On Government in Relativization

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I. Introduction

In Chomsky(1981), he proposed his Binding Theory to subsume the two independent opaque conditions: the Nominative Island Condition[1](henceforth, NIC) and the Specified Subject Condition[2] (henceforth, SSC). His Binding Theory states:

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1) Note that it is in terms of considerations of Case within the OB framework that the Nominative Island Condition was reformulated from the Tensed S Condition, which is defined as:

No rule can involve X, Y in the structure of the type:

$\cdots X \cdots [\alpha \cdots Y \cdots] \cdots$

where α is a tensed sentence

Within the OB framework the NIC is such that:

A nominative anaphor can not be free in $\bar{S}$.

2) In the version given in 'On Wh-Movement'(1977), this says:

No rule can involve X and Y in the structure of the type:

$\cdots X \cdots [\alpha \cdots Y \cdots] \cdots X \cdots$

where α is an S-bar or NP which contains a specified subject
(i.e. a subject not containing Y and not controlled by X)

Note that in the case of a semantic interpretation rule, this might be paraphrased as the constraint informally along the lines below:

No rule can construe a nonsubject anaphor contained within an S-bar or NP which has a subject with some constituent outside that clause or NP.

(1) Binding Theory
A. An anaphor is bound in its governing category
B. A pronominal is free in its governing category
C. An R–expression is free

To understand (1), we need the following definitions:

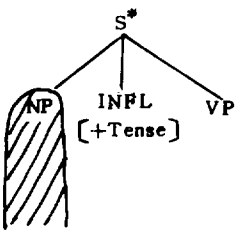
(2) (i) α is bound if α is an argument coindexed with a c-commanding argument; if not bound it is free.
(ii) An argument is an NP-position within S or NP (subject, direct object, indirect object, etc.)
(iii) α c-commands β if the first branching node dominating α dominates β, and α does not dominate β, nor β, α.
(iv) α is the governing category for β iff α is the minimal category containing β and a governor of β, where α =NP or S.
(v) α governs β if α minimally c-commands β (α =a lexical category, i. e. V, A, N, P or Tense) and there is no γ c-commanded by α and c-commanding β but not α

In this paper, I will point out, first of all, that Chomsky's Binding Theory (1) can not account for some cases of coreferentiality in a relative clause. Then I will proceed to examine the value of governing category (2) (iv) with respect to the relative clause and demonstrate that, contrary to (2)(iv), in the case of relative clause the governing category should be moved up to the NP maximally dominating the head noun in terms of a few assumptions available to the structure of relative clause, and thereby show that what can not be accounted for by the Binding Theory alongside of the definitions (2) can be accounted for by the analysis proposed in this paper.

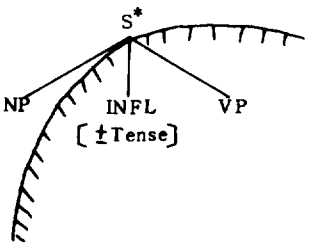
II. Problems

The two unrelated opacity conditions NIC and SSC may be roughly represented as (3)(i) and (3)(ii), respectively.

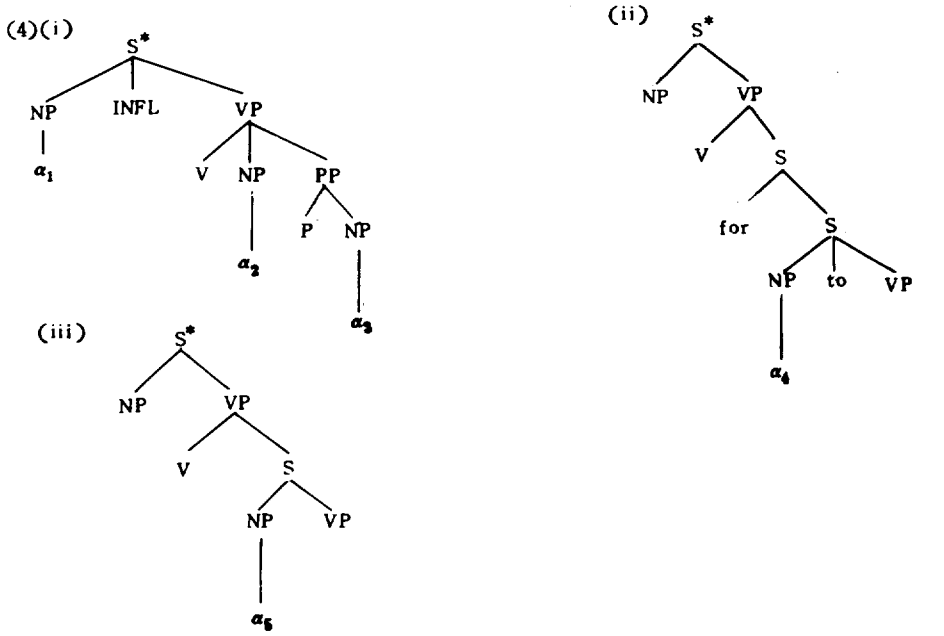
(3) (i)



(ii)



That is, the opaque domain of the NIC, as shown in (3)(i), indicates the subject position of a tensed clause whereas the SSC, as in (3)(ii), indicates the c-command domain of the subject regardless of the Tense, i. e. [+Tense] or [−Tense]. More specifically, notice that Chomsky's major examples of opacity may be represented as follows:



Given (1), (2) and (4) above, let us begin by considering the case of overt anaphors such as *each other*. By Binding Theory A (henceforth, BTA) it must be bound(=coindexed) in its governing category. Keeping this in mind, note that in (4)(i) α_1 is governed by INFL and the minimal category containing both the NP of α_1 and its governor INFL is S*. Thus it follows that S* the governing category for α_1 in the sense of (2)(iv). But there is clearly no NP c-commanding α_1 is in S*, so that α_1 can not be bound and no NP can be coindexed with α_1 in S*. Hence the violation of BTA which specifies that an anaphor is bound in its governing category. This is the typical case of NIC. Note further that S* is also the governing category for α_2 and α_3. That is, in the case of α_2 S* is the minimal S containing both α_2 and its governor V. Such being the case, α_2 must be coindexed with α_1 since it is the only NP c-commanding α_2 in S*. This means clearly that BTA is met if α_2 is an anaphor such as *each other*. Hence the sentence is grammatical if the c-commanding coindexed antecedent for α_2 is within S*, but not if it is outside of S*. Much the same is true of α_3. Note, however, that this is the case in which α_3 is c-commanded by both α_1 and α_2, and in no doubt they are all the possible NP's coindexed with α_3. α_2 and α_3 are the cases of SSC since they are all in the c-command domain of the subject, as established in (3)(ii).

Let us now turn to the case of α_4, which is in the subject position of an infinitive. As is the case with (4)(i), the governing category for α_4 is S* since it is the minimal category S or NP containing α_4 and its governor *for* by which α_4 is governed and assigned Case, so that α_4 must be bound in S*, as required by BTA. In other words, the sentence is ruled grammatical if an anaphor in α_4 is coindexed with the NP in the main clause subject position in S*, but not if it is coindexed with the NP outside of S*. This is also the case of SSC for the same reason.

Next is the case of α_5. It is assumed that in (4)(iii) the governor of α_5 is V. (cf. verbs such as *believe* are assumed to take an S-complement, not an S-bar infinitival complement in S-structure) Following this assumption, S* is the governing category for α_5 and thus α_5 must be

bound in S* by BTA, so that the main clause subject NP is the only candidate for the antecedent of α_5. Otherwise, the sentence is ruled ungrammatical by virtue of the violation of SSC.

So far we have shown that the two unrelated opacity conditions NIC and SSC can be plausibly subsumed under a more principled theory of binding in (1). Note the following examples, which are due to Chomsky, are accounted for by his BTA.

(5) (i) * *We* thought [$_{S*}$ *each other* gave the books to Bill]
[= α_1]

(ii) [$_{S*}$ *They* introduced *each other* to Bill]
[= α_2]

(iii) * *They* expected [$_{S*}$ me to introduce *each other* to Bill]
[= α_2]

(iv) [$_{S*}$ *They* pointed *the guns* at *each other*]
[= α_3]

(v) *They* expected [$_{S*}$ me to point the gun at *each other*]
[= α_3]

(6) (i) [$_{S*}$ *They* prefer [for *each other* to win]]
[= α_4]

(ii) * *We* expected [$_{S*}$ Bill to prefer [for *each other* to win]]
[= α_4]

(7) (i) [$_{S*}$ *We* believed [*each other* to be incompetent]]
[= α_5]

(ii) * *We* expected [$_{S*}$ him to believe [*each other* to be incompetent]]
[= α_5]

Now let us suppose that α is an overt pronominal such as pronoun. Note that in place of BTA for anaphors BTB is applied to account for pronominals. That is, BTB requires that a pronominal is free (is not bound) in its governing category. To put it another way, if α is a pronoun in (4) it can not be coindexed with any NP in its governing category S* while it may be coindexed with an NP outside of S*. Consider the examples, which are also due to Chomsky.

