

# Syntactic Movement Analysis of Korean Relativization

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The present paper claims that Korean relativization involves syntactic Wh-movement of an empty relative operator. This paper will first show that Korean relativization displays typical Wh-movement properties and then provide three facts as evidence in support of the movement analysis: First, relativization in Korean is constrained by Subjacency and the Empty Category Principle. Second, the Strong Crossover Effect is obtained in Korean relative clauses. Third, canonical parasitic gaps are allowed in Korean relative clauses. Based on this movement analysis, the status of empty categories found in Korean relative clauses is thus analyzed as a variable which is A'-bound by the empty relative operator in the specifier position of CP.

## 0. Introduction

The ultimate purpose of this paper<sup>1</sup> is to show that the empty category in Korean relative clauses is a variable which is A'-bound by an empty operator within the framework of the current generative grammar. This is proven by the syntactic movement analysis of relative clauses in Korean.

Since relativization in English is constrained by conditions on movement, the formation of relative clauses has been analyzed as a representative instance of a syntactic Wh-movement. Thus, the empty category in English relative clauses is analyzed as a variable which is A'-bound by a Wh-relative pronoun in the specifier position of CP.

On the other hand, it has been widely assumed that relative clauses in

<sup>1</sup> I would like to thank anonymous reviewers of *Language Research* for valuable comments and suggestions. All the remaining shortcomings or mistakes are of course my own.

Korean and Japanese do not involve movement at all, since relativization in these two languages does not seem to be subject to Subjacency: some relative clauses in Korean and Japanese are well-formed in spite of the fact that they apparently violate the classical island constraints.<sup>2</sup> Under the non-movement analysis of relativization in Korean and Japanese, the empty category in relative clauses is analyzed as a base-generated *pro* which is not subject to Subjacency.

As opposed to the widely claimed non-movement analysis, this paper will argue that relativization in Korean involves a syntactic movement of an empty relative operator. Based on this movement analysis, the empty category in Korean relative clauses will be analyzed as a variable which is A'-bound by an operator in the specifier position of CP.

The organization of this paper is as follows. Section 1 proposes the syntactic movement analysis of Korean relativization, based on the fact that Korean relative clauses exhibit typical properties of the Wh-movement. Section 2 argues for the syntactic movement analysis of Korean relative clauses by showing that relativization in Korean is constrained by Subjacency and the Empty Category Principle (ECP). Section 3 discusses related issues and the consequences of the syntactic movement analysis which deals with the Strong Crossover Effect and the parasitic gap constructions. Section 4 is the conclusion of this paper.

## 1. Proposal for Syntactic Movement Analysis

### 1.1. Motivation for Syntactic Movement Analysis

The syntactic movement analysis of Korean relativization is motivated by the fact that Korean relative clauses exhibit all the typical properties of Wh-movement proposed in Chomsky (1977: 86) except that they do not have

<sup>2</sup> See Kuno (1973) for the crucial data against the movement analysis of relativization in Japanese. Analogous examples have been cited as evidence against the movement analysis of Korean relativization. To cover all the counterexamples will make this paper too long. Hence, we are going to deal with the only examples that support the movement analysis. As for the exceptional cases, see Han (forthcoming) who argues that the counter examples are no longer problematic for the movement analysis.

an overt Wh-pronoun:

First, relative clauses have an obvious gap to indicate that an element has moved, as shown below:<sup>3</sup>

- (1) [[e Mary-lul salangha<sub>NP</sub>]-nun<sub>CP</sub>] John  
 Mary-ACC love -REL John  
 'John who, e, loves Mary'

Second, contrary to the non-movement analysts' claim, relativization in Korean is subject to the Complex NP Condition, the Subject Condition, and the Adjunct Condition, as shown below:

- (2) a. ?\*[John-i [[t<sub>i</sub> t<sub>i</sub> mul-un<sub>CP</sub>] kay<sub>NP</sub>]-lul chacanay-n<sub>CP</sub>] namca  
 John-NOM bit-REL dog-ACC identified-REL man  
 'the man who<sub>i</sub> John identified the dog which<sub>i</sub> t<sub>i</sub> bit t<sub>i</sub>'
- b. ?\*[John-i [t<sub>i</sub> t<sub>i</sub> chackoiss-nun<sub>CP</sub>] salam<sub>NP</sub>]-ul manna-n<sub>CP</sub>] pomwul  
 John-NOM look for-REL person-ACC met-REL treasure  
 'the treasure [which<sub>i</sub> [John met [the person [who was looking for t<sub>i</sub>]]]]'
- (3) a. ?[[[haksayng-i t<sub>i</sub> ttayli-n<sub>CP</sub>] ket<sub>NP</sub>]-i wuli-lul  
 student-NOM hit-COMP thing-NOM we-ACC  
 sulpukeyha-nun<sub>CP</sub>] kyoswu  
 make-sad -REL professor  
 'the professor [who<sub>i</sub> [that students hit t<sub>i</sub>] makes us sad] (Lit.)'
- b. ?[[[Mary-ka salangha-nun<sub>CP</sub>] ket<sub>NP</sub>]-i  
 Mary-NOM love - COMP thing-NOM  
 na-lul sulpukeyha-nun<sub>CP</sub>] John  
 I-ACC make-sad -REL John  
 'John [who<sub>i</sub> [that Mary loves t<sub>i</sub>] makes me sad]]'

