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Authors	Saito, Mamoru
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## ON THE DEFINITION OF C-COMMAND AND GOVERNMENT\*

Mamoru Saito

M.I.T.

0. The notions, c-command and government, play central roles in the Government-Binding Theory. Yet, how these relations should be defined exactly is still controversial. The purpose of this paper is to bring out some data from Japanese bearing on this issue. In the following section, I will briefly go over four definitions of c-command widely assumed in the literature. In the second section, I will discuss those four definitions in the light of some data concerning the Condition (C) of the Binding Theory. And then, in the third section, I will consider the definition of government and proper government. There, I will suggest that c-command in the classical sense (cf. the definition in (1a)) is a necessary condition for proper government by a lexical head.

1. Four widely assumed definitions of c-command are shown in (1).

(1) a. Reinhart (1976, p.32)

Node A c-commands node B if neither A nor B dominates the other and the first branching node dominating A dominates B.

b. Aoun and Sportiche (1981)

A c-commands B if A and B are  $\bar{X}$ ,  $A \neq B$ , and every maximal projection dominating A dominates B.

c. Chomsky (1981, p.166)A c-commands B if

- (i) A does not contain B
- (ii) Suppose that  $s_1, \dots, s_n$  is the maximal sequence such that
  - (a)  $s_n = A$
  - (b)  $s_i = A^j$
  - (c)  $s_i$  immediately dominates  $s_{i+1}$

Then if C dominates A, then either (I) C dominates B, or (II)  $C=s_i$  and  $s_1$  dominates B.

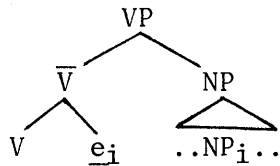
d. Borer (to appear)A c-commands B if

- (i) A does not contain B
  - (ii) Suppose  $s_1, \dots, s_n$  is a sequence such that
    - (a)  $s_i$  immediately dominates  $s_{i+1}$
    - (b) for every  $s_j, j \geq 1, s_n$  is the head of  $s_j$
- Then if C immediately dominates A, then either (I) C dominates B, or (II)  $C=s_j$  and  $s_i$  dominates B.

(1a) is the classical definition of c-command in terms of branching nodes proposed in Reinhart (1976). (1b) is the definition in terms of maximal projections proposed in Aoun and Sportiche (1981). This definition is supported by examples such as (2).

(2) a. \*Elle l'enverra  $e_i$  à la personne qui voulait voir Marie $e_j$

b.



Given this definition, government can be defined basically as symmetric c-command, as shown in (3).

(3) a.  $\bar{R}(x,y)$  if  $\forall Z, Z$  a maximal projection,  $Z$  dominates  $x \Rightarrow Z$  dominates  $y$ .

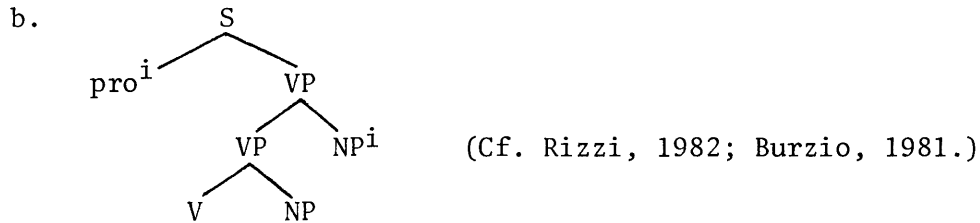
b.  $x$  c-commands  $y$  if  $x$  and  $y$  are  $\bar{X}$ , and  $x \neq y$ , and  $\bar{R}(x,y)$ .

c.  $x$  governs  $y$  if  $x$  is an  $X^0$ , (+AGR if  $x=INFL$ ),  $y=\bar{Y}$ , and  $(\bar{R}(x,y)$  and  $\bar{R}(y,x))$ .

(Aoun & Sportiche, 1981)

The definition of c-command in (1c) is proposed in Chomsky (1981). This definition is motivated by the postverbal subject construction in Italian, which is exemplified in (4).

