking in the discourse, and the set need not be that of fish. Consider the version of 30 and 32 in which *dono sakana* is replaced by *dore*:

- (34) Dore-o tabe-te {mo/ka} sore-o modosi-te simaw-ta
 mo: 'Whichever (I) ate, }
 ka: '(Because I) ate which, } (I) ended up vomiting it'

In the case of *mo*, the bound variable interpretation of *sore* is still possible whereas in the case of *ka*, this interpretation seems to become even harder than the case of *dono sakana*. Now consider the least restricted case, namely *nani* ('what'). The domain of a variable bound by this WH is only restricted to the set of nonhuman things, which need not be what we are talking about in the discourse. In this most "generous" case, the bound variable interpretation of an element seems almost hopeless if *ka* is selected:

- (35) Nani-o tabe-te {mo/ka} (sore-o) modosi-te simaw-ta
 mo: 'Whatever (I) ate, }
 ka: '(Because I) ate what, } (I) ended up vomiting it'

In the case of *mo*, the bound variable interpretation of *sore* seems quite tolerable, although some speakers may perceive a subtle difference between *nani* and *dono sakana/dore* in this regard; even with *mo*, it may become somewhat difficult to interpret a pronominal like *sore* as a variable bound by *nani*.

It seems clear, then, that the choice of a WH element is relevant to the availability of the bound variable interpretation of an element (whether it is an overt pronominal or an empty category). This is particularly clear in the case of *ka*, where the interpretation in question becomes harder to obtain in accordance with the weakness of the degree of restriction of the domain of the variable: the lesser the restriction, the harder the bound variable interpretation. Although this fact is probably grounded on some pragmatic factors (in particular, the pragmatics of existential vs. universal quantification), it is beyond the scope of this paper to enter into this matter in any greater detail.

In any case, even with the IP whose specifier position is occupied by

The analysis of *a* in 36b requires some care, since it is (part of) an embedded cleft sentence, which happens to be a *wh*-interrogative. For this matter, see the discussion below 44.

show that empirical data receive a natural explanation without new theoretical apparatus.

Since the categorial status of NP plus *ga/o* is controversial (is it an NP' or a PP), depending on the particular theory/assumption one is adopting, I will mainly concentrate on the Case-marker *kara* ('from'), whose categorial status as a postposition (P) creating a PP seems uncontroversial across theories within the generative framework. (However, I will discuss later cases of an NP with *ga* somewhat.)

First consider the following sentences:

- (37) a. Taroo *kara* *kare-ga* *rakudaisi-ta* *koto-o* *kik-ta*
 from he-Nom. fail-Pt. thing-Acc. hear-Pt.
 '(I) heard from Taro that he (had) failed'
- b. Dareka *kara* *kare-ga* *rakudaisi-ta* *koto-o* *kik-ta*
 someone
 '(I) heard from someone that he (had) failed'

In 37a, the pronominal *kare* can refer to *Taroo*. To put this in theoretical terms, the former can be coindexed with the latter. As for 37b, judgments seem to vary; some speakers judge that coindexation between *dareka* and *kare* results in ungrammaticality, others judge it to be possible, and still others claim that judgment is difficult to make. According to our theory, *kare* should not be taken as a variable bound by *dare*, since *dare* is already governed by *ka* and thus no LF-movement of *dare* takes place; it cannot c-command, hence bind, *kare*, being within (dominated by) the PP headed by *kara*. However, recall that the relation of government between *dare* and *ka* in *dareka* is established in the lexicon, not syntax, and therefore it is conceivable that for the speakers who judge "coreference" between *dareka* and *kare* to be possible, *dareka* as a whole is perceived as one lexical item behaving like a name such as *Taroo*. I believe that at least one of the reasons for the variance of judgment noted above comes from this special status of *dareka*. It seems therefore better to avoid *dareka* and instead use another WH+*ka* sequence. Let us take *dono otoko ka* ('some man'). In this sequence, the WH feature of *dono* is percolated up to N'=*dono otoko*, to which the specifier *ka* is attached, forming an NP. Thus, *dono otoko* with the WH feature is governed by *ka* in the syntax, not the lexicon. But like *dareka*, there is no LF-movement, and the version of 37b in which *dareka* is replaced by *dono otoko ka* should differ from 37a with respect to the interpretation of *kare*:

- (38) *Dono otoko ka kara kare-ga rakudaisi-ta koto-o kik-ta*
 '(I) heard from some man that he (had) failed'

In contrast to 37b, most speakers seem to judge that the bound variable interpretation of *kare* is impossible, as predicted.