<sup>3</sup> Note that the actual gap in (1) is in contrast with the LF WH-movement, which does not contain any gap in the surface structure, as shown below:

[[nwu-ka Mary-lul salangha] -ni]  
 who-NOM Mary-ACC love Q  
 'Who loves Mary?'

See Hong (1985) and Han (1990) for arguments that Korean relativization cannot be an instance of LF Wh-movement.



that of Korean relative clauses.

*That*-relatives in English, just like Korean relatives, have no overt Wh-pronoun, but share nearly all of the properties of the wh-relatives: (i) they have a gap, (ii) they obey Subjacency, (iii) they occupy the same position in NP, (iv) they involve an unbounded relation between the gap and the empty relative operator, as long as Subjacency is maintained, and (v) the gap in *that*-relatives blocks WANNA CONTRACTION. Furthermore, the complementizer *that* in *that*-relative clauses is not a relative pronoun, but a complementizer.

Thus it has been assumed in generative grammar that the *that*-relatives contain a base-generated empty relative operator, and it is this empty relative operator that undergoes Wh-movement.

According to Browning (1987), the movement of a relative operator, overt or null, is necessary to set up an agreement chain. Browning (1987) claims that a relative head noun and a relative clause are basically a subject-predicate relation and that the relative head noun, as a subject, has to agree with a relative operator in [SPEC, CP] of the relative clause in order that a subject-predication be licensed for relatives.

In sum, extending the analysis of *that*-relatives in English to that of Korean relativization, we will assume that (i) relativization in Korean involves movement of an empty relative operator, (ii) the empty relative operator is base-generated in an argument position, and (iii) the empty operator must move to the specifier position of CP to set up a proper agreement chain between a relative head noun and a relative clause.

## 2. Arguments for Syntactic Movement Analysis

In the previous section, it was proposed that Korean relativization should be analyzed as syntactic movement of an empty relative operator. This section will argue for this movement analysis of Korean relativization by providing evidence that the formation of Korean relative clauses is actually constrained by the Subjacency condition and the ECP.

## 2.1. Evidence from Subjacency

### 2.1.1. Subjacency as a Condition on Movement

In current generative grammar, Subjacency has been taken as a condition on syntactic movement since it has the effect of subsuming Ross's (1967) complex NP constraint and Wh-island condition, and Huang's (1982) Condition on Extraction Domains (CED).<sup>4</sup>

The Subjacency condition, which was first proposed in Chomsky (1973), requires that rules should not relate X, Y in the structure  $\dots X \dots [_{\alpha} \dots [_{\beta} \dots Y \dots ] \dots ] \dots X$  where  $\alpha$  and  $\beta$  are bounding nodes. As the theory of transformational generative grammar develops, the formulation of Subjacency in Chomsky (1973) has been revised.

In this paper, along with the Barriers theory suggested in Lasnik and Saito (1991),<sup>5</sup> we will assume the following version of Subjacency:

#### (6) Subjacency

(a)  $\dots \alpha \dots \beta \dots \alpha \dots$

No item can be moved from the position  $\beta$  to the position  $\alpha$  if  $\beta$  is not subjacent to  $\alpha$ .

(b)  $\beta$  is subjacent to  $\alpha$

if for every  $\gamma$ ,  $\gamma$  a barrier for  $\beta$ , the maximal projection immediately dominating  $\gamma$  dominates  $\alpha$ .

(Lasnik & Saito (1991), Chap 3: 19)

<sup>4</sup> See Chomsky (1986) and L & S (1991) for the detailed discussion.