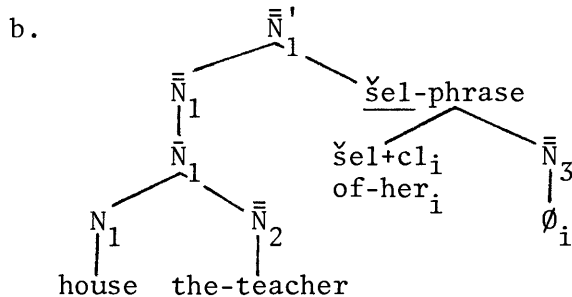
(4) a. Hanno fatto domanda      molti studenti  
       have made application many students



It is shown in Rizzi (1982, Chapter 4) that long-distance movement of the postverbal subject is allowed in Italian. (Cf. also Jaeggli, 1982, Chapter 4 for similar facts in Spanish.) From this fact, he concludes that the postverbal subject is properly governed by the verb. Given this conclusion, if c-command is a necessary condition for government, as is assumed in Chomsky (1981), then in (4b), V must c-command NP<sup>i</sup>. The definition of c-command in (1c) satisfies this requirement. According to this definition, a head can c-command any phrase dominated by its projection. Otherwise, this definition is equivalent to Reinhart's definition in (1a).

The definition of c-command in (1d) is proposed in Borer (to appear) as a revision of the modified definition in Reinhart (1976, p.148). According to this definition, A c-commands B if some projection of the node immediately dominating A dominates B. As Borer notes, given this definition, the ungrammaticality of the Hebrew example in (5) is accounted for.

- (5) a. \*beit ha-mora<sub>i</sub>    šel-a<sub>i</sub>  
 house the teacher of-her  
 (the teacher's house which she owns)



According to the definition of c-command in (1d), NP<sub>2</sub> c-commands NP<sub>3</sub>. Thus, (5a) is ruled out by the Binding Conditions.

2. In this section, I will present some facts that seem to favor the definitions of c-command in (1a) and (1c) over those in (1b) and (1d).

Let us first consider the Japanese examples in (6).<sup>1</sup>

- (6) a. John<sub>i</sub>-ga [NP<sup>Mary-ga kare<sub>i</sub>-ni okutta tegami-o ] mada yonde  
 -nom -nom he<sub>i</sub>-to sent letter-acc yet read  
 inai (koto)  
 not fact  
 (John has not read the letter Mary sent to him)</sup>

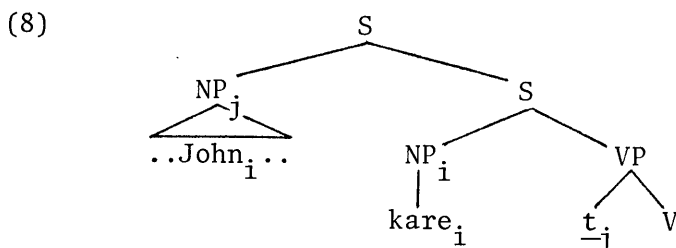
- b. \*Kare<sub>i</sub>-ga [<sub>NP</sub>Mary-ga John<sub>i</sub>-ni okutta tegami-o ] mada yonde  
 he<sub>i</sub>-nom -nom <sub>i</sub>-to sent letter-acc yet read  
 inai (koto)  
 not fact  
 (\*He has not read the letter Mary sent to John)
- c. [<sub>NP</sub>John<sub>i</sub>-kara okane-o moratta hito-ga ] kare<sub>i</sub>-o  
<sub>i</sub>-from money-acc received person-nom he<sub>i</sub>-acc  
 suisensita (koto)  
 recommended fact  
 (The person who received money from John recommended him)
- d. [<sub>NP</sub>Kare<sub>i</sub>-kara okane-o moratta hito-ga ] John<sub>i</sub>-o  
 he<sub>i</sub>-from money-acc received person-nom <sub>i</sub>-acc  
 suisensita (koto)  
 recommended fact  
 (The person who received money from him recommended John)

As has been argued in the literature, these examples show not only that Binding Condition (C), which states that names must be free, is observed in Japanese, but also that Japanese sentences have hierarchical structures similar to those of English sentences. (Cf. Huang, 1982, Saito, 1983a, and especially Whitman, 1982.) Note that if Japanese lacks VP, then in (6c), the pronoun kare c-commands its antecedent, and hence, we should expect this sentence to be ungrammatical.

Given that Binding Condition (C) holds in Japanese, it is argued in Whitman (1982), Saito (1983a) that scrambling in Japanese should be analyzed in terms of movement. Consider the following examples:<sup>2</sup>

- (7) a. \*Kare<sub>i</sub>-ga [<sub>NP</sub>Mary-ga John<sub>i</sub>-ni okutta tegami-o ] mada yonde  
 he<sub>i</sub>-nom -nom <sub>i</sub>-to sent letter-acc yet read  
 inai (koto)  
 not fact  
 (\*He has not read the letter Mary sent to John)
- b. [<sub>NP</sub>Mary-ga John<sub>i</sub>-ni okutta tegami-o] kare<sub>i</sub>-ga mada yonde  
 inai (koto)  
 (The letter Mary sent to John, he has not read)

In (7a) the pronoun kare clearly c-commands John, and hence, the sentence is straightforwardly ruled out. On the other hand, the grammaticality of (7b) indicates that the object NP is moved from its original position to a position the subject NP does not c-command. In Saito (1983a), I suggested that scrambling is like QR in that it involves adjunction to S. According to this hypothesis, the representation of (7b) is as in (8).