But now consider 39:

- (39) *Dono otoko kara ka kare-ga rakudaisi-ta koto-o kik-ta*
 '(I) heard from some man (such that I wonder who he is) that
 he (had) failed'

In 39, *ka* occupies the specifier position of PP, not NP as in 38. In this case, it is possible for *kare* to be taken as a variable bound by *dono otoko*, or at least this interpretation is readily accessible when compared to 38. The problem now is how to account for this difference.

The S-structure for the PP *dono otoko kara ka* is 40:

- (40) [[[*dono otoko* _{NP}] [*kara* _P] _{P'}] [*ka* _Q] _{PP}]

In 40, *dono otoko* is not governed by *ka*, since they are not sisters even under our definition of sisterhood presented in section 2 (cf. the discussion below 13); NP *dono otoko* is dominated by P', while Q *ka* is dominated by PP, and P' and PP are *not* one and the same projection; one is an "intermediate" projection of P, while the other is its maximal projection.¹¹ Therefore, movement of *dono otoko* to a position where *ka* can govern it is necessary. If *dono otoko* moves to the specifier position of the PP by adjunction to Q *ka*, the result is that *dono otoko* remains to be properly contained in (dominated by) the PP, which means that it cannot c-command anything outside the PP. Then *kare* in 39 cannot be a variable bound by *dono otoko*. If, on the other hand, *dono otoko* adjoins to the PP, then it will no longer be dominated by the PP (but only by a segment of it) and it can c-command an element outside the PP. In the case of 39, *dono otoko* does indeed c-command *kare* at LF if it is adjoined to the PP:

- (41) [[[[*t_i* *kara* _P] *ka* _{PP}] [*dono otoko* _i] _{PP}] [*kare-ga* ...] *kik-ta*]

If *kare* has the same index as *dono otoko*, namely *i*, it is interpreted as a variable bound by *dono otoko*. This LF-movement by adjunction to PP is allowed either because PP is in general not a possible argument (but only NP in PP) or because a PP whose specifier position is occupied by a Q is sort of an adjunct, rather than an argument, even if PP in general *can* be an argument. The latter possibility is suggested by an obligatory

¹¹ Note that under a "traditional" definition of government, *ka* governs *dono otoko*, since the former c-commands the latter and there is no maximal projection boundary intervening between *dono otoko* and *ka*. But see BRS for another definition of government, in terms of the "Minimality Condition".

(42) a. [Dono otoko ka ga _a] [kare-ga rakudaisi-ta to] iw-ta
C say-Pt.

b. [[Dono otoko _β] ga ka _α] [kare-ga rakudaisi-ta to] iw-ta
 'Some man (such that I wonder who he is) said that he
 (had) failed'

In any case, it seems quite possible that any PP (or NP' with a Case-marker) whose specifier is Q is sort of an adjunct (hence a possible adjunction site), this kind of constituent almost always requiring an intonation break. Note that the presence of WH seems irrelevant in this case. Compare 43a with 43b:

(43) a. Taroo kara tegami-ga ki-ta
letter-Nom. come-Pt.

'A letter came from Taro'

b. Taroo kara ka, tegami-ga ki-ta
'A letter came from someone such that I wonder whether it is Taro'

In 43b but not in 43a, an intonation break before *tegami* is obligatory.

An apparent counterexample to the above-mentioned claim would be a sentence like the following:

(44) (Tegami-ga ki-ta no wa) [dono otoko kara ka_a] (-o) kare-ni
kik-te kudasai

- (49) a. Hanako-wa utukusi-i
Top. beautiful-Pr.
'Hanako is beautiful'
b. Hanako-wa kirei-da
beautiful-be
'Hanako is beautiful'
c. Hanako-wa bizin-da
beautiful-(wo)man-be
'Hanako is a beautiful-woman'

(51) [[[[Hanako-ga Taroo-o but_{VP}] ta_{IP}] no_{CP}] da_{IP}]
hit Pt. C be

‘(It) is that Hanako hit Taro’

It takes PP as well, as in 45. Then α in 44 and the corresponding constituent in 46 should be analyzed as an IP (whose specifier is *ka*) rather than PP, since we have seen reason to believe that *da* is “deleted” before *ka* (sometimes optionally) in such cases. Thus the structure of α in 44 should be something like 52:

If *da* takes IP as well as PP, then the same line of analysis suggests a structure like the following for α in 36b:

¹² That the “complement” to *da* in 51 is CP rather than NP is evidenced by the impossibility of GA-NO Conversion (cf. fn. 7):

(i) Hanako-{ga/*no} Taroo-o but-ta no da

¹³ As noted in the text above, “deletion” of *da* is often optional in an embedded context. A sentence like 36b is no exception and the version without *da*-“deletion” is, although somewhat awkward, not unacceptable. In 44, too, it seems that *da* can appear before *ka*. However, for some reason appearance of an overt Case-marker decreases the acceptability of *da-ka* sequence. Thus, 48 with *da* becomes worse if *ga* follows *ka*, where *ga* is a Case-marker selected by *wakar* (‘understand’).