<sup>5</sup> Lasnik and Saito (1991) defines the notion of barrier as follows:

(i) Barrier;  $\gamma$  is a barrier for  $\beta$  if a.  $\gamma$  is a maximal projection, b.  $\gamma$  is not L-marked, and, c.  $\gamma$  dominates  $\beta$ . The barriers system revised by L & S (1991) differs from that of Chomsky (1986) in the following respects:

(ii) a. IP is not a defective category and thus, IP is a barrier since it is not L-marked.  
 b. VP is not a barrier since it is L-marked by INFL,  
 c. adjunction creates an additional maximal projection, and  
 d. all barriers are inherent barriers and there is no inheritance

Note that we will assume Lasnik and Saito's barriers system throughout this paper.

2.1.2. The Subjacency Condition Effect

If the assumption that Korean relative constructions involve syntactic Wh-movement is correct, then we expect that Korean relativization should be constrained by the Subjacency condition. This prediction is correct in Korean, as shown below.

2.1.2.1. Complex NP Constructions

Relativization out of the complex NP constructions such as relative clauses and noun complements yields an ungrammatical result, as shown below in (7) and (8). The ungrammaticality can be accounted for by the Subjacency condition (6), which supports our movement analysis. Consider the following:

(7) Relativization out of Relative Clause Constructions

- a. <sup>?</sup>\*[[John-i            [[ [t<sub>i</sub> t<sub>i</sub> mul<sub>IP</sub>]-un OP<sub>i CP</sub>]        kay<sub>NP</sub>]-lul  
           John-NOM                    bit-REL                                    dog-ACC  
           chacanay<sub>IP</sub>]-n    OP<sub>i CP</sub>]    namca  
           identified-REL                                    man  
           'the man who<sub>i</sub> John identified the dog which<sub>i</sub> t<sub>i</sub> bit t<sub>i</sub>']

- b. <sup>?</sup>\*[John-i            [t<sub>i</sub> t<sub>i</sub>    chackoiss<sub>IP</sub>]-nun OP<sub>i CP</sub>]    salam<sub>NP</sub>]-ul  
           John-NOM                    look for-REL                                    person-ACC  
           manna<sub>IP</sub>]-n    OP<sub>i CP</sub>]    pomwul  
           met-REL                                    treasure  
           'the treasure [which<sub>i</sub> [John met [the person [who was looking for t<sub>i</sub>]]]]']

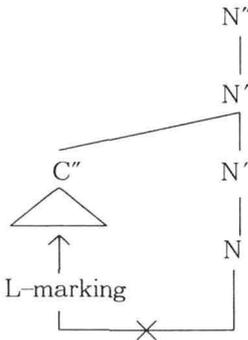
(8) Relativization out of Noun Complement Constructions

- a. <sup>?</sup>\*[[[[Mary-ka    t<sub>i</sub>    choahanta-nun<sub>CP</sub>]        somwun<sub>NP</sub>]-ul  
           Mary-NOM        love-COMP                                    rumor-ACC  
           nay-ka    tul<sub>IP</sub>]-un OP<sub>i CP</sub>]    John  
           I-NOM        heard-REL                                    John  
           'John who<sub>i</sub> I heard the rumor that Mary loves t<sub>i</sub>']

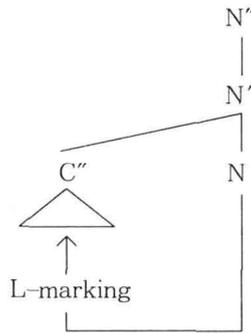
- b. <sup>22</sup>[[[<sub>t<sub>i</sub></sub> Mary-lul cwukyessta]-nun <sub>t<sub>i</sub></sub> CP] sasil]-ul  
 t Mary-ACC killed-COMP fact-ACC  
 nay-ka mitnu IP]-n OP<sub>1, CP</sub>] John  
 I-NOM believe -REL John  
 ‘the man who, I believe the fact that <sub>t<sub>i</sub></sub> killed Mary’

In (7), elements are relativized out of relative clauses. In (8), elements are relativized out of noun complements. Note the contrast between (7) and (8). Even if both of them are ungrammatical, there is a clear contrast between relativization out of relative clauses and relativization out of noun complements: (7) is almost uninterpretable and much worse than (8). Such a contrast is nicely accounted for by the notion of *L-marking* under the Barriers Theory. Relative clauses differ from noun complements in that the former, as adjunct clauses, are not *L*-marked by its head noun, whereas the latter are *L*-marked. Relative clauses and noun complements are thus assumed to have different structures as demonstrated below:

(9) a. Relative Clause



b. Noun-Complement



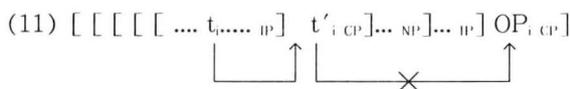
Given these different structures in (9), the ungrammaticality of (7) and (8) and their relative acceptability can be accounted for only under the assumption that Korean relative clause are derived by syntactic movement.