(8) (i) *Mary* thought [$_{S*}$ *she* gave the books to Bill]
[=α_1]

(ii) *[$_{S*}$ *John* introduced *him* to Bill]
[=α_2]

(iii) *Mary* expected [$_{S*}$ me to introduce *her* to Bill]
[=α_2]

(iv) [$_{S*}$ *Everyone* introduced John to *him*]
[=α_3]

(v) *Mary* expected [$_{S*}$ me to point the gun at *her*]
[=α_3]

(9) (i) *[$_{S*}$ *John* would prefer [for *him* to win]]
[=α_4]

(ii) *Mary* expected [$_{S*}$ Bill to prefer[for *her* to win]]
[$=\alpha_4$]

(10) (i) *[$_{S*}$ *John* believed [*him* to be incompetent]]
[$=\alpha_5$]

(ii) *Mary* expected [$_{S*}$ Bill to believe[*her* to be incompetent]]
[$=\alpha_5$]

In (8)(i), the subordinate clause subject α_1 [=*she*] is governed by Tense: the minimal S or NP containing α_1 and its governor Tense is the bracketed S*, so that the S* is the governing category for α_1; *She*[$=\alpha_1$] is a pronominal NP and hence is subject to BTB which says that a pronominal must not be coindexed with any c-commanding NP within its governing category [= S*, here]. But there is no NP c-commanding α_1 in S*. It follows then that BTB leads to the correct prediction that *she* [$=\alpha_1$] may be coreferential with *Mary* since *Mary* is outside of S*. In (8)(ii), on the other hand, α_2[=*him*] can not be coindexed with *John* by virtue of the violation of BTB. Hence the grammaticality of (8)(i) vs. ungrammaticality of (8)(ii), with respect to the coreferentiality between the two NP's in question. As is the case with anaphors, note that the NIC of (8)(i) and the SSC of (8)(ii) are incorporated into a unified theory of binding.

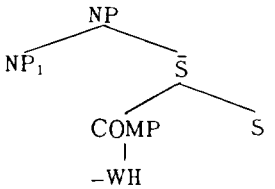
Note further that much the same is true of the rest of the examples above. In other words, it can be said that in (8)(iv), (9)(i) and (10)(i) α is free and must not be coindexed with any c-commanding NP within the bracketed S* while in (8)(iii) & (v), (9)(ii) and (10)(ii) it can be coindexed with the NP outside of S*. Hence the ungrammaticality of the former vs. grammaticality of the latter.

Hitherto, we have seen that Binding Theory (1) can beautifully account for both anaphors and pronominals in relation to coreferentiality. Once again, we have to say that the Binding Theory is near to truth. In what follows, however, we shall examine how such a brilliant theory works on the structure of English relative clauses.[3] Now consider first the following examples:

(11) (i) *People hate *him*$_i$ who knows *Reagan*$_i$
(ii) *People hate *Reagan*$_j$ who knows *him*$_j$

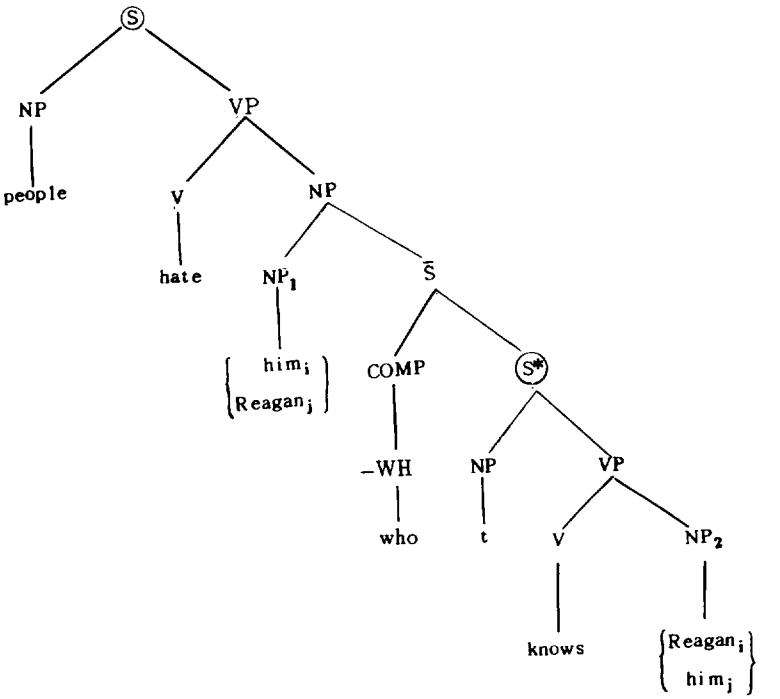
How does Chomsky's Binding Theory (1) account for the sentences in (11) in relation to coreferentiality? Let us assume that the sentences have the structure:

3) English is traditionally assumed to have three types of wh-relative clause construction: restrictive relative clauses, non-restrictive relative clauses and free relative clauses. We shall confine our discussion to restrictive relative clauses in this paper. Note further that English relative clauses are assumed to have the structure of the form:



where NP_1 is a 'head NP' modified by an S-bar which comprises a wh-phrase in COMP and S.

(12)



In (12), the encircled S is assumed to be the governing category for NP_1 in terms of the definitions in (2). Given this, the requirement that *him*$_i$ of NP_1 must not be coindexed with the c-commanding NP within the encircled S is not met since the embedded clause object *Reagan*$_i$ of NP_2 does not c-command him$_i$ of NP_1. Therefore, if we appeal to the BTB only it appears that *him*$_i$ of NP_1 can be coindexed with *Reagan*$_i$ of NP_2. Note, however, that this is not true of BTC which stipulates that a lexical NP is free (i. e. must not be coindexed with any NP which c-commands it), irrespective of the governing category. *Reagan*$_i$ of NP_2 is c-commanded by *him*$_i$ of NP_1 and thus it follows that BTC does not allow *him*$_i$ to be coindexed with *Reagan*$_i$ in (11)(i). Hence the ungrammaticality of (11)(i).

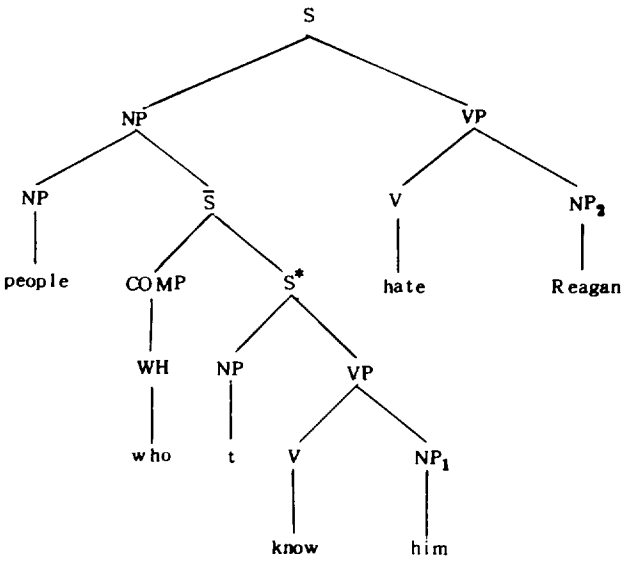
But what happens in the case of (11)(ii)? The governing category for NP_2 is the encircled S^* in the sense of (2)(iv) & (v). Since NP_2 is filled with a pronoun *him*$_j$, the BTB requires that NP_2 should not be coindexed with any NP c-commanding it within the encircled S^*. But there is clearly no NP which c-commands NP_2 other than the empty *t* in S^*. It is therefore that BTB does not prevent NP_2 from being disjoint in reference with NP_1 since NP_1 is outside of S^*, the governing category for NP_2. In short, it does indeed seem that Chomsky's Binding Theory (1) does not work well enough to account for the ungrammaticality of the sentences like (11)(ii). This is really a problem with the Binding Theory analysis.