Turning to the main issue, if α in 44 is analyzed as 52, a sentence like 44 is no longer a counterexample to our claim that any PP whose specifier contains a Q is sort of an adjunct, for the PP in α in 44 does not, as shown by 52, contain a Q. Furthermore, the analysis of α in 44 as 52 is natural, since *kik* takes a *wh*-complement, which from a semantic point of view should be clausal, hence CP or IP but not PP.

We have yet to discuss the case of PP whose specifier position is occupied by *mo*. A relevant example is the following:

- (54) [(Boku-ga tegami-o dasi-ta) dono otoko kara mo_{pp}]

I-Nom. letter-Acc. send-Pt.

[kare-ga rakudaisi-ta to] iw-te ki-ta

fail-Pt. C say-ing come-Pt.

'From every man (I had sent a letter to), (a reply) came saying that he had failed'

Here, too, there is an intonation break after Q=*mo*, suggesting that the bracketed PP behaves like an adjunct. If it is an adjunct, or at least does not "count" as an argument blocking adjunction, (...) *dono otoko* should be able to bind *kare* after adjoining to the PP. In fact, this bound variable interpretation seems possible, although for some reason that is perhaps related to the pragmatics of universal quantification, implying the plurality of *otoko* which conflicts with the singularity of *kare*, the interpretation in question may be difficult to pin down. Notice, however, that the plural form of *kare*, namely *kare-ra*, obviously cannot be interpreted as a variable bound by the WH-phrase in 54.

Unfortunately, we cannot compare 54 with the version in which *mo* is followed, rather than preceded, by a P, since such a sequence as *dono otoko mo kara* is for some reason unacceptable. An exception would be *dono otoko mo ga*. Let us take an example with this expression:¹⁴

- (55) Dono otoko mo ga [kare-ga rakudaisi-ta to] iw-te ki-ta

'Every man came saying that he had failed'

In this case, the bound variable interpretation of *kare* seems less accessible than that of *kare* in 54. If this judgment is correct, it confirms the validity of our analysis; *dono otoko* in 55, being already governed by *mo*, does not undergo LF-movement; therefore it cannot c-command, hence bind, *kare*.

¹⁴ For the same reason as noted above concerning *dareka*, we avoid using the expression *daremo(-ga)*.

5. CONCLUDING REMARKS. In this paper, we have claimed that LF-movement of WH is effected either by direct adjunction to Q or by adjunction to a category whose specifier position is occupied by Q. In either case, the requirement of government of WH by Q is met.

If an element (a pronominal or an empty category) is to be taken as a variable bound by a WH, where that element is not a trace left by the WH but one outside the category within which the WH originates, the movement of the WH must be via adjunction to the category, for only by this process are both the requirement of government and that of c-commanding the element satisfied. However, as has been repeated several times, adjunction to a category is possible only if it is a non-argument. Accordingly, the availability of the bound variable interpretation also depends on the argumenthood of the category with WH and Q.

Suppose that a WH binds both its trace and another element, which is the situation we have been considering all along. Evidently, this violates Koopman and Sportiche's 1982 *Bijection Principle*, which requires that there be a one-to-one relation between operators and variables, if a WH is considered to be an operator binding both its trace, a variable, and another variable (a pronominal or an empty category). However, it may be that the real operator "binding" the trace of a WH is not the WH itself but rather the Q licensing the WH (cf. Ohno 1983, 1985), though the WH *is* an operator binding an element other than its trace. If this is the right conception of the operator-variable relation in Japanese, there is no violation of the Bijection Principle. If not, our study concerning variable binding could cast serious doubt on the validity, or at least the universality, of the Bijection Principle.¹⁵

¹⁵ Chomsky 1982 suggests that violation of the Bijection Principle only assigns a marginal status. Thus consider the following parasitic gap construction from Chomsky 1982:37:

(i) *who*_i [did you give a picture of *e*_i to *e*_i]

In (i), there are two occurrences of an empty category, and each is interpreted as a variable bound by the same operator, namely *who*, violating the Bijection Principle. In fact, according to Chomsky, constructions like (i) are (more or less) acceptable under the intended interpretation.

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