Under the movement analysis, (7) involves two kinds of empty operator movement: first, the lower relative operator  $OP_n$ , and then, the higher relative operator  $OP_1$ . The schematic representation of these two operators' movement is given below:

- (10) [[[[[... <sub>t<sub>i</sub></sub>... <sub>t<sub>i</sub></sub>... IP]  $OP_{1, CP}$ ]... NP]... IP]  $OP_{1, CP}$ ]
-

As we can see in (10), the ungrammaticality of (7) follows from Subjacency. In the first relativization, the movement of the lower relative operator  $OP_i$  observes Subjacency: this movement crosses one barrier (i.e. the lower IP), but it moves to the position contained in the maximal projection immediately dominating this IP (i.e. the lower CP) and hence, satisfies the Subjacency Condition. In the second relativization, however, the higher relative operator  $OP_i$  must move directly to the specifier position of the higher CP since the specifier position of the lower CP is already occupied by the other operator  $OP_j$ . This movement crosses two barriers, namely, the lower IP and CP. In order not to violate Subjacency,  $OP_i$  must move to the positions which are dominated by the lower CP and the NP, the maximal projections immediately dominating those two barriers. But this cannot apply to the case of (7). Thus, the Subjacency condition is doubly violated. The strong violation of Subjacency in (7) accords with our intuition since the sentences in (7) are almost intelligible. Hence, the ungrammatical sentences can be correctly ruled out by the Subjacency condition.

Similarly, the empty relative operator  $OP_i$  in (8) first moves into the specifier position of the lower CP, then into the higher specifier position. This empty relative operator movement is represented in the following diagram:



In the first movement, the lower IP is a barrier, but this movement does not violate the Subjacency condition since it is not out of the lower CP, the maximal projection immediately dominating that IP. For the second movement, however, the lower CP is a barrier since it is assigned inherent Oblique Case by its head noun.<sup>6</sup> Further, this movement crosses the NP node, the maximal projection immediately dominating the CP, and hence violates the Subjacency condition. The Subjacency condition thus predicts that extraction out of noun complement constructions like (11) is in a typi-

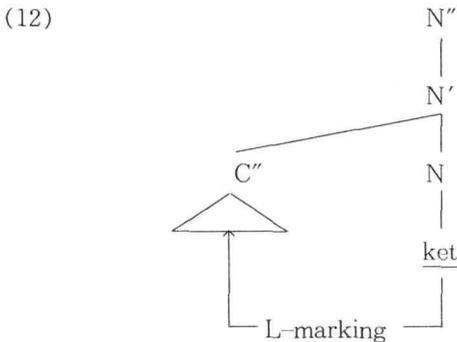
<sup>6</sup> See Chomsky (1986: 36). According to him, in sentential complement constructions, nouns assign Oblique Case to CP and this imposes an inherent barrier to government.

cally weak Subjacency violation by crossing one barrier. This prediction accords with our intuition since (8) is only marginal, but not fully ungrammatical.

Note that this explanation is possible only under the assumption that syntactic Wh-movement is involved in Korean relativization.

### 2.1.2.2. Sentential Subject Constructions

As can be seen from the marginal mark of (3), whose S-structures are given below (14), the sentential subject condition effect seems to be weak in Korean. This weak effect may be attributed to the fact that the sentential complements in Korean are always followed by a dummy noun *ket* 'thing' which cannot stand by itself. Thus the configuration of sentential complements in Korean must be something like (12), where the CP node, being a complement, is L-marked by the noun *ket* 'thing'.



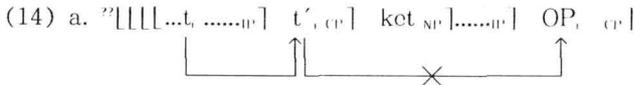
Furthermore, it is well-known in the literature that the subject position as well as the object position seems to be L-marked in Korean (Huang (1984), Fukui (1987), and Lasnik & Saito (1991)). So no subject/object asymmetry is obtained with respect to the extraction out of the sentential subject and out of the sentential object, as shown below:

- (13)a. ??John-i        cohaha-nun        ket-i        wuli-lul  
           John-NOM    like-COMP    thing-NOM    us-ACC  
           pwulanhakeyha-nun    chayk  
           make uneasy-REL    book  
           'the book which, that John likes t, makes us uneasy'

- b. \*Mary-ka John-i coaha-nun ket-ul  
 Mary-NOM John-NOM like-REL thing-ACC  
 a-nun chayk  
 know-REL book  
 ‘the book which<sub>i</sub> Mary knows that John likes t<sub>i</sub>’

The relativization of *book* out of a sentential subject and that out of a sentential object are equally marginal.