Let us now consider the following examples:

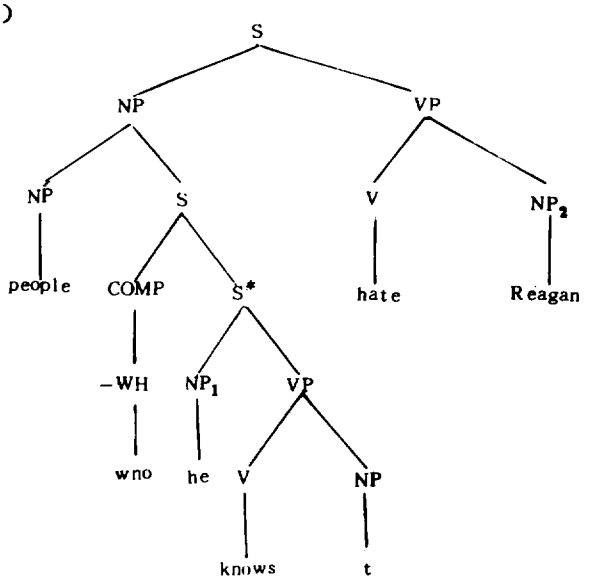
(13) (i) People who know *him* hate *Reagan*
(ii) *People who *he* knows hate *Reagan*

Prima facie, the only difference between the two sentences in (13) is that in (13)(i) the pronoun is assigned objective case while in(13)(ii) it is assigned nominative case, but nothing else. Does the Binding Theory account for the fact that this difference leads to the sharp contrast in grammaticality between the two sentences? Here, let us assume that the sentences in (13) have the structures below:

(14)(i)



(ii)



In (14)(i), the governing category for NP_1 is S*, as established earlier. By BTB *him* of NP_1 is coreferential with *Reagan* of NP_2 since NP_2 is outside the governing category S*. In other words, when applied to the case of (14)(i) Chomsky's Binding Theory seems to make a correct prediction about the coreferentiality. But notice that the BTB does not account for the ungrammaticality of (14)(ii). As is the case with (14)(i), in (14)(ii) the governing category for NP_1 is S* since it is the minimal category containing both NP_1 and its governor INFL(i. e. S* is a tensed clause). That is, whether a pronominal is filled by the object as in the case of (14)(i) or by the subject as in the case of (14)(ii) has nothing to do with the difference in governing category. Such being the case, it seems that the BTB fails to prevent *he* of NP_1 from being disjoint in reference with *Reagan* of NP_2 which is outside the governing category and makes a wrong prediction that the two NP's are coindexed. Note further that the same is true if we appeal to the BTC for the lexical NP_2. In effect, *Reagan* of NP_2 is not free in reference unless *he* of NP_1 c-commands it. Neither BTB nor BTC can account for the ungrammaticality of (14)(ii).

It seems not very difficult to find more examples similar to those in (13). Consider the following, which are almost parallel in structure to those in (14).

(15) (i) The woman [$_{S'COMP}$ who [$_{S*}$ t talked with *him*]] would recognize that *Ham* was a peacemaker
(ii) *The woman [$_{S'COMP}$ who [$_{S*}$ *he* talked with t]] would recognize that *Ham* was a peacemaker

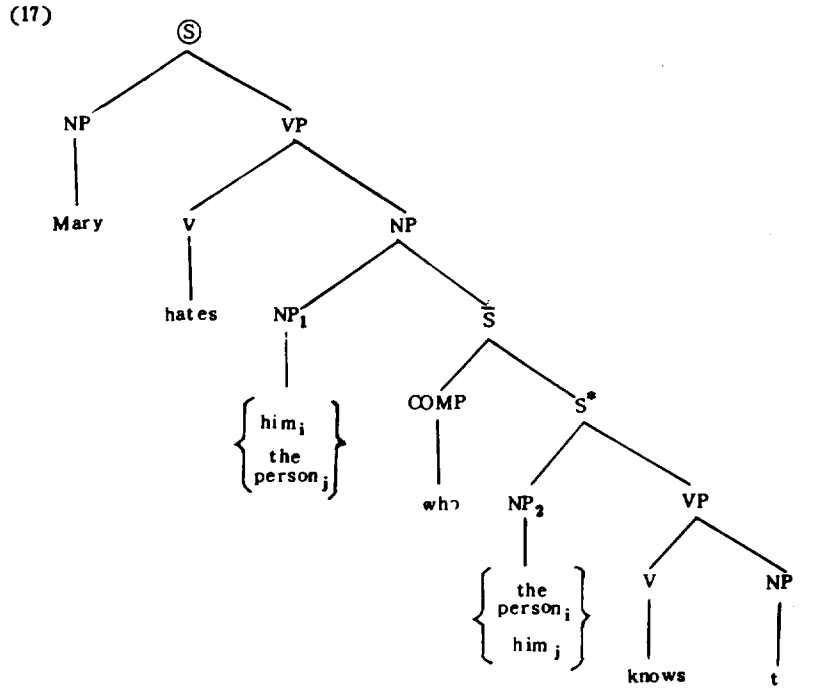
In(15), the prima facie difference between (i) and (ii) lies in the Case of the pronoun in the embedded clause marked by S*, just as it is the case with (13). Regardless of whether the pronoun is assigned the objective case or the nominative case, the same is the environment for the Binding Theory by virtue of the fact that they are all inside and their antecedents are all outside the governing category S*. If we say that *him* of (15)(i) can be coreferential with *Ham*, then we must also say that *he* of (15)(ii) can be coreferential with *Ham*, or vice versa. As pointed out in the discussion of (13), Chomsky's Binding Theory as it stands fails to distinguish (15)(i) from (15)(ii).

Now consider the following examples:

(16) (i) *Mary hates *him* who *the person* knows
(ii) *Mary hates *the person* who *he* knows

Note that the sentences in (16) stand in sharp contrast to those in (11) to the extent that what can not be coindexed with the root clause object NP is the relative clause object NP in (11) while it is the relative clause subject NP in (16). Despite this contrast (16) turns out that both (i) and (ii) are ungrammatical, just as both in (11) are ungrammatical. So as to look closely at the operation of Binding Theory in these sentences, let us assume that they have the structure:

(17)



In (17), the encircled S is assumed to be the governing category for NP_1. Recall here that it is not BTB but BTC that accounted for the ungrammaticality of (11)(i). This is also the case with (16)(i). In terms of BTB, *him*$_1$ of NP_1 can be coindexed with *the person*$_i$ of NP_2 since there is no appropriate NP c-commanding NP_1 within the governing category, the encircled S. Note in passing that a possible NP c-commanding NP_1 is the matrix clause subject NP, but it is immediately ruled out by some condition like Matching Condition which specifies that if two NPs are assigned the same index, they must 'match' in features such as number, gender, person, etc. Thus it should be noted that (16)(i) is ruled ungrammatical by BTC since a lexical NP, *the person*$_i$ of NP_2 is c-commanded by *him*$_i$ of NP_1. In the case of (16)(ii), however, once again the Binding Theory leads to the wrong prediction that it is ruled grammatical on the ground that *the person*$_j$ of NP_1 is outside S*, the governing category for *him*$_j$ of NP_2.

As a result of considering (11) and (16), it seems at least tentatively that when it is followed by a relative clause the object NP of the matrix clause can not be coindexed with any NP in the relative clause. Note further that in effect what can not be coindexed with the matrix clause object is not limited to only the relative clause object and subject NPs, since much the same is true of the object of preposition in the relative clause. Consider the following:

(18) (i) *John loves *her* [who I met with *the girl*]
(ii) *John loves *the girl* [who I met with *her*]

In (18), we see that the object NP of preposition in the relative clause is disjoint in reference

with the matrix clause object NP. Recall here that the Binding Theory can account for the ungrammaticality of (18)(i), but not for the ungrammaticality of (18)(ii). Given this, it might be observed that any NP of the relative clause can not be coreferential with the object NP modified by the relative clause. To be more concrete, consider the following examples:

(19) (i) *People hate *Reagan*$_i$ [who knows *him*$_i$] [=(11)(ii)]
(ii) *People*$_i$ hate Reagan [who knows *them*$_i$]
(20) (i) *Mary hates *the person*$_i$ [who *he*$_i$ knows] [=(16)(ii)]
(ii) *Mary*$_i$ hates the person [who *she*$_i$ knows]
(21) (i) *John loves *the* girl [who I met with *her*$_i$] [=(18)(ii)]
(ii) *John*$_i$ loves the girl [who I met with *him*$_i$]

Once again, we see that in (19)(ii) the pronominal in the relative clause can be coreferential with the subject NP of the matrix clause in contrast to (19)(i) in which it can not be coreferential with the object of the matrix clause. But note here that the condition for the BTB to be applied is exactly the same since both *Reagan*$_i$ in (19)(i) and *people*$_i$ in (19)(ii) are outside their governing category and c-command their pronominals, *him*$_i$ and *them*$_i$, respectively. Assuming the BTB, therefore, (19)(ii) should be as ungrammatical as (19)(i) or (19)(i) should be as grammatical as (19)(ii). Otherwise, Chomsky's Binding Theory (1) can not be adopted to account for the grammatical difference between the two sentences in (19). Much the same is the case of (20) where it is the embedded subject pronominal that might be expected to be coindexed with the NP outside the governing category. Following Chomsky, we should expect that (20)(ii) is ruled as ungrammatical as (20)(i) or (20)(i) is ruled as grammatical as (20)(ii), since there is no difference between the two sentences with regard to the governing category. By the same token, the examples in (21) display the same difficulty with the BTB. That is, the BTB can not provide any plausible account of why it is that (21)(i) is ungrammatical whereas (21)(ii) is grammatical.

