NOTES ON ANTECEDENT-GOVERNMENT
AND BLOCKING CATEGORIES*

MAKOTO KONDO
University of Tsukuba

In this article, I examine multiple wh-questions and adjunction structures derived by the Quantifier Raising. I argue that adjunction to a maximal projection creates another maximal projection and that government should be defined in terms of domination but not exclusion. I also claim that a blocking category should be defined in terms of V-marking; that is, the determination of a blocking category should be based on the relation between a head and its complement but not on L-marking. Then I analyze some properties of an antecedent-governor. These considerations have several theoretical implications with respect to VP-adjunction and a filter proposed in Chomsky and Lasnik 1977.

1. INTRODUCTION. The Empty Category Principle (ECP) was first proposed in Chomsky 1981 and the principle has been one of the main issues in the recent study of generative grammar. In Chomsky 1986, the notion of barrier is introduced with the aim of integrating two concepts concerning locality; government and subjacency. The main concerns in this article are to examine the property of antecedent-government, to determine a blocking category (BC) in terms of V-marking (i.e. the relation held between a zero-level [+V] category and its complement), and to explore their theoretical implications. I will analyze the behavior of multiple wh-questions at LF and the property of an adjunction structure derived by the application of the Quantifier Raising (QR) in order to examine the property of antecedent-government. Then we will find that the locality condition necessary for antecedent-government is more strict than it is assumed in Chomsky 1986 and that adjunction structures do not have the property suggested in May 1985 and Chomsky 1986. We will see that these considerations have a number of impli-

* This is an extended and revised version of Kondo 1988a, b. I am grateful to Hidekazu Suzuki, Shosuke Haraguchi, Mamoru Saito, and Takahiro Ono for comments on the previous versions of this article. I also thank two anonymous reviewers for their comments on the first draft of this article.
cations concerning VP-adjunction proposed in Chomsky 1986 and the property of BCs. I will also examine the qualification necessary for an antecedent-governor and it will enable us to reduce a filter proposed in Chomsky and Lasnik 1977 to the ECP.

Let us begin with observing the outline of the framework proposed in Chomsky 1986 which I will presuppose throughout this article. In Chomsky 1986, the X-bar system is extended to nonlexical categories so that S and S' are treated as maximal projections whose heads are I (INFL) and C (complementizer), respectively.

(1) a. \( S = \text{IP} = [\text{IP} \ NP \ [\text{I'} \ I \ [\text{VP} \ V \ldots]]] \)
   b. \( S' = \text{CP} = [\text{CP} \ldots [\text{C'} \ C \text{IP}]] \)

In Chomsky 1986, the notion of barrier is introduced into the definition of government as follows:

(2) government:
   \( \alpha \) governs \( \beta \) iff \( \alpha \) m-commands \( \beta \) and there is no \( \gamma \), \( \gamma \) a barrier for \( \beta \), such that \( \gamma \) excludes \( \alpha \).

Some relevant notions are defined as follows:

(3) m-command:
   \( \alpha \) m-commands \( \beta \) iff \( \alpha \) does not dominate \( \beta \) and every \( \gamma \), \( \gamma \) a maximal projection, that dominates \( \alpha \) dominates \( \beta \).

(4) barrier:
   \( \gamma \) is a barrier for \( \beta \) iff (a) or (b):
   a. \( \gamma \) immediately dominates \( \delta \), \( \delta \) a BC for \( \beta \);
   b. \( \gamma \) is a BC for \( \beta \), \( \gamma \neq \text{IP} \).

(5) blocking category (BC):
   \( \gamma \) is a BC for \( \beta \) iff \( \gamma \) is not L-marked and \( \gamma \) dominates \( \beta \).

(6) L-marking:
   \( \alpha \) L-marks \( \beta \) iff \( \alpha \) is a lexical category that \( \theta \)-governs \( \beta \).

(7) \( \theta \)-government:
   \( \alpha \) \( \theta \)-governs \( \beta \) iff \( \alpha \) is a zero-level category that \( \theta \)-marks \( \beta \), and \( \alpha \), \( \beta \) are sisters.

(8) exclusion:
   \( \alpha \) excludes \( \beta \) if no segment of \( \alpha \) dominates \( \beta \).

(9) domination:
   \( \alpha \) is dominated by \( \beta \) only if it is dominated by every segment of \( \beta \).