Given the definitions of c-command in (1a) and (1c), we correctly predict that (7b) is grammatical. In (8), the first branching node dominating  $NP_i$  is the lower S, and this node does not dominate John. Thus, the definition in (1a) is consistent with (7b). The definition in (1c) also makes the correct prediction since  $NP_i$  is not the head of the lower S. On the other hand, the definition in (1d) seems to make a wrong prediction. In (8), the lower S immediately dominates  $NP_i$  and is the head of the higher S, which dominates John. Thus, according to the definition of c-command in (1d),  $NP_i$  c-commands John in (8). The definition of c-command in (1b) is consistent with (7b) only if S is a maximal projection, and in the configuration in (8) not only the higher S but also the lower S counts as a maximal projection.<sup>3</sup>

The second set of examples has to do with the internal structure of VP in Japanese. Let us consider the following examples:

- (9) a. Mary-ga [<sub>pp</sub>John<sub>i</sub>-no obasan-ni] kare<sub>i</sub>-o azuketa (koto)  
 -nom -gen aunt-to he-acc entrusted fact  
 a'. \*Mary entrusted him<sub>i</sub> to John's<sub>i</sub> aunt.  
 b. Mary-ga [<sub>pp</sub>John<sub>i</sub>-no atarasii sensei-ni] kare<sub>i</sub>-o syookaisita  
 -nom -gen new teacher-to he-acc introduced  
 (koto)  
 fact  
 b'. \*Mary introduced him<sub>i</sub> to John's<sub>i</sub> new teacher.

It appears that the contrast in (9) between Japanese and English follows straightforwardly from the movement analysis of scrambling. As shown below, multiple scrambling is possible in Japanese.

- (10) [<sub>S</sub>Sono hon-o<sub>i</sub> [<sub>S</sub>John-ni<sub>j</sub> [<sub>S</sub>Mary-ga t<sub>j</sub> t<sub>i</sub> watasita]]] (koto)  
 that book-acc -to<sub>j</sub> -nom t<sub>j</sub> t<sub>i</sub> handed fact  
 (Mary handed that book to John)

Thus, it seems possible that in (9a), for example, both the subject NP and the PP are adjoined to S as in (11).

- (11) [<sub>S</sub>Mary-ga<sub>j</sub> [<sub>S</sub>[<sub>pp</sub>John<sub>i</sub>-no obasan-ni]<sub>1</sub> [<sub>S</sub>t<sub>j</sub> [<sub>VP</sub>t<sub>1</sub> kare<sub>i</sub>-o azuketa]]]]] (koto)

If (11) is a possible representation of (9a), then the grammaticality of (9a) is straightforwardly accounted for, since kare does not c-command John in (11) under any of the four definitions of c-command.

However, there is reason to doubt that (11) is a possible representation of (9a). Let us consider the following contrast noted in Kuroda (1980, 1983) and Haig (1980):

- (12) a. [<sub>NP</sub>Sannin-no gakusei-ga] sake-o nonde iru  
           3person-gen student-nom -acc drinking  
           (Three students are drinking sake)  
       b. Gakusei-ga sannin sake-o nonde iru  
       c. \*Gakusei-ga sake-o sannin nonde iru
- (13) a. John-ga [<sub>NP</sub>sanbon-no sake-o] motte kita  
           -nom 3bottle-gen sake-acc came-with  
           (John came with three bottles of sake)  
       b. John-ga sake-o sanbon motte kita  
       c. Sake-o John-ga sanbon motte kita

As shown in (12), a quantifier can 'float' out of an NP, but not across another NP argument. Here, (13c) is an apparent counterexample to this generalization, since a "floating" quantifier is related to the sentence-initial object across the subject NP in this sentence. But as Kuroda and Haig point out, if we assume the movement analysis of scrambling, we correctly predict that (13c) should be grammatical. If scrambling is an instance of Move-alpha, the structure of (13c) should be as in (14).