Now recall that if the matrix clause object NP is filled by the pronominal then it can not be coindexed with any NP in the relative clause modifying the pronominal, as discussed earlier in (11)(i), (16)(i) and (18)(i), which are repeated here for the sake of intelligibility.

(11) (i) *Mary hates *him* who *the person* knows
(16) (i) *People hate *him* who knows *Reagan*
(18) (i) *John loves *her* who I met with *the girl*

On the basis of what we have observed so far, it might be suggested that any NP in the relative clause can not be coreferential with any object NP modified by the relative clause. The case is not limited only to the matrix object NP. Note in effect that not only the matrix object NP but also any possible NP in the matrix clause — i. e. the subject NP, indirect object NP, the object NP of preposition etc. — can not be coreferential with the NP in the relative clause. The following are the other cases of NP with which the NP in the relative clause can not be coindexed when it is modified by the relative clause.

(22) Subject NP

(i) **People* who *they* know hate Reagan

(ii) **People* who know *them* hate Reagan
(iii) **People* who John met with *them* hate Reagan
(iv) **They* who *people* know hate Reagan
(v) **They* who know *people* hate Reagan
(vi) **They* who John met with *people* hate Reagan

(23) Indirect Object NP

(i) *John sent *the students* who *they* like the books
(ii) *John sent *the students* who praised *them* the books
(iii) *John sent *the students* who I met with *them* the books
(iv) *John sent *them* who *the students* like the books
(v) *John sent *them* who praised *the students* the books
(vi) *John sent *them* who I met with *the students* the books

(24) Object NP of Preposition

(i) *John sent the books to *the students* who *they* like
(ii) *John sent the books to *the students* who praised *them*
(iii) *John sent the books to *the students* who I met with *them*
(iv) *John sent the books to *them* who *the students* like
(v) *John sent the books to *them* who praised *the students*
(vi) *John sent the books to *them* who I met with *the students*

Given these data, it might be concluded that any NP, a lexical NP or a pronominal, in a relative clause can not be coreferential with the head noun. In this respect, the Binding Theory must be more tightened up to account for the all counterexamples we have discussed so far. Otherwise, it follows that one is left with no plausible way to avoid the possibility of overgeneration.

Now consider the following Korean examples:[4]

(25) (i) **K*ɨ-ka[5] sowke-ha -n *John* -i
He NM introduce SM John NM
'John who he introduced'

(ii) **K*ɨ-lɨl sowke-ha-n *John* -i
He AC introduce SM John NM
'John who introduced him'

If we follow the Binding Theory we should expect that sentences (25) are ruled grammatical,

4) Note that the abbreviations used for Korean are as follows:
NM=Nominative Marker; AM=Accusative Marker

5) Two forms of Korean Nominative Marker are *-i* and *-ka*. The choice of these two forms is phonologically determined: -i follows a consonant and *-ka* follows a vowel.

since the pronominal *ki* is supposed to be coreferential with the NP, *John* outside the governing category for *ki*. Now suppose the embedded subject NP is filled by a Korean anaphor *caki*, instead, as in:

(26) (i) **Caki* -ka sowke-ha-n *John* -i
He(self)NM introduce SM John NM
'John who himself introduced'

(ii) *Caki* -l+l sowke-ha -n *John* -i
Him(self) AM introduce SM John NM
'John who introduced himself'

Under the analysis of BTA, sentences (26) must be ruled ungrammatical, since the lexical NP *John* is outside the governing category for *caki* and thus the BTA is not met. But (26)(ii) is clearly possible in spite of the violation of BTA. Given the Korean counterexamples in (25) and (26), and given the English counterexamples mentioned earlier, it seems that the Binding Theory, as such, is not adequate enough to handle them and creates many problems especially when it is applied to relative clauses

Ⅲ. A Possible Solution

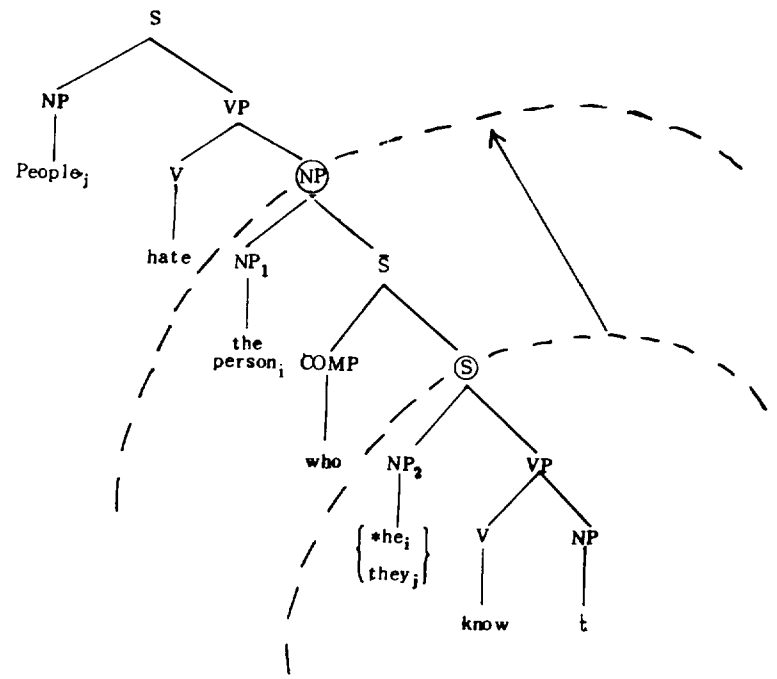
Having pointed out a crucial difficulty that the Binding Theory, as such, faces, I wish to demonstrate here that the governing category in relative clauses should be expanded to enclude the NP dominating the head noun, crossing over the S-bar barrier to government. Recalling that any NP in a relative clause can not be coreferential with the head noun, consider the following example:

(27) *People*$_j$ hate [$_{NP_1}$ [$_{NP_2}$ *the person*$_i$] [$_{\bar{S}}$ who [$_S$ { **he*$_i$ / *they*$_j$ } know]]]

Following Chomsky and related works, in (27) the governing category for both *he*$_i$ and *they*$_j$ is the S by virtue of (2)(iv), which specifies that α is the governing category for β iff α is the minimal category containing β and a governor of β, where α = NP or S. Given this, they [= both *he*$_i$ and *they*$_j$] are all to be coreferential with the NP outside the governing category, if we follow the BTB of (1) as it stands. That is, if we say that *they*$_j$ is coindexed with *people*$_j$ we must also say that *he*$_i$ is coindexed with the *person*$_i$. But this is not possible.

On the other hand, if we assume that the governing category in question is NP_1 it follows then that we can have a very good account of the grammatical contrast in (27). That is, it is assumed that *he*$_i$ is not coindexed with *the person*$_i$ inside the governing category NP_1 whereas *they*$_j$ is coindexed with *people*$_j$ outside of it. This the keypoint in this section: assumption that the governing category is moved up to the NP dominating a head noun in relative clauses. This assumption might be represented as (28):

(28)



How is it that in (28) the governing category for NP_2 is moving up from the encircled S to the encircled NP ? To see this, it seems necessary to know if there is any possibility to delete $\bar{S}$ between the encircled S and encircled NP. First of all, consider the following example, due to Chomsky(Cf. On Binding, p. 349 in *Chomsky's Current Papers*).

(29) I asked the man who you had visited.

As pointed out by Chomsky, sentence (29) is ambiguous in that it may have either the structure (30)(an indirect question) or (31) (a relative clause).

(30) I asked[NP the man] [$\bar{S}$[COMP who] [S you had visited]]
(31) I asked[NP the man [$\bar{S}$[COMP who] [S you had visited]]]

Despite the structural contrast between (30) and (31), it is assumed that the limit to the governing category for any NP in an embedded clause is S, if we follow the definition of (2)(iv). Note, however, that the ambiguity of (29) is resolved by some characteristics of COMP *who* *who* is stressed in (30) while it is not in (31) and furthermore the deletion of *who* is not possible in (30) in contrast to (31) where it is possible. As Chomsky & Lasnik suggested, in questions such as (30) the wh-word actually has its intrinsic content, while in relatives such as (31) it simply marks a certain category with no semantic content. On the basis of these observations regarding the behavior of COMP between the above two sentences, it seems that the status

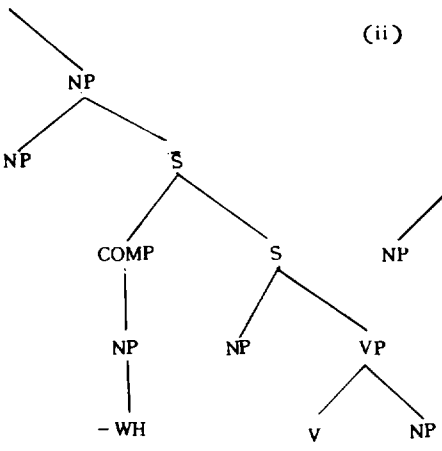
of S in (30) is not identical with that in (31).