In Chomsky 1986, it is supposed, following May 1985, that neither \( \gamma \text{l} \) nor \( \gamma \text{2} \) is a maximal projection in an adjunction structure of the form 10, where \( \alpha \) is adjoined to a maximal projection \( \gamma \); rather they are assumed to
be segments of $\gamma$.

\begin{equation} \ldots \delta \ldots \left[ y_1 \alpha [ y_2 \ldots \beta \ldots]\right] \end{equation}

According to the above definitions, $\gamma$ dominates $\beta$ but not $\alpha$ nor $\delta$, and $\gamma$ only excludes $\delta$. If $\gamma$ is a barrier for $\beta$, $\alpha$ governs $\beta$ but $\delta$ does not. The definition of proper government is modified in Chomsky 1986 as follows:

\begin{equation} \text{(11) proper government:} \end{equation}

$\alpha$ properly governs $\beta$ iff $\alpha \theta$-governs or antecedent-governs $\beta$.

I assume that $\alpha$ antecedent-governs $\beta$ when $\alpha$ governs $\beta$ and $\alpha$ is co-indexed with $\beta$.

2. Localities Condition for Antecedent-Government

2.1. Multiple wh-questions. Chomsky 1981 assumes that the embedded clauses of the following multiple wh-questions have the LF representations of the form 13, where wh-in-situ is adjoined to the embedded COMPs at LF, and that the grammatical difference between 12a, b is accounted for by the ECP.

\begin{equation} \begin{array}{ll}
\text{(12) a.} & \text{It is unclear who saw what.} \\
\text{b.} & \text{*It is unclear what who saw.}
\end{array} \end{equation}

\begin{equation} \begin{array}{ll}
\text{(13) a.} & \left[ S' \left[ \text{COMP}_1 \text{what}_j \left[ \text{COMP}_2 \text{who}_i \right]\right]\right] [S \ t_i \text{ saw } t_j] \\
\text{b.} & \left[ S' \left[ \text{COMP}_1 \text{who}_i \left[ \text{COMP}_2 \text{what}_j \right]\right]\right] [S \ t_i \text{ saw } t_j]
\end{array} \end{equation}

\begin{equation} \text{(14) The Empty Category Principle (ECP):} \end{equation}

$[\alpha \ e]$ must be properly governed.

Chomsky 1981 argues that proper government is satisfied by government of either a zero-level lexical category or an element coindexed with the empty category. Both $t_j$s in 13 satisfy the ECP since they are properly governed by saw. The subject trace is also properly governed by who in 13a while $t_i$ violates the ECP in 13b because what intervening between

---

1 In Chomsky 1986, antecedent-government is defined so as to restrict a link $(\alpha, \beta)$ of a chain. See Chomsky (1986: 17).

2 Chomsky 1981 argues that the Superiority Condition proposed in Chomsky 1973 should be reduced to the ECP, but there are cases which can be accounted for by the Superiority Condition but not by the ECP. See the following.

\begin{enumerate}
\item (i) a. Who$_1$ did you persuade $t_1$ to read what?
\item b. *What$_1$ did you persuade who to read $t_1$?
\item c. Whom$_1$ did you tell $t_1$ that Harry saw who?
\item d. *Who$_1$ did you tell whom that Harry saw $t_1$?
\end{enumerate}

In this paper, I will not be concerned with these cases and I will concentrate my attention on the ECP and multiple wh-questions of the form 12.
who and \( t_i \) blocks proper government of \( t_i \) by its antecedent.\(^3\)

We face a theoretical difficulty in accounting for the grammatical distinction between the multiple \( wh \)-questions in 12 within the framework shown in section 1. According to 1 and 13, 12a, b should have the following LF representations.\(^4\)

\[
\begin{align*}
(15)\text{ a. } & [CP [NP1' [NP2 what] [NP1" who]] [IP t_i saw t_j]] \\
& * [CP [NP1' [NP2 who] [NP1" what]] [IP t_i saw t_j]]
\end{align*}
\]

Prime notation is used here in order to indicate that NP1' and NP1" are segments of a maximal projection NP1. In order to account for the grammaticality of 15a, b, it must be that \( t_i \) is properly governed in 15a but not in 15b, since both \( t_i \)'s in 15 are \( \theta \)-governed by saw. In 15a, \( t_i \) is antecedent-governed by NP1 (or by NP1' if a segment can be an antecedent-governor) as desired since it inherits its index from its head who. However, 15b shows an undesirable result; that is, \( t_i \) is also properly governed by NP2 in 15b. NP2 has the same index as that of \( t_i \) since NP2 is the antecedent of \( t_i \), and NP2 m-commands \( t_i \) because the maximal projection which immediately dominates NP2 is CP and it also dominates \( t_i \). Note that NP1' does not prevent NP2 from m-commands \( t_i \) since NP1' is not a maximal projection. Furthermore, in 15b, there is no barrier for \( t_i \) that excludes NP2, since a barrier for \( t_i \) (i.e. CP) dominates NP2. Therefore, \( t_i \) is antecedent-governed by NP2, and we cannot account for the ill-formedness of 12b which has the structure 15b, within the framework proposed in Chomsky 1986.