Under the movement analysis, thus, it is assumed that elements are relativized out of the following structure:



As shown in (14), relativization out of a sentential subject violates Subjacency only once: the first movement of the empty relative operator satisfies the Subjacency condition since it is not out of the maximal projection (namely the lower CP) immediately dominating the barrier (the lower IP). In the second movement, as in the case of (11), the lower CP constitutes an inherent barrier since it gets inherent Case from its head noun *ket* ‘thing’ (cf. Chomsky 1986) and further, the moved element is not contained in the NP node, the maximal projection immediately dominating the barrier CP. Hence, it violates the Subjacency condition. On the other hand, the subject NP does not constitute a barrier since it is L-marked by INFL in Korean. Thus, (14) is correctly ruled out by the Subjacency condition.

### 2.1.2.3. Adjunct Constructions

Relativization out of adjunct constructions is ungrammatical in Korean, as shown in (4). The ungrammaticality can also be accounted for by the movement analysis. That is, it is due to a Subjacency violation. Let us reconsider the sentences given below:

- (15) a. \*[[[John-i t<sub>i</sub> manness-ki ttaymwuney <sub>CP</sub>] Mary-ka  
 -NOM met -because -NOM  
 whakana <sub>NP</sub>]-n OP<sub>i, CP</sub>] Jane  
 is angry -REL  
 ‘Jane [whom<sub>i</sub> [Mary was angry [because John met t<sub>i</sub>]]’

- b. ?[[[*nay-ka*  $t_i$  *sse-myen*  $_{CP}$ ] *nampyen-i*  
 -NOM use-if husband-NOM  
*pulpyenhayci*  $_{IP}$ ] -nun  $OP_i$   $_{CP}$ ] *cha*  
 inconvenient-become-REL car  
 'The car [which $_i$  my husband becomes inconvenient [if I use  $t_i$ ]]'
- c. ?[[[*nay-ka*  $t_i$  *sayongha-myen*  $_{CP}$ ] *tongsayng-i*  
 -NOM use-if brother-NOM  
*whanay*  $_{IP}$ ] -nun  $OP_i$   $_{CP}$ ] *computer*  
 get angry-REL computer  
 'The computer [which $_i$  my brother gets angry [if I use  $t_i$ ]]'

In (15), the movement of the empty relative operator  $OP_i$  crosses one barrier, namely the adjunct clause, and it is not contained in the matrix IP, the maximal projection immediately dominating the barrier. Thus, the relativization out of adjunct clauses results in a weak Subjacency violation and (15) is correctly excluded by the Subjacency condition.

So far we have seen that Korean relativization is constrained by the classical cases of the Subjacency condition such as the Complex NP Condition, the Sentential Subject Constraint, and the Adjunct Condition. This fact supports our claim that Korean relative clauses are derived by syntactic movement.

Furthermore, to the extent that this fact constitutes evidence for the movement analysis, it provides evidence against the non-movement analysis that the empty category in Korean relative clauses is a base-generated *pro*. The ungrammaticality of the sentences given in (7, 8, 13, 15) would not be accounted for if the gap in Korean relative clauses is analyzed as a base-generated *pro* since pronominal elements in general are not constrained by the Subjacency condition.

## 2.2. Evidence from the ECP

### 2.2.1. The Empty Category Principle

The ECP was originally proposed to account for the subject/object asymmetry, as shown below:

- (16) a. Who<sub>i</sub> do you think that Bill saw t<sub>i</sub>?  
 b. Who<sub>i</sub> do you think Bill saw t<sub>i</sub>?  
 (17) a. \*Who<sub>i</sub> do you think that t<sub>i</sub> left?  
 b. Who<sub>i</sub> do you think t<sub>i</sub> left?

It is evident that the Subjacency condition cannot account for the subject/object asymmetry since the movement occurs in the identical construction. Rather, the asymmetry can be accounted for by the assumption that the government of the subject position by INFL alone cannot license an empty category in the subject position, whereas an empty category is licensed in the object position since it is governed by a lexical head. Based on this, Chomsky (1981) proposes the ECP, which requires that a nonpronominal empty category be properly governed.