Similar examples are given below to show that the status of S should not be always identical. Consider the following:

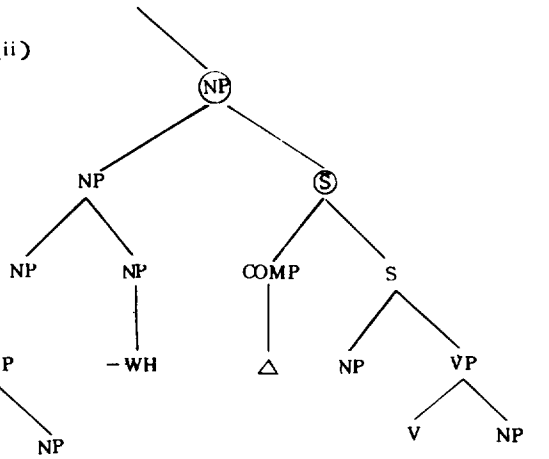
(32) I asked[$_{NP}$ *John*$_i$] [$_S$[$_{COMP}$ who] [$_S$ *he*$_i$ had visited]] (an indirect question)
(33) *I asked[$_{NP}$ *John*$_i$ [$_{\bar{S}}$[$_{COMP}$ who] [$_S$ *he*$_i$ had visited]]] (a relative clause)

In (32) the embedded subject *he*$_i$ can be coreferential with *John*$_i$ since *John*$_i$ is outside the governing category S. But it is not the case with (33), where *John*$_i$ is also outside the governing category S. For the sentences like (33) to be ungrammatical with regard to coreferentiality, it should be assumed that the two NPs in question, *John*$_i$ and *he*$_i$ are inside one and the same governing category. For the two NPs in question to be inside one and the same governing category, in turn, the governing category should be expanded to the NP dominating the head noun from the S. But note that there is an obstacle to the movement of governing category in relative clauses: S-bar is an absolute barrier to government (i.e. no category can govern another category across an intervening S-bar). At this point of argument, I am assuming that wh-phrase in COMP introducing a relative clause is raised to its head noun, leaving the COMP empty. This assumption might be represented as (34).

(34)(i)



(ii)



The situation in (34) is simply that the wh-moved NP in COMP is raised up to the head NP, so that the COMP position in (34)(ii) leaves empty, as marked by △. Note in passing that this assumption is another aspect of the "head-raising" analysis proposed by Schachter(1973) and Vergnaud (1974), which states:

(35) Head Raising:

$$\underbrace{[_{XP} \cdots \triangle \cdots]}_{1}\ [_{COMP}\underbrace{[_{XP}\ \text{wh-phrase}]}_{2}\ \cdots\ ]_{3} \rightarrow 2\ \ t\ \ 3$$

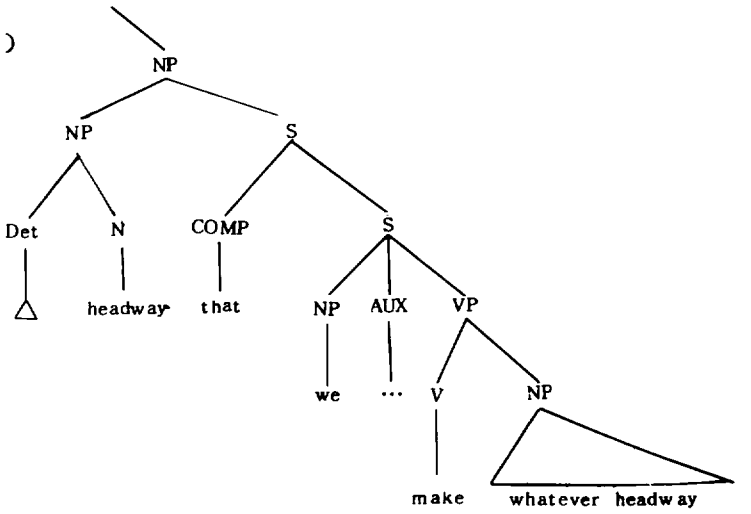
where 1 and 2 are nondistinct and 2 contains a free relative

Given (35), note further that it has been pointed out by Iwakura (1981) that a free relative clause can be simply and in a unified way accounted for by both (35) and the familiar rule of WH-Movement. To see this approach, consider the following examples, which are cited by Bresnan and Grimshaw (1978).

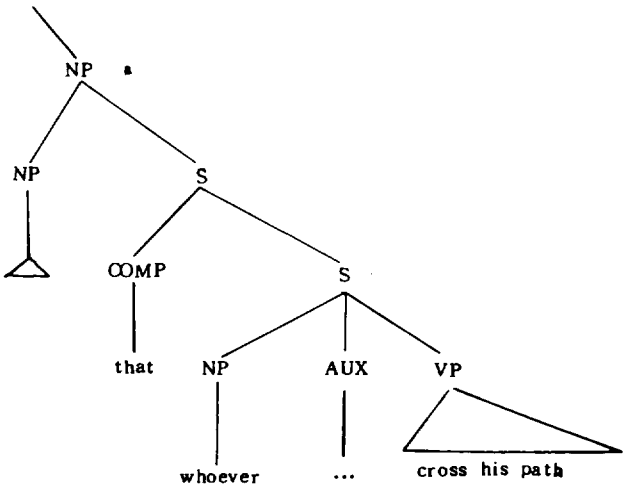
(36) (i) Whatever headway we made was insufficient.
(ii) He abuses whoever crosses his path.

On the basis of WH-Movement analysis for a free relative clause, sentences (36)(i) & (ii) are assumed to have the structures like (37)(i) & (ii), respectively.

(37)(i)

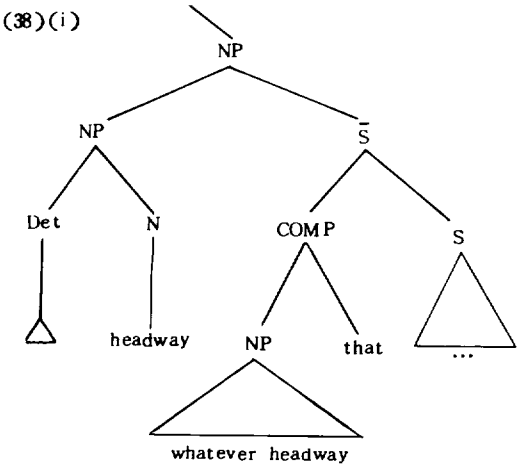


(ii)

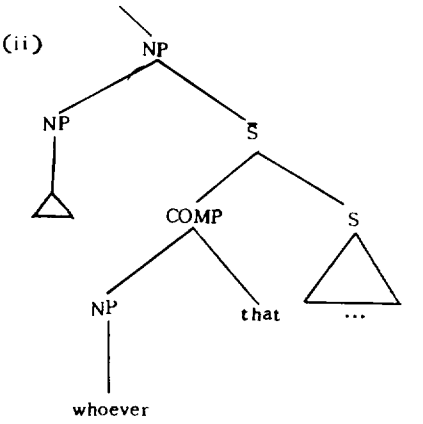


Applied to (37)(i) & (ii), the rule of WH-Movement yields (38)(i) & (ii), respectively.

(38)(i)

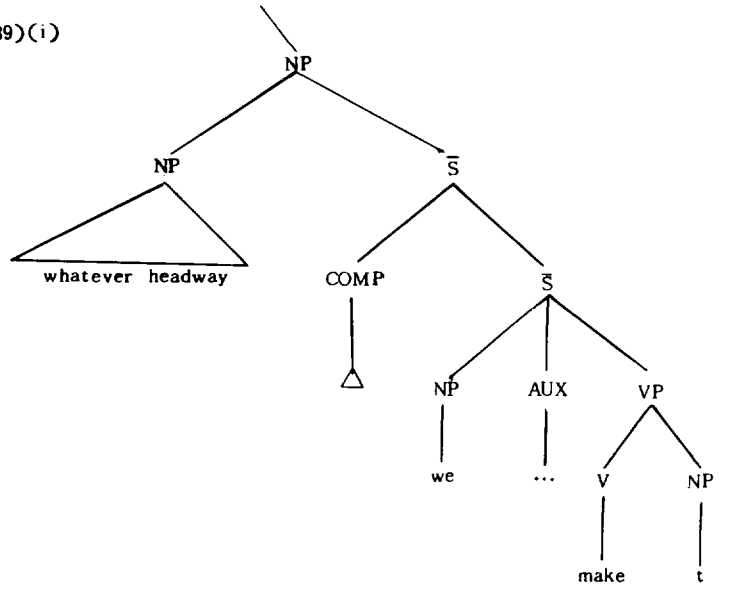


(ii)

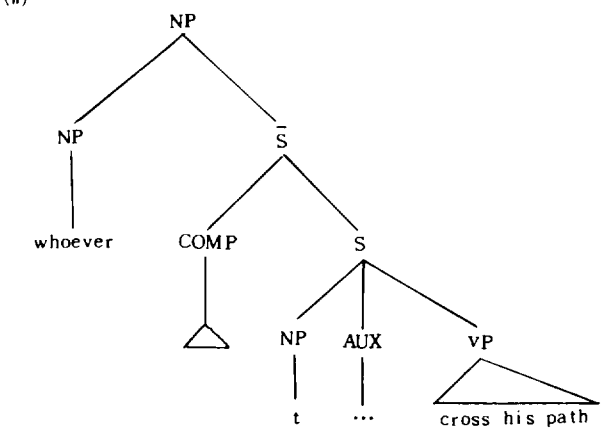


Note, at this point, that the operation of rule of Head Raising (35) makes it possible to fill the empty head NP with the wh-moved NP in COMP with the COMP left empty, resulting in (39)(i) & (ii) respectively.