\(^3\) More precisely, who does not govern (hence properly govern) \( t_i \) in 13a if government requires c-command of a governee by a governor and c-command requires the first branching node to dominate c-commanded elements; that is, the first branching node dominating who is COMPI in 13a, and it does not dominate the trace of who, and therefore, who does not c-command its trace, and it does not properly govern \( t_i \) in 13a either. According to Aoun, Hornstein, and Sportiche 1981, COMPI properly governs \( t_i \) in 13a by virtue of being coindexed with who by the application of the COMP Indexing Rule, whereas COMPI does not properly govern \( t_i \) in 13b since COMPI inherits its index from what but not from who in 13b. The following discussion will not change even if we adopt the COMP Indexing Rule for the explanation of the grammaticality of 12. See Aoun, Hornstein, and Sportiche 1981 and Kondo 1988a for further discussion.

\(^4\) The behavior of \( wh \)-in-situ is not made clear in Chomsky 1986, though it has been assumed that \( wh \)-in-situ is moved to the position where it cannot antecedent-govern its trace. Here I tentatively assume that \( wh \)-in-situ is adjoined to another \( wh \)-phrase moved to the specifier of CP at S-structure, since this option enables us to get LF representations similar to those which are assumed in Chomsky 1981. May 1985 also assumes that \( wh \)-in-situ is adjoined to another \( wh \)-phrase in the specifier of CP.
In order to solve this problem, let us reexamine the analysis that \(wh\)-in-situ is adjoined to the specifier of CP at LF. If Chomsky's assumption that \(wh\)-in-situ is moved to the position where it cannot antecedent-governs its trace is correct, then we must abandon the assumption that \(wh\)-in-situ is adjoined to the specifier of CP at LF\(^5\) since \(wh\)-in-situ can antecedent-govern its trace after being adjoined to the specifier of CP. Moreover, there is a good reason to assume that \(wh\)-in-situ should not be adjoined to the specifier of CP at LF and that it should be adjoined to CP at LF. The motivation for this assumption comes from the analysis of the behavior of quantified phrases at LF. It has been argued that quantified phrases are similar in their behavior to \(wh\)-phrases; that is, both \(wh\)-phrases and quantified phrases \(\bar{A}\)-bind their trace. The distinction between them is that \(wh\)-phrases \(\bar{A}\)-bind their trace at S-structure while \(\bar{A}\)-binding of a trace by quantified phrases is held only at LF (i.e. after the application of the QR). Thus we may hope to get some evidence for the behavior of \(wh\)-in-situ at LF from the analysis of the behavior of quantified phrases at LF.

In May 1977, the Condition on Quantifier Binding (CQB) is proposed in order to guarantee that the QR is applied to every quantified phrase at LF\(^6\).

\[(16) \text{The Condition on Quantifier Binding (CQB):} \]
\[
\text{Every quantified phrase must properly bind a variable.} \]

If we assume that this condition is also valid for a \(wh\)-phrase,\(^7\) then we can have one reason for the assumption that \(wh\)-in-situ must move to pre-IP position at LF.\(^8\) In other words, we now assume that every operator (a \(wh\)-phrase, a quantified phrase, and the like) must properly bind a variable at LF. May 1977 defines proper binding as follows:

\[(17) \text{proper binding:} \]
\[
\text{A variable is properly bound by a binding phrase } \phi \text{ iff it is c-} \]


\(^6\) In May 1985, it is suggested that the \(\theta\)-criterion may guarantee the application of the QR, but the argument is not convincing to me. See May (1985: 27).

\(^7\) This assumption may be justified by the fact that both \(wh\)-phrases and quantified phrases have their scope properties and the scope of \(wh\)-phrases interacts with the scope of quantified phrases. See section 2.2.

\(^8\) Huang 1982 suggests that Chinese has LF \(wh\)-movement though it does not have a syntactic \(wh\)-movement. There may be a universal constraint that requires a \(wh\)-phrase to be in a pre-IP position at LF and the assumption we made here may be responsible for the constraint.
commanded by \( \phi \).