- (14) [<sub>S</sub>Sake-o<sub>i</sub> [<sub>S</sub>John-ga t<sub>i</sub> sanbon motte kita]]

Although the quantifier sanbon cannot be related to sake-o directly, it can be related to this scrambled object through the trace in the object position.

If Kuroda's and Haig's account of the paradigm in (12) and (13) is correct, then it follows that (12c) cannot have the structure shown in (15).

- (15) \* [<sub>S</sub>Gakusei-ga<sub>i</sub> [<sub>S</sub>sake-o<sub>j</sub> [<sub>S</sub>t<sub>i</sub> sannin t<sub>j</sub> nonde iru]]]

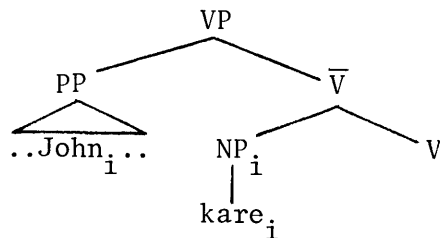
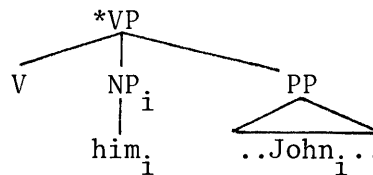
In Saito (1983b), I argued that the subject position is not assigned abstract Case in Japanese, and that the representation in (15) is ruled out because of the requirement that variables must be Case-marked. This account implies that a subject NP can never be scrambled. Note also that (15) will be ruled out by the Path Containment Condition (cf. Pesetsky, 1982), which subsumes the crossing constraint. Under either account, structures of the following form must be in general impossible in Japanese:

- (16) \* [<sub>S</sub>A<sub>i</sub> [<sub>S</sub>B<sub>j</sub> [<sub>S</sub>t<sub>i</sub> [<sub>VP</sub> ... t<sub>j</sub> ... ]]]]

If this is the correct approach, then (11) cannot be a possible representation of (9a), since (11) has the structure shown in (16). Thus,

it seems that the PP in (9a) is within the VP.

Assuming that both the direct object and the PP are in their D-structure positions in (9a), Hoji (1982) argues that Japanese is more configurational than English in that its phrase structure is strictly binary branching. (Cf. also Huang, 1982.) According to Hoji's hypothesis, the contrast between Japanese and English is due to the difference in the VP-internal structure.

(17) a. Japaneseb. English

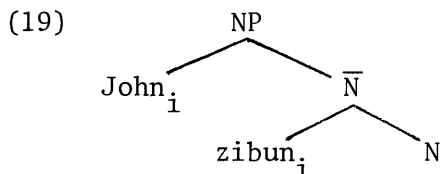
But here, note that this account is possible if we assume the definition of c-command in (1a) or (1c), but not if we assume the definition in (1b) or (1d). In (17a), there is no maximal projection dominating kare and not John. Furthermore, John is dominated by a projection of the first node dominating kare. Thus, according to the definitions in (1b) and (1d), kare c-commands John in (17a). On the other hand, according to the definitions in (1a) and (1c), kare does not c-command John in (17a). Neither the first branching node dominating kare nor a projection of NP<sub>i</sub> dominates John. Thus, if Hoji's account is correct, then the examples in (9) constitute evidence for the definitions of c-command in (1a) and (1c) and against those in (1b) and (1d).

The final set of examples has to do with the internal structure of NP in Japanese. Let us consider the following examples:<sup>4</sup>

- (18) a. [<sub>NP</sub>John to Mary-no]<sub>i</sub> otagai<sub>i</sub>-no hihan  
           and            -gen each other-gen criticism  
           (John and Mary's criticism of each other)

- b. John<sub>i</sub>-no zibun<sub>i</sub>-no hihan  
       <sub>i</sub>-gen self<sub>i</sub>-gen criticism  
       (John's criticism of himself)

The structure of (18b) is shown in (19).



As pointed out in Bouchard (to appear), given the definition of c-command in (1b), zibun c-commands its antecedent in (19) since there is no maximal projection dominating zibun and not John. (Cf. also Bouchard, 1982.) Hence, Binding Condition (C) and the definition of



c-command in (1b) jointly predict that (18b) should be out. The definition of c-command in (1d) shares this problem. The first node dominating zibun is  $\bar{N}$ , and John is dominated by a projection of this  $\bar{N}$ . Thus, the definitions in (1b) and (1d) both predict that the examples in (18) should be out. The definitions in (1a) and (1c) face no such difficulty.