(39)(i)

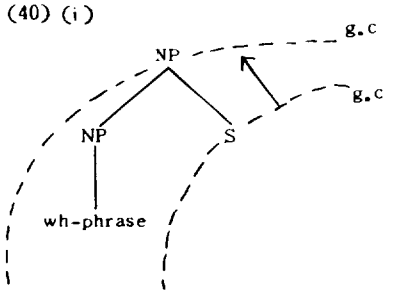


(ii)

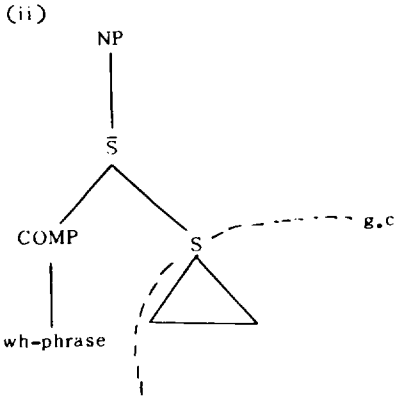


Given (39)(i) & (ii) in terms of both the WH-Movement and Head Raising (35), I am here assuming that (1) if COMP leaves empty the $\bar{S}$ dominating the COMP is deleted to release the absolute barrier to government and (2) if $\bar{S}$ is deleted the governing category for any NP in a relative clause is free to move up to the NP dominating the head NP from S. These assumptions lead to a structure such as (40)(i) rather than (40(ii):

(40) (i)



(ii)



It seems likely that in effect this approach to a free relative clause can account for the ungrammaticality of the examples (41) in the sense of coreferentiality.

(41) (i) * *Whoever*$_i$ likes *him*$_i$ is intelligent.
(ii) * *Whoever*$_i$ *he*$_i$ loves is intelligent.
(iii) * *Whoever*$_i$ talks with *him*$_i$ is a pinko.

Unless we follow (40)(i) to deal with a free relative clause, sentences (41) should be turned out grammatical since *whoever*$_i$ is outside the governing category in the sense of (40)(ii) and

thereby the BTB does permit *whoever*$_i$ to be coindexed with *him*$_i$ or *he*$_i$ in each case of (41). In the sense of (40)(i), however, we have assumed that the two NPs are within the governing category and the wh-phrase is c-commanding each pronominal; so that the BTB does not permit *whoever*$_i$ to be coindexed with *him*$_i$ or *he*$_i$. Hence the ungrammaticality of (41).

Thus far, we have observed that in a free relative clause both the WH-Movement and Head Raising (35) lead to the assumptions on which (40)(i) is based.

Turning back to the discussion of (34) where a restrictive relative clause is concerned, the assumption that the wh-moved NP immediately dominated by COMP is raised up to the right of head NP by means of Chomsky-adjunction requires another rule of Head Raising which may be stated as (42):

(42) Head Raising:

$$\underbrace{[_{XP}\ \cdots X_P\ \cdots]}_{1}\ [_{COMP}\ \ \underbrace{[_{XP}\ \text{wh-phrase}]}_{2}\ \cdots\ ] \rightarrow 1+2 \quad t \quad 3$$

where 1 and 2 are nondistinct and 2 contains a restrictive relative

Given (35) and (42) independently, it seems likely that the rule of Head Raising should be modified to cover both a free relative clause and a restrictive relative clause in a unified way. Considering that the only difference between (35) and (42) is that in (35) the empty head NP is simply filled by the wh-moved NP whereas in (42) the wh-moved NP is Chomsky-adjoined to the right of head NP, they may be revised to have the structure of

(43) Head Raising(Revised 1):

$$\underbrace{[_{XP}\ \cdots \gamma \cdots]}_{1}\ [\ _{COMP}\ \ \underbrace{[_{XP}\ \text{wh-phrase}]}_{2}\ \cdots] \rightarrow \quad \begin{Bmatrix} 2 \\ 1+2 \end{Bmatrix} \quad t \quad 3$$

where (1) 1=2 (i.e. nondistinct)

(2) $\gamma = \Delta$ or XP

(3) a. if γ is Δ, then it is replaced by the wh-phrase

b. if γ is XP, then it is Chomsky-adjoined to the right of γ

Note, however, that (43) still does not show a unified way in its operation since it applies in two ways: one with replacement for a free relative clause and the other with Chomsky-adjunction for a restrictive relative clause. So as to solve this problem, I am assuming here that even in case of a free relative clause the wh-phrase is Chomsky-adjoined to the right of the empty head NP rather than simply moved to the position of empty head NP. If this assumption is really the case, then it seems that (43) should be modified to unify the way of raising the wh-phrase and thereby to erase the condition (3) in (43). Accordingly, we might have the structure of the form:

(44) Head Raising (Revised 2)[6]:

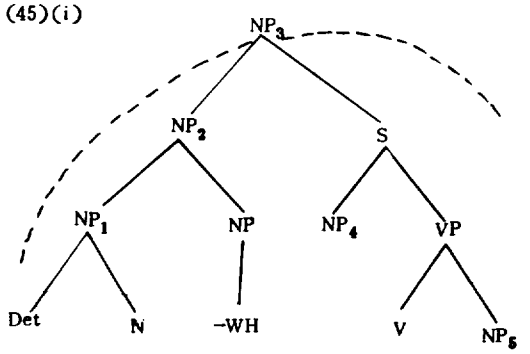
6) Given (44) for both free relative clauses and restrictive relative clauses, it should be noted that the structures (39)(i) and (ii) are not in strict accordance with (44). Following (44), therefore, they are

$$[_{XP}\ \cdots\ \underbrace{\gamma}_{1}\ \cdots]\ [\ COMP\ \ [_{XP}\ \underbrace{wh\text{-}phrase}_{2}]\ \cdots] \rightarrow 1+2\quad t\quad 3$$

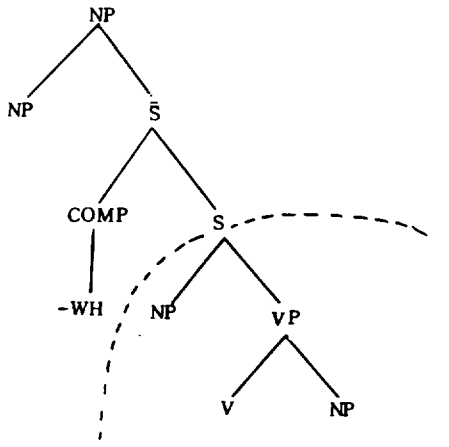
where (1) 1=2 (i.e. nondistinct)
(2) $\gamma = \triangle$ or XP

Given (44), it is assumed that applied to (34)(i), the rule of Head Raising does yield (34)(ii), where the wh-phrase in COMP is Chomsky-adjoined to the right of head NP. Recall here the two assumptions we had in order to establish (40)(i) instead of (40)(ii): if COMP leaves empty the $\bar{S}$ dominating the COMP is deleted to release the absolute barrier to government: if $\bar{S}$ is deleted the governing category for any NP in a relative clause is free to move up to the NP dominating the head NP from S. Following these assumptions, it is that in (34)(ii) $\bar{S}$ is deleted and then the governing category is moved up to the encircled NP from the encircled S. This is how we are to lead to the structure of (45)(i) rather than (45)(ii).