If we adopt this definition of proper binding, we must abandon the assumption that \textit{wh}-in-situ is adjoined to the specifier of CP at LF. If \textit{wh}-in-situ is adjoined to the specifier of CP at LF, the representation is excluded by the CQB since \textit{wh}-phrases cannot c-command their traces. Consider the LF representation in (15a). The first branching node dominating \textit{who} is NPI' and it is also the first branching node dominating \textit{what}. Since NPI' does not dominate \( t_i \) nor \( t_j \), neither \textit{who} nor \textit{what} satisfies the CQB. Note that we are assuming here that c-command should be defined in terms of a branching node (including a branching segment).\(^9\) Thus, in order to satisfy the CQB, we must abandon the assumption that LF \textit{wh}-movement adjoins \textit{wh}-in-situ to the specifier of CP and assume that \textit{wh}-in-situ is moved to a position where it c-commands its trace; that is, it must be adjoined to a node dominating it. Then, the possible landing sites for \textit{wh}-in-situ are VP, IP, and CP in (12a).\(^{10}\) Adjunction of \textit{wh}-in-situ to VP derives the following LF representation:

\[
(18) \quad [CP \text{ who}_i [IP \text{ t}_i [VP \text{ what}_j [VP \text{ saw } t_j]]]]
\]

This representation does not violate the ECP; however it still violates another condition which must be satisfied at LF. The condition is tentatively defined as follows:

(19) Every \textit{wh}-phrase must be immediately dominated by [+wh] CP at LF.\(^{11}\)

\(^9\) In May 1985, c-command is defined in terms of a maximal projection. If it is correct to define c-command as in May 1985, then the following argument concerning the behavior of \textit{wh}-in-situ at LF should be abandoned, since \textit{who} and \textit{what} c-command (hence properly bind) their traces in (15a), satisfying the CQB. However, Chomsky 1986 suggests that c-command should require the first branching category to dominate c-commanded elements. Though Chomsky does not make any claim about binding in an adjunction structure, whether the first branching segment should dominate c-commanded elements, I stipulate that the first branching segment should dominate c-commanded elements. See Chomsky (1986: 8). Recall that as long as we assume the LF representations of the form 15, we cannot explain the grammatical distinction between them within the framework suggested in Chomsky 1986.

\(^{10}\) We assume here, following Chomsky 1986, that adjunction is permitted only to a maximal projection. See Chomsky (1986: 6).

\(^{11}\) This condition is a revised version of the following constraint concerning the property of [+wh] COMP and a \textit{wh}-phrase, which is assumed in many papers
In 18, VP does not have the feature [+wh], and thus it is not an appropriate landing site for wh-in-situ. Adjunction of wh-in-situ to IP is also barred by the same reason.

Now it is clear from the discussion above that wh-in-situ must be adjoined to CP at LF. Then, the LF representations of the multiple wh-questions should be as follows:

(20) a. \[[\text{CP}_1 \text{what}_j \left[ \text{CP}_2 \text{who}_i \left[ \text{IP} \ t_i \ \text{saw} \ t_j \right] \right]\]]

b. \[[\text{CP}_1 \ \text{who}_i \left[ \text{CP}_2 \ \text{what}_j \left[ \text{IP} \ t_i \ \text{saw} \ t_j \right] \right]\]]

Here we face one problem; that is, we cannot rule out the LF representation of the ungrammatical multiple wh-question (i.e. 20b), since a barrier for \(t_i\) (i.e. CP) does not exclude its antecedent (i.e. \(\text{who}\)). We have already seen that wh-in-situ must be adjoined to CP at LF. Therefore the most plausible reason for this failure is that the definition of government given in 2 is not correct. I propose now to define government as follows:

(21) government:

\(a\) governs \(\beta\) iff \(\alpha\) m-commands \(\beta\) and every barrier for \(\beta\) dominates \(\alpha\).

I also assume that adjunction to a maximal projection creates two maximal projections; that is, both \(\gamma_1\) and \(\gamma_2\) are maximal projections in an adjunction structure 10, which is repeated here for convenience.

(10) \(\ldots \delta \ldots \left[\gamma_1 \ \alpha \ \left[\gamma_2 \ \ldots \ \beta \ \ldots\right]\right]\)

If this claim is correct, \(\beta\) is not governed by \(\alpha\) when \(\gamma_2\) is a barrier for it, and we can account for the ill-formedness of 20b by the ECP since IP is a BC for \(t_i\) and CP2, which does not dominate who, becomes a barrier for \(t_i\) by inheritance of barrierhood from IP and thus who does not antecedent-govern its trace resulting in the violation of the ECP. In the next concerned with this problem.

(i) Every wh-phrase must be dominated by [+wh] COMP at LF. Since wh-movement is supposed to be substitution of a wh-phrase into the specifier of CP, C does not dominate a wh-phrase in any cases. Therefore I tentatively revised the condition as in 19. I assume that [+wh] feature contained in C, the head of CP, percolates up to its maximal projection (i.e. CP).

Aoun 1985 also proposes that wh-in-situ should be adjoined to CP at LF on the basis of the Generalized Binding Theory.

Lasnik and Saito 1987 also suggest that adjunction creates an additional maximal projection.