Huang (1982) extended the subject/object asymmetry to the more general case of complement/non-complement asymmetry, as shown below:

- (18) a. ?[<sub>CP</sub> Who<sub>i</sub> do [<sub>IP</sub> you wonder [<sub>CP</sub> whether [<sub>IP</sub> John likes t<sub>i</sub> ]]]]?  
 b. \*[<sub>CP</sub> Who<sub>i</sub> do [<sub>IP</sub> you wonder [<sub>CP</sub> whether [<sub>IP</sub> t<sub>i</sub> likes Mary ]]]]?  
 c. \*[<sub>CP</sub> Why<sub>i</sub> do [<sub>IP</sub> you wonder [<sub>CP</sub> whether [<sub>IP</sub> John likes Mary t<sub>i</sub> ]]]]?  
 (19) a. ?\*[<sub>CP</sub> What<sub>i</sub> do [<sub>IP</sub> you know [<sub>NP</sub> the girl [<sub>CP</sub> who<sub>i</sub> [<sub>IP</sub> t<sub>i</sub> likes t<sub>i</sub> ]]]]]]?  
 b. \*\*[<sub>CP</sub> Who<sub>i</sub> do [<sub>IP</sub> you know [<sub>NP</sub> the book [<sub>CP</sub> which<sub>i</sub> [<sub>IP</sub> t<sub>i</sub> likes t<sub>i</sub> ]]]]]]?  
 c. \*\*[<sub>CP</sub> Why<sub>i</sub> do [<sub>IP</sub> you know [<sub>NP</sub> the girl [<sub>CP</sub> who<sub>i</sub> [<sub>IP</sub> t<sub>i</sub> likes the book t<sub>i</sub> ]]]]]]?

According to Huang (1982), subjects and adjuncts are not properly governed, while objects are properly governed by their lexical heads.

In this paper, following Chomsky (1986) and L & S (1991), we will assume the following version of the ECP:

- (20) The Empty Category Principle  
 a. a nonpronominal empty category must be properly governed.  
 b. Proper government  
      $\alpha$  properly governs  $\beta$   
     if (i)  $\alpha$  head-governs  $\beta$ <sup>7</sup>, or (ii)  $\alpha$  antecedent-governs  $\beta$   
 c.  $\alpha$  antecedent-governs  $\beta$  if (i)  $\alpha$  binds  $\beta$ , and (ii)  $\alpha$  is subjacent to  $\beta$

For determining satisfaction of the ECP, we will further assume the fol-

<sup>7</sup> Head government means that a head governs its complement.

lowing  $\gamma$ -marking mechanism and LF Filter proposed in L & S (1984):

(21)  $\gamma$ -Marking

(i)  $t \dots [+ \gamma]$  when properly governed

(ii)  $t \dots [- \gamma]$  otherwise

(22) LF Filter

\*  $t$   
 $[- \gamma]$

(L & S, 1984: 257)

According to (21), a trace is assigned the feature  $[+ \gamma]$  if it is properly governed and a trace receives the feature  $[- \gamma]$  if it is not properly governed.  $\gamma$ -marking takes place at S-structure for argument traces, but at LF for adjunct and intermediate traces. According to (22), a nonpronominal empty category must have the feature  $[+ \gamma]$  at LF.

## 2.2.2. The ECP Effect

If our assumption that Korean relative clause formation involves syntactic movement of an empty relative operator is correct, then we expect that Korean relativization should observe the ECP. This is confirmed by the complement/non-complement asymmetry observed in several Korean constructions.

### 2.2.2.1. ECP Effects on the Complex NP Construction

The ECP effect is obtained in relativization out of the complex NP construction. Compare (23) with (24).

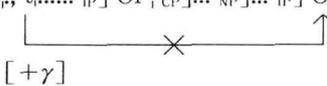
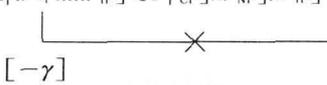
(23) a. ?\*[John-i [[  $t_i$   $t_i$  mul-un<sub>CP</sub>] kay<sub>NP</sub>]-lul chacanay-n<sub>CP</sub>]namca  
 John-NOM bit-REL dog-ACC identified-REL man  
 'the man who<sub>i</sub> John identified the dog which<sub>i</sub>  $t_i$  bit  $t_i$ '

b. ?\*[John-i [  $t_i$   $t_i$  chackoiss-nun<sub>CP</sub>] salam<sub>NP</sub>]-ul  
 John-NOM look for-REL person-ACC  
 manna-n<sub>CP</sub>] pomwul  
 met-REL treasure  
 'the treasure [which<sub>i</sub> [John met [the person [who was looking for  $t_i$ ]]]]'