(45)(i)

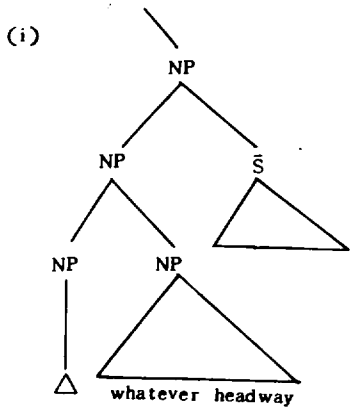


(ii)

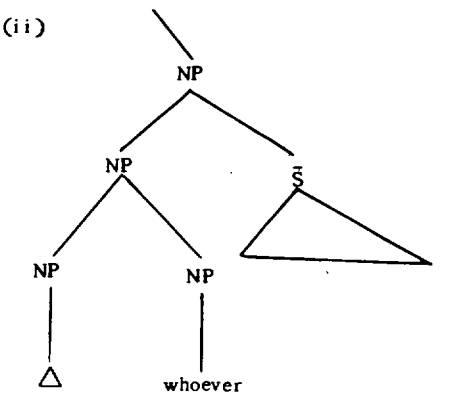


to be modified to (i) and (ii) below, respectively.

(i)



(ii)



But there seems an apparent problem with (45)(i); how is it that the head noun N in (45)(i) governs NP_4 or NP_5 if we simply follow the definitions (2)(iii) & (v)? The fact is that N does not c-command NP_4 or NP_5 in the sense of (2)(iii) since the first branching node dominating N, or NP_1 does not dominate NP_4 or NP_5. Note, however, that this problem can be beautifully solved by the notion of 'strong c-command' proposed by Aoun and Sportiche, which states:

(46) α c-commands β if and only if
  (i) α does not contain β
  (ii) Suppose that $\gamma_1, \ldots, \gamma_n$ is the maximal sequence such that
    (a) $\gamma_n = \alpha$
    (b) $\gamma_i = \alpha^j$
    (c) γ_i immediately dominates γ_{i+1}
    Then if δ dominates α, then either (I) δ dominates β, or (II) $\delta = \gamma_i$ and γ_1 dominates β

Note further that we need also the redefined notion of 'government' based on (46), which might be stated as (47).

(47) $[\beta \cdots \gamma \cdots \alpha \cdots \gamma \cdots]$, where
  (i) $\alpha = X^\circ$
  (ii) where ϕ is a maximal projection, if ϕ dominates γ then ϕ dominates α
  (iii) α c-commands γ

Given (46) and (47), it seems that in (45)(i) the head noun N c-commands NP_4 or NP_5 and therefore it governs them. More generally, it is that in a structure of relative clause the head noun is in the position which c-commands and governs any NP dominated by an S in the sense of (46) and (47). Such being the case, we are to lead to the conclusion that in (45)(i) NP_1 is the c-commanding NP inside the governing category for NP_4 or NP_5. If NP_4 or NP_5 is a pronominal, then it must be free in its governing category NP_3; i.e. A pronominal NP_4 or NP_5 can not be coindexed with the c-commanding NP_1 which is inside the governing category NP_3. In other words, we may say that any NP in a relative clause, if it is a pronominal, can not be coreferential with the head noun. Note, however, that such is not the case with the analysis (45)(ii) where the rule of "Head Raising" (44) is not applied, since there seems no way of accounting of the impossible coreferentiality between the head noun and any NP in the relative clause. With the governing category not raised to the NP immediately dominating the head NP and $\bar{S}$, (45)(ii) makes a wrong prediction that the head NP outside the governing category S can be coindexed with any pronominal NP inside the governing category.

Thus far we have established (45)(i) rather than (45)(ii) for the analysis of a relative clause under the assumptions: (1) a wh-moved NP in COMP is raised up to the head NP in terms of Chomsky-adjunction, with the COMP position left empty; (2) if COMP becomes empty, then an absolute barrier to government S dominating COMP is deleted; (3) if $\bar{S}$ is deleted the governing category for any NP in a relative clause is moved up to the NP immediately dominating $\bar{S}$ from S. We have also shown that together with (46) and (47), (45)(i) is the key to the problems pointed out in the previous section: a head NP can not be coreferential with any

pronominal in a relative clause.

Given this, now consider more specifically the first three examples of (22), (23) and (24). We might simply say that they are all ruled ungrammatical since in all cases the head NP is c-commanding a pronominal, both of which are inside one and the same governing category in the sense of (45)(i). In the same manner, we see that a sharp contrast in grammaticality in (19), (20) and (21) can also be accounted for in terms of (45)(i). In sentences such as (19)(i), (20)(i) and (21)(i) the NP in question is inside the governing category whereas in sentences such as(19)(ii), (20)(ii) and (21)(ii) it is outside the governing category for a pronominal. Hence the impossible coreferentiality of the former versus the possible coreferentiality of the latter, on the basis of BTB. Exactly the same is true of the grammatical contrast in (27), where a pronominal can be coindexed with the matrix clause subject outside the governing category, but not with the matrix clause object inside the governing category.

Ⅳ. NIC and SSC in Relative Clauses

As mentioned in section I of this paper, Chomsky proposed his Binding Theory we have discussed so far to subsume the two independent opaque conditions, the NIC and SSC. But he did not miss pointing out that the two conditions are not always identical enough to be unified as one in their behavior in relation to Move-α. Consider the following (48) and (49), which are due to Chomsky.

(48) (i) (?) this book, I wonder [how well John understands]
(ii) (?) these men, I wonder [how well John knows]
(iii) (?) what did John wonder [how well Bill did]
(iv) (?) what does John know [how Bill did]

(49) (i) *John, I wonder [how well understands this book]
(ii) *John, I wonder [how well knows these men]
(iii) *who did John wonder [how well did his work]
(iv) *who does John know [how did his work]

The embedded clauses in the sentences of (48), marked by the square bracket, have the structure of the form (50) and those of (49) have the structure of the form (51), respectively.

(50) [$_{\bar{S}}$[how (well)] [$_S$ NP V t]]
(51) [$_{\bar{S}}$[how (well)] [$_S$ t V NP]]

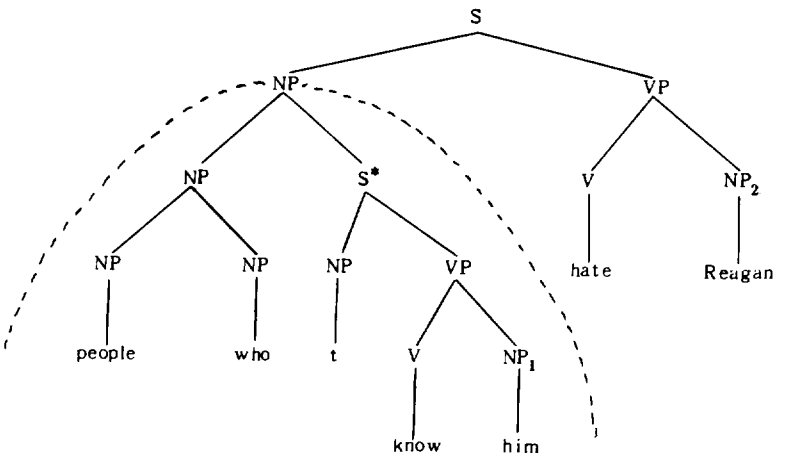
Here t is the trace of the element extracted from the clause. The sentences of (48) are somewhat marginal while those of (49) are completely unacceptable. This grammatical contrast shows that it is more difficult to move the embedded clause subject than the embedded clause object. In other words, Move-α is impossible out of the nominative subject position in construction in which it is possible out of the domain of a subject. Hence the asymmetry between the NIC and the SSC to the extent that it is impossible to violate the NIC while it is possible to violate the SSC in Move-α.

In this section, we are going to point out that the asymmetry between the NIC and the SSC should also be taken into account in order to account for coreference in a relative clause. Note that in section Ⅱ we have already shown that the Binding Theory can not provide a unified way of accounting for the difference in coreferentiality in such sentences as (13), which is repeated here as (52) for the sake of convenience.

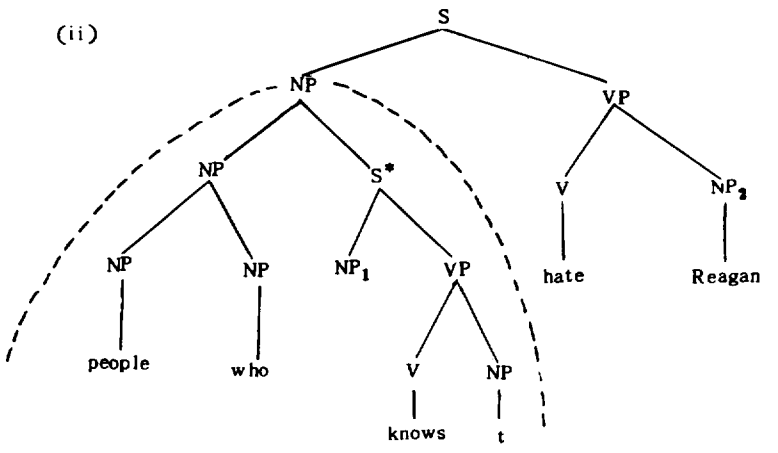
(52) (i) People who know *him* hate *Reagan*
(ii) *People who *he* knows hate *Reagan*