Note also that if the assumption that adjunction creates an additional maximal projection is correct, adjunction of wh-in-situ to the specifier of CP always violates the
section, I will present another argument for this assumption.

2.2. ADJUNCTION STRUCTURES. Let us consider, in this section, how the ECP interacts with adjunction structures derived by the application of the QR. May 1985 gives the following examples in order to justify the necessity of the Scope Principle defined in 23:

(22) a. What did everyone buy for Max?
   b. Who bought everything for Max?

(23) The Scope Principle:
Members of $\Sigma$-sequences are free to take on any type of relative scope relation.

As for a $\Sigma$-sequence, it is sufficient for our discussion to simply stipulate that an operator which is adjoined to IP and an operator in the specifier of CP form a $\Sigma$-sequence. We can find the ambiguity in 22a whereas it disappears in 22b. 22a allows the following two types of answers:

(24) a. Everyone bought Max a Bosendorfer piano.
   b. Mary bought Max a tie, Sally a sweater, and Hally a piano.

If what has a wide scope in 22a, 24a is an appropriate answer and if everyone is interpreted as having a wide scope, 24b is an appropriate answer. 22b, however, has only one interpretation; that is, who must have a wide scope in 22b and an appropriate answer for 22b is the following one:

(25) Oscar bought everything for Max.

If we adopt the Scope Principle, the ambiguity of 22a and unambiguity of 22b is accounted for by the ECP. The QR derives the following LF representation from 22a.

(26) $[\text{CP what}_j \text{ did } [\text{IP}_1 \text{ everyone}_i [\text{IP}_2 \text{ ti buy tj for Max}]]]

This is a well-formed LF representation since $\text{ti}$ is antecedent-governed by everyone and $\text{tj}$ is $\theta$-governed by buy. Since what is in the specifier of CP and everyone is adjoined to IP, they form a $\Sigma$-sequence and the Scope Principle applies to 26. Therefore it is predicted that either what or CQB even if we define c-command in terms of a maximal projection as in May 1985. Consider the following LF representation:

(i) $[\text{CP } [\text{NP}_1' [\text{NP}_2 \text{wh}_j] [\text{NP}_1'' \text{wh}_i]] [\text{IP} \ldots \text{ti} \ldots \text{tj} \ldots]]

In the above LF representation, $\text{wh}_j$ (or NP2, which is coindexed with $\text{wh}_j$) does not c-command $\text{tj}$, since $\text{NP}_1'$ is a maximal projection dominating $\text{wh}_j$, and it does not dominate $\text{ti}$. Thus the representation is ruled out by the CQB.

15 May 1985 assumes that ill-formed LF representations such as 15b and 27 should be excluded by the Path Containment Condition proposed in Pesetsky 1982.
everyone may have the broader scope than the other. However, the QR
does not adjoin the quantified phrase to IP in 22b. If everything in 22b is
adjoined to IP at LF, its LF representation will be as follows:

(27) \[CP \text{ who}_i \ [IP_1 \text{ everything}_j \ [IP_2 \ t_i \text{ bought } t_j \text{ for Max}]\]

This LF representation is ruled out by the ECP since it has essentially the
same status as the LF representation of the ungrammatical multiple wh-
question 20b; that is, two maximal projections intervene between the
subject trace and its antecedent, and the lower maximal projection (i.e.
IP2 in this case) is a BC for the trace and it transfers its barrierhood to the
maximal projection immediately dominating it (i.e. IP1). Since IP1 is a
barrier for \(t_i\) by inheritance and it does not dominate who, \(t_i\) is not
properly governed and 27 is ruled out by the ECP. Therefore, 22b does
not have the LF representation in which who and everything form a \(\Sigma\)-
sequence and thus who must have a wide scope interpretation.\(^{16}\) Notice
here that 27 cannot be ruled out by the ECP within the framework of
Chomsky 1986. Since IP1 and IP2 are treated as segments of a maximal
projection IP in Chomsky 1986, IP1 cannot be a barrier for \(t_i\) and
who antecedent-governs its trace. Therefore, within the framework of
Chomsky 1986, it is wrongly predicted that 27 is a well-formed LF rep-
resentation and that 22b is ambiguous. To sum up, we can correctly
explain the examples 22a, b on the assumption that adjunction creates an
additional maximal projection.