- (24) a. \*\*[[John-i [[ [ t<sub>i</sub> t<sub>i</sub> ku chayk]-ul sa ]-n OP<sub>i</sub>]  
 John-NOM the book-ACC buy-REL  
 salam]-ul chac]-nun OP<sub>i</sub>] iyu  
 person-ACC look for-REL reason  
 'the reason why, John looks for the person who bought the book  
 t<sub>i</sub>'
- b. \*\*[[ [ John-i t<sub>i</sub> t<sub>i</sub> ttetu -nun CP ] salam-ul NP ]  
 John-NOM make a noise REL person-ACC  
 silheha-nun CP ] kyosil  
 dislike-REL classroom  
 'the classroom [where, John dislikes [the person [who makes a  
 noise t<sub>i</sub>]]']

Although both (23) and (24) are hardly interpretable under the indicated reading due to a strong Subjacency violation, the asymmetry between the relativization of objects and the relativization of adjuncts seems to be real: the latter is totally ungrammatical, which indicates an ECP violation as well as a Subjacency violation; on the other hand, the former is not as bad as the latter, indicating a mere Subjacency violation. The relative acceptability of (23) versus (24) is unexpected unless Korean relativization obeys the ECP.

Under the movement analysis, the S-structure representation for (23) and the LF representation for (24) would be roughly (25a) and (25b), respectively:

- (25) a. ?\*[ [ [ [ [ ...t<sub>i</sub>, t<sub>i</sub>..... IP ] OP<sub>i</sub> CP ]... NP ]... IP ] OP<sub>i</sub> CP ]  

- b. \*\*\*[ [ [ [ [ ...t<sub>i</sub> .. t<sub>i</sub> ..... IP ] OP<sub>i</sub> CP ]... NP ]... IP ] OP<sub>i</sub> CP ]  


As we have seen in (7), the ungrammaticality of (23) and (24) is due to a strong violation of Subjacency. The object trace, however, is properly-governed by the embedded verb, and hence satisfies the ECP by being  $\gamma$ -marked at S-structure.

On the other hand, the extraction out of adjuncts violates both the Subjacency condition and the ECP. Just like the case of relativization of objects, the movement of an empty relative operator  $OP_i$  yields a strong Subjacency violation. The adjunct trace, not being a complement, requires an antecedent governor. But the nearest binder for it cannot antecedent-govern the trace due to two intervening barriers (i.e. the lower IP and CP). The adjunct trace is thus marked  $[-\gamma]$  at LF and is ruled out by the Filter (22). The violations of both Subjacency and the ECP yield much worse sentences (24) than those in (23) which involve Subjacency violation only. This prediction accords with our intuition.

### 2.2.2.2. ECP Effects in Other Constructions

The ECP effect is not confined to the complex NP construction, but can be obtained in other constructions such as the sentential subject construction and the adjunct construction, as shown below:

#### (26) Sentential Subject Constructions

- a. <sup>??</sup>[[[[haksayng-i e ttayli]-n ket]-i wuli-lul  
 student-NOM beat-REL thing-NOM we-ACC  
 sulpukeyha]-nun] kyoswu  
 make-sad -REL professor  
 'the professor [who, [that students beat  $t_i$ ] makes us sad](Lit.)'
- b. <sup>??</sup>[[[[haksayng-i e kyoswu-lul ttayli]-n ket]-i  
 student-NOM professor-ACC beat -REL thing-NOM  
 wuil-lul sulpukeyha]-nun] tayhakkyo  
 we -ACC make-sad -REL university  
 'the university [where [that students beat professors  $t_i$ ] makes us sad]'

#### (27) Adjunct Constructions

- a. <sup>??</sup>[[[John-i  $t_i$  manness-ki ttaymwuney  $_{CP}$ ] Mary-ka  
 -NOM met -because -NOM  
 whakana  $_{IP}$ ]-n  $OP_i$   $_{CP}$ ] Jane  
 is angry -REL  
 'Jane [whom, [Mary was angry [because John met  $t_i$ ]]'