In this case it is possible to construct a similar argument on the basis of English data. Consider the example in (20).

- (20) a. [<sub>NP</sub><sub>e</sub> [ <sub>$\bar{N}$</sub> destruction [<sub>NP</sub>the city]]]  
 b. [<sub>NP</sub>the city's<sub>i</sub> [ <sub>$\bar{N}$</sub> destruction t<sub>i</sub>]]

If (20b) is derived from (20a) by NP-movement, as is widely assumed, then according to the definitions of c-command in (1b) and (1d), the trace t<sub>i</sub> c-commands its antecedent the city in (20b). Again, the definitions in (1a) and (1c) face no such difficulty.

3. So far, we have seen some data that seem to support the definitions of c-command in (1a) and (1c). Before we compare these two definitions, let us briefly discuss Aoun & Sportiche's (1981) definition of government, shown in (21).

- (21) Aoun & Sportiche (1981)  
 A governs B if every maximal projection dominating A dominates B and conversely.

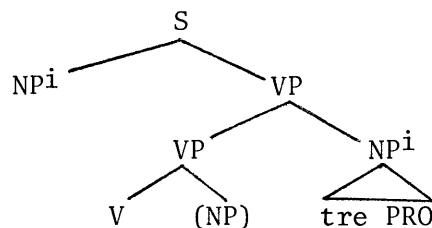
As pointed out in Aoun & Sportiche, this definition of government is supported by the contrast in (22).

- (22) a. John likes [<sub>NP</sub>his [ <sub>$\bar{N}$</sub> red book]]  
 b. \*John likes [<sub>NP</sub>PRO [ <sub>$\bar{N}$</sub> red book]]

Given the definition in (21), PRO is governed by the head noun book in (22b). Thus, the ungrammaticality of (22b) follows from the theorem of Binding Theory that PRO must be ungoverned.

Furthermore, the definition in (21) seems to be consistent with Belletti and Rizzi's (1981) account of the ungrammaticality of the following sentence:

- (23) \*Hanno parlato tre  
 have spoken three



As Belletti & Rizzi point out, if the head of a maximal projection is accessible to government from without and if V governs the postverbal

subject in (23), then (23) can be ruled out since PRO will be governed. The definition of government in (21) is consistent with this account if the lower VP in (23) does not count as a maximal projection, as is often assumed in the literature for adjunction structures. Thus, the definition of government in (21) seems to be well motivated.

However, it is not clear that proper government should also be defined in terms of maximal projections. According to the definition of proper government in Chomsky (1981), a trace can be properly governed either by an antecedent (antecedent government) or by a lexical head (lexical government). Let us first consider the case of antecedent government. It is argued in Lasnik & Saito (1983) that VP is not a barrier to antecedent government. I will not discuss this hypothesis in detail here, but will just mention one set of relevant examples.

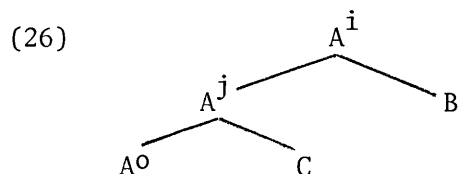
(24) [<sub>S</sub>Why<sub>i</sub> [<sub>S</sub>do you [<sub>VP</sub>think [<sub>S</sub>t<sub>i</sub> [<sub>S</sub>he left t<sub>i</sub>]]]]] (SS & LF)

(25) a. \*[[<sub>S</sub>Who<sub>j</sub> [<sub>S</sub>t<sub>j</sub> [<sub>VP</sub>thinks [<sub>S</sub>[<sub>S</sub>he left why<sub>i</sub>]]]]] (SS)

b. \*[[<sub>S</sub>Why<sub>i</sub> who<sub>j</sub> [<sub>S</sub>t<sub>j</sub> [<sub>VP</sub>thinks [<sub>S</sub>t<sub>i</sub> [<sub>S</sub>he left t<sub>i</sub>]]]]] (LF)

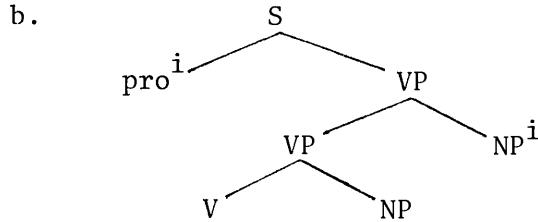
The contrast between (24) and (25a) can be attributed to the status of the intermediate trace of *why* in LF. The LF representation of (25a) is shown in (25b). In both (24) and (25b), the intermediate trace in the embedded COMP has an antecedent in the matrix COMP. But in (24) *why* is the only element in the matrix COMP, whereas the matrix COMP in (25b) contains *who* as well. Thus, we may say that the intermediate trace in (24) is antecedent governed by *why* across VP, while *why* in (25b) fails to properly govern the intermediate trace due to the presence of *who* in the matrix COMP.<sup>5</sup> If this approach is correct, then it follows that VP is not a barrier to antecedent government.