3. VP-ADJUNCTION AND A BC. In the previous section, we saw that
adjunction creates an additional maximal projection. If this is correct
then VP-adjunction proposed in Chomsky 1986 should not be allowed
when an adjunct is moved. Consider the following structure:

(28) \[CP \text{ wh}_i \ [IP \text{ NP } [VP_1 \ t'_i \ [VP_2 \ V \ldots t_i \ldots]]\]

If \(wh_i\) is an adjunct such as how, \(t_i\) is not \(\theta\)-governed and it must be
antecedent-governed in order to satisfy the ECP. If our assumption that
adjunction creates an additional maximal projection is correct, however,
28 is ruled out by the ECP, since VP2 becomes a barrier for \(t_i\) and \(t'_i\)
cannot antecedent-govern \(t_i\). In this section, I argue that VP is not a BC
nor a barrier for elements that it dominates and that a BC should be

\(^{16}\) May 1985 assumes that 22b has the following LF representation:

(i) \[CP \text{ who}_i \ [\text{vp } t_i \ [VP \text{ everything}_j \ [VP \text{ bought } t_j \text{ for Max}]\]]

As for the interpretation of the two operators which do not form a \(\Sigma\)-sequence, see
May 1985.
defined in terms of V-marking.

3.1. VP-ADJUNCTION. Let us begin with observing the reason why VP-adjunction has been adopted in Chomsky 1986. The reason is that VP always becomes a barrier for elements that it dominates; that is, VP is always a BC by virtue of not being L-marked and at the same time, it becomes a barrier by the definition 4b. As long as we adopt this assumption, wh-movement from the position inside VP always violates the Subjacency Condition when the movement is a one-step operation. Consider the following example:

(29) a. How did you fix the car?
   b. \[CP \text{how}_i \text{did IP} \text{you VP fix the car} t_i]\]
   c. \[CP \text{how}_i \text{did IP VP1 t}_i \text{VP2 fix the car} t_i]\]

In 29b, VP is a barrier for \(t_i\) and IP is also a barrier for \(t_i\) by inheritance. Thus, the movement of \textit{how} in 29b violates the Subjacency Condition since the movement crosses two barriers. If \textit{how} is adjoined to VP before it moves into the specifier of CP (i.e. 29c), the violation can be avoided under the framework of Chomsky 1986. In 29c, movement from \(t_i\) to \(t'_i\) does not cross a barrier (i.e. VP) since it does not cross a segment of VP (i.e. VP1). Movement from \(t'_i\) to \textit{how} does not cross any barrier either, since neither VP nor IP is a barrier for \(t'_i\); VP is not a BC nor a barrier for \(t'_i\) because a maximal projection VP which consists of two segments (i.e. VP1 and VP2) does not dominate the trace, and since VP is not a BC for \(t'_i\), IP does not inherit barrierhood from VP and therefore it is not a barrier for \(t'_i\). Thus, movement in 29c does not violate the Subjacency Condition. In order to ensure that \(t'_i\) antecedent-governs \(t_i\), we must adopt the definition of government in terms of exclusion.

On the other hand, if VP is not a BC for \(t_i\) in 29b, we do not have to adopt VP-adjunction; that is, if VP is not a BC for \(t_i\), IP does not inherit barrierhood from VP and therefore there is no barrier for \(t_i\) in 29b and both the Subjacency Condition and the ECP are satisfied.

The following example seems to support the assumption that VP is not a BC for elements that it dominates.

(30) a. Bill was believed to have seen Tom.
   b. \[IP Billi was VP t'_i \text{VP believed IP} t_i \text{to have seen Tom}][]]

If VP is a BC for the elements that it dominates, 30a must have a S-structure of the form 30b in order to avoid the violation of the ECP; that is, since \(t_i\) is not \(\theta\)-governed by any zero-level category, it must be antecedent-governed by its antecedent, and thus \textit{Bill} must be adjoined to
VP which is a barrier for $t_i$ by virtue of not being L-marked, before it is moved into the subject position in the matrix clause. 30b, however, violates the Binding Principle (C) that requires a variable to be A-free; that is, $t_i$, which is a variable by virtue of being locally A-bound by $t_i'$, is A-bound by its antecedent (i.e. Bill) violating the Binding Principle (C). Therefore, in order to satisfy the Binding Principle, 30a must have the following S-structure:

(31) $[\text{IP } \text{Bill}_i \text{ was } [\text{VP } \text{believed } [\text{IP } t_i \text{ to have seen Tom}]]$

However, as we have just seen, 31 is ruled out by the ECP if we assume VP to be a BC for the element that it dominates.\(^1\)

I propose now that the definition of a BC should be modified as follows:

(32) blocking category (BC):
\[
\gamma \text{ is a BC for } \beta \text{ iff } \gamma \text{ is not V-marked and } \gamma \text{ dominates } \beta. 
\]

(33) V-mark:
\[
\alpha \text{ V-marks } \beta \text{ iff } \alpha \text{ is I or V and } \beta \text{ is a complement of } \alpha.\(^2\)
\]

If we adopt these definitions, we can predict the well-formedness of 29b and 31 since VP is no longer a BC nor a barrier for elements that it dominates, and it enables us to adopt the definition of government in terms of domination and thus we can account for the grammatical distinction between the multiple wh-questions in 12 and unambiguity of 22b.