Just as pointed out in section Ⅱ, the question of whether a pronominal is in the nominative subject position or in the domain of a subject does not affect the notion of governing category in the sense of (2)(iv) (cf. (14)(i) and (ii) for the governing category for which S is marked by a star). Note that the situation is the same even though we follow the analysis (45)(i) established for a relative clause. That is, if we follow such assumptions as Head Raising, $\bar{S}$- deletion and Movement of Governing Category from S to NP dominating $\bar{S}$, no change seems to take place with regard to the governing category even in the sense of (45)(i), as indicated in the following structures of the form:

(53)(i)



(ii)



Even with the governing category marked by the dotted line in (53)(i) & (ii), the BTB does not distinguish the grammaticality of (52)(i) from the ungrammaticality of (52)(ii), since in both cases a pronominal of NP_1 is inside and NP_2 is outside the governing category. As observed in the discussion of (14), the only difference between (53)(i) and (53)(ii) is that in the former a pronominal of NP_1 is in the domain of a subject SSC while in the latter it is in the nominative subject position NIC. This is the very case of the asymmetry between the NIC and the SSC in a relative clause. When a relative clause is embedded to a matrix clause subject, a pronominal in a relative clause may or may not be coreferential with the NP outside the governing category, depending on whether it is subject to the SSC or NIC. The very same is true of a sharp contrast in grammaticality between (15)(i) and (ii), repeated here as (54) for the sake of convenience.

(54) (i) The woman [$\bar{S}$ COMP who [S^* t talked with *him*]] would recognize that *Ham* was a peacemaker
(ii) *The woman [$\bar{S}$ COMP who [S^* *he* talked with t]] would recognize that *Ham* was a peacemaker

Following the analysis (45)(i), the structures of (54) would be modified to those of (55), where *who* is Chomsky-adjoined to the right of *the woman* and S is deleted, and thereby the governing category moves to NP^*.

(55) (i) [NP^* [NP the woman [NP who]] [S^* t talked with *him*]] would recognize that *Ham* was a peacemaker
(ii) *[NP^* [NP the woman [NP who]] [S^* *he* talked with t]] would recognize that *Ham* was a peacemaker

As illustrated in (55), the BTB, even with the analysis (45)(i), does not provide any way of accounting for the grammatical difference, since the condition for BTB is the very same in both cases in that a pronominal is inside and the NP in question is outside the governing category. As is the case with (52), what we only can say about this is that in (55)(i) where a pronominal is in the domain of a subject [=SSC] it is possible to apply BTB to give way to the coreferential interpretation whereas in (55)(ii) where a pronominal is in the nominative subject position [=NIC] it is impossible.

Now that we have so far shown that in a certain structure of English sentences the BTB is subject to the SSC or the NIC, consider now the following Korean examples:

(56) (i) **Ki* -ka manna-n nyocja-ka *John* -*ɨl*[7] cowahan-ta.
He-NM met-SM woman-NM John -AM like-DEC
'The woman who he met likes John'

7) Two forms of Korean Accusative Marker are -*lɨl* and -*ɨl*. The choice of these two forms is phonologically determined: -*lɨl* follows a vowel and -*ɨl* follows a consonant. Hence -*ɨl* appears after *John* in (56)(i) whereas -*lɨl* appears after *Kinyo* or *Mary* in (56)(ii).

(ii) ? *Kinyo*–lɨl salanghaet–də–n namcja – ka *Mary*–lɨl
She–AM loved –SM man –NM Mary–AM

cukyot–ta.[8)]
killed–DEC

'The man who loved her killed Mary'

In (56)(i), *Kɨ* a Korean pronominal for the 3rd person masculine singular can not be coreferential with *John*, since it is in the nominative subject position. On the other hand, in (56) (ii) *Kɨnyo* a Korean pronominal for the 3rd person feminine singular can somewhat marginally be coreferential with *Mary*, since it is in the domain of a subject. Hence the asymmetry between the NIC and the SSC in Korean as well as in English.

In this section, we have so far pointed out that the two opaque conditions, the NIC and SSC are not identical enough to be simply subsumed under one principle such as the Binding Theory.

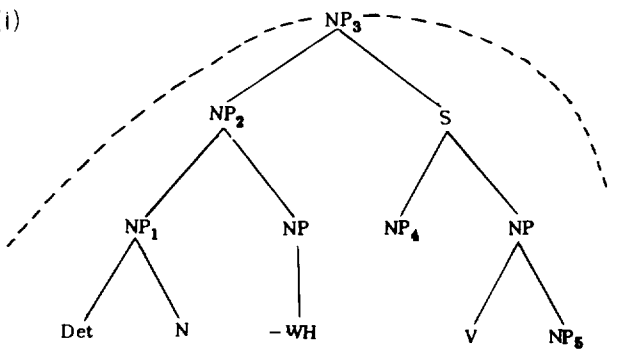
V. Conclusion

In this paper we have first pointed out that Chomsky's Binding Theory (1) can not fully account for the coreferentiality in a relative clause. More specifically, it may make a wrong prediction that a pronominal in a relative clause can be coindexed with the head NP. So as to solve this problem, it has been assumed that

(a) A wh-moved NP in COMP is raised to a head NP in terms of Chomsky-adjunction (= Head Raising (44)).
(b) If COMP leaves empty the $\bar{S}$ dominating COMP is deleted to release absolute barrier to government(=$\bar{S}$-Deletion).
(c) If $\bar{S}$ is deleted the governing category defined as (2)(iv) moves up to the NP maximally dominating the head NP(=Governing Category Raising).

On the basis of these assumptions, we have established (45)(i) as the structure of a relative clause, resulting in the expansion of the governing category.

(45)(i)



8) DEC=Declarative Marker

Following (47) based on the notion of 'strong c-command' defined as (46), it is that the head noun marked by N c-commands NP_4 or NP_5, both of which are in a relative clause. It is also that both the head NP and any NP in a relative clause are inside one and the same governing category NP_3. By doing so we have shown that this analysis can account for what can not be accounted for without such assumptions as (a), (b) and (c) above : a pronominal in a relative clause can not be coindexed with the head NP.

We have also pointed out that despite (45)(i) there still exists an asymmetry between the NIC and the SSC.

國文抄錄

관계대명사화에서의 지배에 관한 연구

李 基 錫

이 논문에서는 Chomsky의 결속이론이 관계절에서의 coreferentiality를 부분적으로 설명하지 못하고 있음을 밝히고 이 점을 설명할 수 있기 위하여 관계절 구조에 관한 다음과 같은 가정을 도출해 내었다.

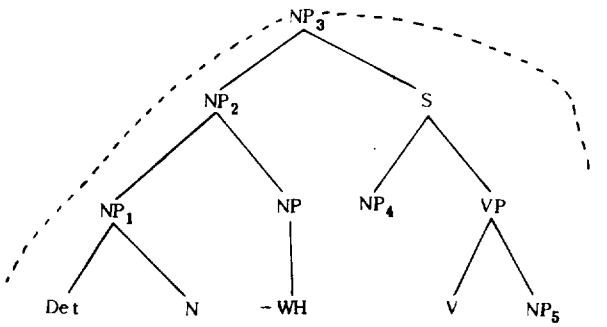
(1) COMP에 있는 wh- moved된 NP가 Head Raising에 의해 선행사에 Chomsky-adjoin된다.

(2) COMP가 비워지면 COMP를 지배하는 $\bar{S}$가 삭제되어 지배에 대한 장애가 제거된다.

(3) $\bar{S}$가 삭제되면 지배범주가 S에서 선행사를 최대로 지배하는 NP로 이동된다.

이 가정이 모두 적용되면 관계절의 구조는 다음의 구조처럼 된다.

(4)



위의 세 가정을 전체로한 관계절의 구조 (4)를 가지고 Reinhart식의 'c-command'로 부터 수정된 Sportiche와 Aoun식의 'strong c-command'의 개념을 기초로한 수정된 'government'의 원리를 도입하면 Chomsky의 결속이론이 설명하지 못하는 부분을 설명할 수 있게 된다. 예를 들어 다음의 문장을 살펴보자.

(5) *[NP *People* [$\bar{S}$ COMP who [S *they* know]]] hate Reagan

만일 지배범주가 S일 경우에 결속이론은 관계절속의 자유대용어 *they*가 S밖에 있는 NP와 coreferential 되는 것으로 잘못 판정을 내리게 된다. 그러나 이 문장의 지배범주가 (4)에 의해 (5)의 NP로 이동된다면 결국 관계절 속의 자유대용어 *they*와 그 선행사 *people*이 같은 지배범주안에 있게 되므로 결속이론은 이 문장을 비문으로 정확히 판정을 내릴 수가 있는 것이다.

그러나 이와 같은 가정에도 불구하고 NIC와 SSC가 이동규칙에서 뿐만아니라 관계절에서의 coreferentiality 결정에도 서로 달리 적용되고 있음을 지적했다.