Let us now turn to lexical government. As we will see directly, once we assume that VP is not a barrier to proper government by an antecedent, there does not seem to be any reason to believe that a lexical head can freely properly govern any phrase immediately dominated by its projection. The issue here is whether A<sup>0</sup> properly governs B in the configuration shown in (26).



One relevant case is the postverbal subject construction in Italian and Spanish. Let us consider again the Italian example in (4), which is repeated below in (27).

(27) a. Hanno fatto domanda      molti studenti  
           have made application many students



As stated above, it is shown in Rizzi (1982, Chapter 4) that long distance movement of the postverbal subject is possible. As he also points out, this fact follows if the postverbal subject position is properly governed by the verb. If this is the correct approach, we must say that  $A^0$  properly governs B in the configuration in (26). However, given that VP is not a barrier to antecedent government, there is an alternative way to account for the possibility of long distance movement of the postverbal subject in Italian. That is, since the postverbal subject is coindexed with the expletive pro in the preverbal subject position, we can assume that the postverbal subject is antecedent governed by this pro.<sup>6</sup> Thus, the facts concerning the postverbal subject construction in Italian do not seem to provide us with decisive evidence that  $A^0$  properly governs B in the configuration in (26).

Another relevant case is discussed in Aoun & Sportiche (1981). Let us consider the sentences in (28).

- (28) a. John<sub>i</sub> is [<sub>AP</sub>likely [<sub>S</sub> t<sub>i</sub> to win]]  
 b. John<sub>i</sub> is [<sub>AP</sub> [<sub>A</sub>very likely][<sub>S</sub> t<sub>i</sub> to win]]

It is widely assumed that the trace in (28a) satisfies the ECP because of the proper government of this trace by the adjective likely. As pointed out in Aoun & Sportiche (1981), if this is also the case in (28b), then this sentence constitutes evidence that  $A^0$  properly governs B in the configuration in (26). However, as noted in Lasnik & Saito (1983), given that VP and hence, AP are not barriers to antecedent government, this is not the only possible way to account for the fact that examples in (28) do not violate the ECP. In both (28a) and (28b), the trace in the embedded subject position is antecedent governed by its antecedent in the matrix subject position. Thus, neither the Italian postverbal subject construction nor the examples in (28) seem to provide us with decisive evidence that  $A^0$  properly governs B in the configuration in (26).

On the other hand, there seems to be some evidence from Japanese that  $A^0$  does not properly govern B in the configuration in (26). One of the relevant cases has to do with the distribution of embedded  $\bar{S}$ 's without an overt complementizer. Let us consider the examples in (29).

- (29) a. Mary thinks (that) John is a fool  
 b. Bill says (that) John loves Mary

As is well known, certain verbs in English allow their  $\bar{S}$  complements

to appear without an overt complementizer. It is suggested in Kayne (1981) and Stowell (1981) that when an embedded  $\bar{S}$  appears without an overt complementizer, there is an empty category in the position of the complementizer, and that this empty category is subject to the ECP. According to this hypothesis, the empty category in (30) is properly governed by the matrix verb thinks.<sup>7</sup>

(30) Mary thinks [ $\bar{S}$   $\underline{e}$  [ $S$  John is a fool]]

Since the empty category in question is subject to the ECP, it follows that a complementizerless  $\bar{S}$  can appear only in a properly governed position. (Cf. Stowell, 1981 for detailed discussion.) Thus, (31) is correctly ruled out by the ECP.

(31) \*[[ $\bar{S}$   $e$  [ $S$  John is a fool]]] is obvious

Note that an  $\bar{S}$  complement can appear without an overt complementizer even when it is not adjacent to the verb, as shown in (32).