Moreover, these assumptions also enable us to account for the ill-formedness of the example in 34a:

(34) a. ?*Which vacation did you go to London during?
b. $[\text{CP } [\text{which vacation}]], \text{ did } [\text{IP } \text{you go to London } [\text{PP } t_i' [\text{PP during } t_i]]]$

\(^1\) Chomsky 1986 assumes that the trace of a raised subject is properly governed by the trace of a verb which is raised to I, a head of IP.

( i ) $[\text{IP } \text{Bill}_i [\text{V}_i], [\text{VP } t_i [\text{IP } t_i . . . .]]]$

Chomsky 1986 argues that SPEC-head agreement holds between the subject of the matrix clause (i.e. Bill) and V raised to I (i.e. V$_i$), and that the subject and the raised V are coindexed by virtue of SPEC-head agreement (i.e. $i=j$). Accordingly, $t_i$ and $t_i$ are coindexed and $t_i$ properly governs $t_i$. If we adopt this solution, 31 is well-formed within the framework of Chomsky 1986. See Chomsky (1986: 74–75).

\(^2\) We might say that [+V] and I L-mark their complement. However, we do not adopt the term L-mark here since we are assuming that the $\theta$-marking property does not play any significant role in determining a BC.

\(^1\) Lasnik and Saito 1987 also suggest that VP is not a BC. They assume that I L-marks VP.
The framework of Chomsky 1986 allows adjunction to non-argument position and therefore *which vacation* can be adjoined to PP deriving 34b, which cannot be ruled out within the framework of Chomsky 1986, since all the traces are properly governed and there is no violation of the Subjacency or any other principle of the grammar. If we adopt the assumptions proposed here, 34b is ruled out by the ECP and 34c is excluded by the Subjacency Condition.

3.2. Determination of a BC. We have seen that complements of I and V are not BCs for elements that they dominate, since they are V-marked by either I or V. Let us now consider other cases; complements of an adjective, a noun, and a preposition. It is clear from the following examples that adjectives V-mark their complements; that is, the complement of an adjective is not a BC for elements that it dominates.

(35) a. He is likely to come.
    b. The only person who it's not essential she talk to is Bill.

35a, b have the following S-structures, respectively:

(36) a. [IP he_i is [AP likely [IP ti to come]]]  
    b. the only person [CP who_i [IP it's not [AP essential [CP t'_i [IP   
        she talk to ti]]]]] is Bill

If a complement of adjective is a BC, these examples must be ungrammatical since ti in 36a and t'_i in 36b will not be properly governed; that is, in 36a, AP blocks a proper government by virtue of being a barrier for ti by inheritance from a lower IP, and proper government is also barred by AP in 36b. Therefore, the fact that 35a, b are grammatical supports the assumption that adjectives V-mark their complements.

On the contrary, complements of a noun and a preposition become BCs. Consider the following *wh*-questions:

(37) a. ?*Which book did John hear a rumor that you had read?  
    b. ?*What did a rabbit appear from behind?

The S-structures of 37a, b are given below:

(38) a. [CP [which book_i did [IP John hear [NP a rumor [CP t'_i that  
        [IP you had read ti]]]]]  
    b. [CP what_i did [IP a rabbit appear [PP from [PP behind ti]]]]

In order to account for the ill-formedness of 37a, b, we must conclude that complements of N and P are BCs for the elements that they
dominate, since otherwise there is no barrier in 37a, b.

Now we can find an important generalization about the property of a BC; that is, only a complement of a zero-level [+V] category and a complement of I are not BCs. Put it another way, only a zero-level [+V] category and I V-mark their complements. Thus V-marking should be defined as follows:

(39) V-mark:

\[ \alpha \text{ V-marks } \beta \text{ iff } \alpha \text{ is a zero-level } [+V] \text{ category or I and } \alpha, \beta \text{ are sisters.} \]

There is one remaining question concerning the definition of V-marking. Is there any property shared by [+V] categories and I? I leave this question open here and I will wait for further researches.20

4. QUALIFICATION OF AN ANTECEDENT-GOVERNOR. So far we have analyzed multiple wh-questions and adjunction structures derived by the QR, and we have seen that government should be defined in terms of domination and that a BC should be defined in terms of V-marking. In this section, we will explore another aspect of antecedent-government; we will examine a qualification necessary for an antecedent-governor.

4.1. AN INTERMEDIATE TRACE AS AN ANTECEDENT-GOVERNOR. Let us consider the environment in which an empty category (i.e. an intermediate trace) can be an antecedent-governor of another trace. Consider the following examples:

(40) a. the only person who she didn’t claim had anything wrong with him
b. *The only person who it’s not essential talk to her is Bill.

The embedded clauses of the examples above have the following structures, respectively.

(41) a. \([\text{CP}_\text{w}o, [\text{IP}_\text{sh} \text{e didn’t claim } [\text{CP}_t \text{h}_i [\text{IP}_t \text{had anything wrong with him}]])]\)

20 We may simplify 39 by assuming that there is a feature sharing between I and V and that I also has the feature [+V]. However, there has been an argument that there exists some relationship between I and C. If this relationship is a feature sharing between I and C, then there is no reason to assume that C does not have the feature [+V], and some stipulation is necessary in order to guarantee that I V-marks its complement (i.e. VP) but C does not V-mark its complement (i.e. IP).
b. *[\text{CP} \text{who}_i [\text{IP} \text{it's not essential} [\text{CP} \text{t}'_i [\text{IP} \text{t}_i \text{talk to her}]])]

In 41a, \text{t}_i is antecedent-governed by \text{t}'_i, and \text{t}'_i is properly governed by \text{who}. The same can be said in 41b. Thus our analysis presented so far cannot account for the ungrammaticality of 41b. If \text{who} is moved from \text{\theta}-
governed position (i.e. object position), 41b becomes acceptable as the following example indicates.

(42) The only person who it's not essential she talk to is Bill.

(=35b)

Thus we must conclude that \text{t}_i is the offending trace in 41b. The difference between 41a, b is that a category governing most deeply
eMBEDDED \text{CP} is \text{V} in 41a whereas the lowest \text{CP} is governed by \text{A} in
41b. On the basis of this observation, Kayne 1980 argues that an
antecedent-governor must be Case-marked. If this claim is correct, the
grammatical distinction shown in 41 is explained by the ECP. I adopt
Kayne’s claim partially and assume that an intermediate trace must be
governed by a zero-level [\text{\text{-N}}] category in order to be an antecedent-
governor. 21

4.2. A FILTER AND THE ECP. Chomsky and Lasnik 1977 propose the
following filter based on the grammatical difference observed in 44. 22

(43) *[\text{NP} \text{NP} \text{tense} \text{VP}]

(44) a. The man who met you is my friend.

b. The man that met you is my friend.

c. *The man met you is my friend.

The examples in 44a–c have the following structures, respectively.

(45) a. the man_1 [\text{CP} \text{who}_i [\text{IP} \text{t}_i \text{met you}]] is my friend

b. the man_1 [\text{CP} \text{O}_i \text{that}_i [\text{IP} \text{t}_i \text{met you}]] is my friend

c. *the man_1 [\text{CP} \text{O}_i [\text{IP} \text{t}_i \text{met you}]] is my friend

If we extend the assumption that an intermediate trace must be governed
by a zero-level [\text{\text{-N}}] category in order to be an antecedent-governor to
empty operators, the ill-formedness of 45c is accounted for by the ECP;
that is, \text{O}_i cannot be an antecedent-governor in 45c since it is not
governed by a zero-level [\text{\text{-N}}] category. Therefore, there must be a

21 I do not refer to Case-marking here because I am not confident that Case-
marking is necessary for the qualification of an antecedent-governor.

22 The filter proposed in Chomsky and Lasnik 1977 is in fact more complex than
43. I ignore irrelevant complexity here.
certain condition that an empty operator (including an intermediate trace) must satisfy in order to be an antecedent-governor. We might define the condition as follows:

(46) An empty operator $\alpha$ antecedent-governs $\beta$ only if $\alpha$ is governed by a zero-level $[-N]$ category.

In 44b, I assume that *that* is coindexed with $O$, and it antecedent-governs the subject trace.

5. CONCLUDING REMARKS. In this article, we analyzed the behavior of multiple *wh*-questions and adjunction structures derived by the QR based on the framework proposed in Chomsky 1986. The most crucial assumption here is that government should be defined in terms of domination and that adjunction creates an additional maximal projections. Adopting this assumption, we can account for the grammaticality of several constructions which cannot be explained within the framework of Chomsky 1986. Another point in this article is that these two assumptions force us to define a BC in terms of V-marking (the relation between a head and its complement). It enables us to generalize a certain property holding [+V] elements and their complements. We have also seen that an empty category must be governed by a zero-level $[-N]$ category when it antecedent-governs a trace, and that a filter proposed in Chomsky and Lasnik 1977 can be reduced to the ECP by adopting the assumptions suggested here.

Among the remaining problems, the most serious ones are to explain why I but not C V-marks its complement, and to examine the relation between [+V] elements and I.

REFERENCES


NOTES ON ANTECEDENT-GOVERNMENT AND BLOCKING CATEGORIES