(32) a. Carol convinced Dan she didn't want a cat  
(Stowell, 1981, p.410)  
b. ??I said to John he should come

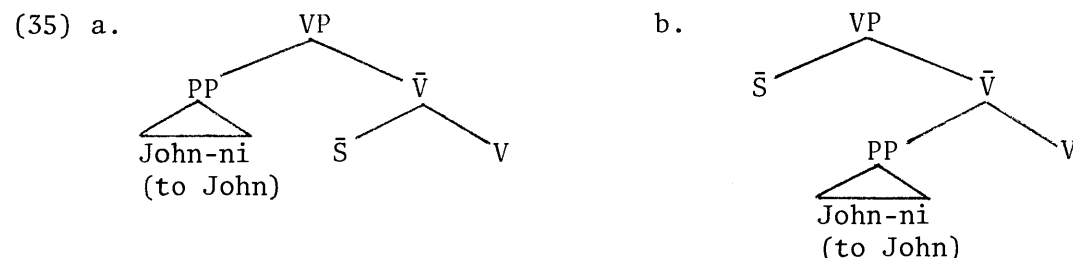
We can find a similar phenomenon in the western dialects of Japanese. An example from the Kobe Dialect is shown in (33).<sup>8</sup>

(33) Mary-ga kinoo John-ni [ $\bar{S}$  Koobe-ni iku (te)] yuuteta  
-nom yesterday -to -to go COMP was-saying  
(koto)  
fact  
(Mary said to John yesterday that she was going to Kobe)

However, in Japanese, an embedded  $\bar{S}$  can appear without an overt complementizer only when it is adjacent to the verb. This is shown in (34).

(34) Mary-ga kinoo [ $\bar{S}$  Koobe-ni iku \*(te)] John-ni yuuteta (koto)

Given Hoji's (1982) hypothesis that Japanese phrase structure is strictly binary branching, this contrast between English and Japanese can be attributed to the difference in the VP-internal structure. As shown in (35), if Japanese phrase structure is strictly binary branching, a verb and its complement  $\bar{S}$  can be sisters only when they are adjacent.



On the other hand, as shown in (36), if VP in English lacks this hierarchical structure, then a verb and its complement  $\bar{S}$  can be sisters even when they are not adjacent.



If this is the correct approach, then the ECP account of the distribution of  $\bar{S}$ 's without an overt complementizer entails that  $\bar{S}$  is properly governed in (35a) and (36), but not in (35b). This conclusion, in turn, implies that  $A^0$  does not properly govern B in the configuration in (26).

I have suggested above that  $A^0$  does not properly govern B in the configuration in (26). This result directly follows if we assume the definition of c-command in (1a) and that c-command is a necessary condition for proper government. Note that according to the definitions of c-command in (1b), (1c), and (1d),  $A^0$  c-commands B in (26). Thus, the facts discussed above constitute evidence for the definition of c-command in (1a) to the extent that c-command can be plausibly made a necessary condition for proper government.

It seems to me that the c-command requirement for proper government makes good sense under Stowell's (1981) version of the ECP. Stowell argues that  $\theta$ -role assignment results in coindexation between the  $\theta$ -role assigner and the  $\theta$ -role assignee, and that this coindexation is a necessary requirement for lexical government to obtain. (Cf. also, Jaeggli, 1980, 1982). Thus, according to Stowell's version of the ECP, proper government by a lexical head is a special case of proper government by an antecedent. Given this interpretation of lexical government, the c-command requirement seems very natural, since when a lexical head properly governs an empty category, it is actually an antecedent of the empty category.

4. In this paper, I examined the four definitions of c-command stated in (1). I first argued on the basis of some Binding Condition (C) facts that the definitions in (1b) and (1d) are too weak in the sense that they are too permissive. Then, I discussed proper government, and suggested that c-command as defined in (1a) is a necessary condition for proper government by a lexical head. I also suggested that this requirement makes sense under Stowell's (1981) version of the ECP. If this is the correct approach, then it provides us with evidence for the definition of c-command in (1a). Although the arguments in this paper are based on a particular set of assumptions and are by no means decisive, I hope I succeeded in showing that a number of desirable consequences follow if we assume the definition of c-command in (1a).

Before we conclude the discussion, let us briefly speculate on how proper government will be defined, given the assumptions and suggestions made in this paper. First, I have assumed, following

Lasnik & Saito (1983), that VP is not a barrier to antecedent government. Antecedent government is defined in Lasnik & Saito as follows:

- (37) A antecedent governs B if
- a. A and B are coindexed
  - b. A c-commands B
  - c. There is no C (C an NP or  $\bar{S}$ ) such that A c-commands C and C dominates B, unless B is the head of C.

As in Stowell (1981), COMP is assumed to be the head of  $\bar{S}$ . By (37c), NP and  $\bar{S}$  are absolute barriers to antecedent government in the sense that only the head is accessible to such government from without. The definition of c-command in (1a) is assumed in the formulation of the definition of antecedent government in (37).

Secondly, adopting Stowell's (1981) hypothesis that lexical government is a special case of antecedent government, I suggested that c-command as is defined in (1a) is a necessary condition for proper government. Putting this suggestion aside for a moment, we may say that the standard definition of lexical government is as in (38).

- (38) A lexically governs B if
- a. A is  $X^0$  (and  $A \neq \text{AGR}$ )
  - b. A governs B.

Now, as stated above, according to Stowell's version of the ECP,  $\theta$ -role assignment results in coindexation between the  $\theta$ -role assigner and the  $\theta$ -role assignee, and this coindexation is a necessary condition for lexical government. Also, note that adding the locality condition in (37c) to the definition of lexical government does not have any effect, since whenever the government requirement in (38b) is satisfied, the locality condition in (37c) is also satisfied. Thus, incorporating the c-command requirement for lexical government into the definition, we can restate (38) as follows:

- (39) A lexically governs B if
- a. A is  $X^0$  (and  $A \neq \text{AGR}$ )
  - b. A governs B
  - c. A and B are coindexed
  - d. A c-commands B
  - e. There is no C (C an NP or  $\bar{S}$ ) such that A c-commands C and C dominates B, unless B is the head of C.

Here, the government requirement in (39b) seems to be redundant. Since the coindexation requirement in (39c) can be satisfied only through  $\theta$ -role assignment and  $\theta$ -role assignment takes place under government, whenever (39c) is satisfied, (39b) must also be satisfied. Thus, the only difference between (39) and (37) is that the former contains an additional requirement that A be  $X^0$ . Hence, according to the definitions in (37) and (39), lexical government will indeed be a special case of antecedent government. Now, we can define proper

government as in (40b).

- (40) a. A BINDS B if a. A and B are coindexed  
(co-subscripted or co-superscripted)  
b. A c-commands B.  
(Cf. Chomsky, 1981, p.333.)
- b. A properly governs B if  
a.  $A \neq \text{AGR}$   
b. A BINDS B  
c. There is no C (C an NP or  $\bar{S}$ ) such that A  
c-commands C and C dominates B, unless  
B is the head of C.

If this is the correct approach, then the relation of proper government is only indirectly related to that of government.

#### FOOTNOTES

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1. Koto (the fact that) is added to the end of each sentence to avoid the unnaturalness resulting from the lack of topic in a matrix sentence. The result is an NP, but we will ignore koto in the translations.

2. Examples such as (7b) was first brought to my attention by Susumu Kuno (p.c.).

3. English examples such as the following will be problematic for the definitions of c-command in (1b) and (1d) if S is not a maximal projection:

- (i) Which man that saw John<sub>i</sub> does he<sub>i</sub> like

For relevant discussion, see Guéron (1983) and the references cited there.

4. I am indebted to Denis Bouchard for bringing these examples as well as their relevance to the definition of c-command to my attention. See Borer (1981, p.172, fn.9) for similar examples in Modern Hebrew.

5. This analysis implies that in both (24) and (25b), the intermediate trace is not lexically governed by the matrix verb. See Lasnik & Saito (1983) for details.

6. This possibility was suggested to me by Osvaldo Jaeggli. According to the definition of government assumed in Jaeggli (1980, 1982), pro in the preverbal subject position governs, and hence,

antecedent governs (identifies) the postverbal subject position. See Jaeggli (1982, Chapter 4) for details. Note that if our account is correct, then superscripts, which are invisible for binding, must be visible for proper government.

7. As noted in Stowell (1981), this directly follows if we assume that COMP is the head of  $\bar{S}$  and following Belletti & Rizzi (1981), that whenever a phrase is governed, its head is also governed. In the discussion of (24) and (25), we assumed that the intermediate trace in (24), for example, is not properly governed by the verb think. This assumption apparently is in contradiction with the Kayne-Stowell analysis of (30). However, it seems to me that this contradiction is only apparent if we assume, following Stowell (1981), that  $\theta$ -role assignment is a necessary condition for lexical government. We can say that the empty category in (30), being the head of the embedded  $\bar{S}$ , receives the  $\theta$ -role assigned by think to the  $\bar{S}$ . On the other hand, it does not seem likely, to say the least, that the intermediate trace in (24) can receive a  $\theta$ -role from think even if it is in the head position of  $\bar{S}$ . See Saito (1984) for some discussion.

8. I am indebted to Kiyoko Masunaga for the Kobe Dialect examples.

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