- b. ??[[[sensayngnim-i t<sub>i</sub> ilkusyessulttay <sub>CP</sub>]  
 teacher-NOM read-when  
 modun haksayng-i wulesste <sub>IP</sub>]-n OP<sub>i</sub> <sub>CP</sub>] pyenci (Yang 1987)  
 all the students-NOM cried -REL letter  
 'the letter [which<sub>i</sub> [all the students cried [when the teacher read  
 t<sub>i</sub> ]]]'
- c. \*[[[John-i t<sub>i</sub> Jane-ul manness-ki ttaymwuncy <sub>CP</sub>]  
 -NOM -ACC met -because  
 Mary-ka whakana <sub>IP</sub>]-n OP<sub>i</sub> <sub>CP</sub>] sulcip  
 -NOM is angry -REL bar  
 'the bar [where<sub>i</sub> [Mary was angry [because John met Jane t<sub>i</sub> ]]]'
- d. \*[[[sensayngnim-i t<sub>i</sub> ku pyenci-lul ilkusyessulttay <sub>CP</sub>] modun  
 teacher-NOM the letter-ACC read-when all the  
 haksayng-i wulesste <sub>IP</sub>]-n OP<sub>i</sub> <sub>CP</sub>] kyotan (Yang 1987)  
 students-NOM cried-REL platform  
 'the platform [where<sub>i</sub> all the students cried [when the teacher  
 read the letter t<sub>i</sub> ]]]'

The complement/non-complement contrast observed in (26) and (27) can be accounted for in a similar way. The relativization of an element, either a complement or a non-complement, yields a weak Subjacency violation, as we have seen in (14) and (15). As for the ECP, the object trace, being a complement, is properly governed by the verb and thus satisfies the ECP by having the feature [+ $\gamma$ ] at the S-structure. On the other hand, the adjunct trace, which is required to be antecedent-governed, fails to be antecedent-governed since there intervenes a barrier. The adjunct trace is thus marked [- $\gamma$ ] and violates the ECP. Hence the asymmetry that follows.

In sum, the fact that the ECP holds in the formation of Korean relative clauses supports our claim that Korean relativization involves the syntactic movement of an empty relative operator. On the other hand, the non-movement analysis cannot account for the contrast between relativization of objects and relativization of adjuncts out of complex NP constructions, sentential subject constructions, and adjunct constructions, since the ECP typically constrains traces, but not pronominal elements.

### 3. Related Issues

#### 3.1. The Strong Crossover Effect

The Strong Crossover Effect, which was first discussed by Postal (1971), is obtained when a Wh-element crosses over a coreferential pronoun. Consider classical examples of the Strong Crossover Effect, which cannot have the indicated reading:

(28) a. \* $[_{CP} \text{ who}_i \text{ does } [_{IP} \text{ he}_i \text{ like } t_i ]]$

For which  $x$ ,  $x$  a person,  $x$  likes  $x$ .

b. \* $[_{CP} \text{ who}_i \text{ does } [_{IP} \text{ he}_i \text{ think } [_{CP} t_i' [_{IP} \text{ Mary likes } t_i ]]]]$

For which  $x$ ,  $x$  a person,  $x$  thinks Mary likes  $x$ .

Within the framework of the Principles and Parameters theory, this Strong Crossover Effect is accounted for in terms of Binding Principle C of the Binding Theory, by which R-expressions and variables must not be bound by something in an A-position. In (28), the trace of *who*,  $t_i$ , is A-bound by the *c*-commanding pronoun *he*, an NP in subject position, in violation of Binding Principle C. Hence, sentences in (28) are ungrammatical.

We have seen that the Strong Crossover Effect follows when a *c*-commanding pronoun binds a variable or a wh-trace.

If it is true that Korean relativization involves syntactic movement of an empty operator and thus the empty categories in Korean relative clauses are variables, then we expect that the Strong Crossover Effect should be obtained in Korean relative clauses.

Let us consider the relevant Korean examples given below:

(29) a. \* $[_{CP} [_{IP} \text{ ku}_i\text{-ka } t_i \text{ salangha}]]\text{-nun OP}_i$  namca  
           he-NOM love -REL man  
           'the man [ who, [ he, loves t, ] ]'

- b. \* $[_{CP} [_{IP} ku\text{-}ka [_{CP} [_{IP} Mary\text{-}ka\ t_i\ coahanta ]\text{-}ko\ t' ], ]$   
           he-NOM      Mary-NOM      like -COMP  
           sayngkakha ]-nun OP<sub>i</sub>] namca  
           think-REL                  man  
           'the man [ who, [ he, thinks [ that Mary likes  $t_i$  ] ] ]'

(29) cannot have the indicated reading, where *ku* 'he' refers to the relative head noun *namca* 'the man'.

If the gap in (29) is a variable which is A'-bound by an empty relative operator, then the ungrammaticality of (29) can be accounted for by Binding Principle C. The traces of empty operators in (29), as variables, must be A-free, but they are A-bound by the c-commanding pronoun *ku* 'he'. Thus sentences in (29) violate the Binding Principle C and are correctly ruled out under our movement analysis.

Note that this account crucially depends on the assumption that the empty category in relative clauses is a variable created by the movement of an empty relative operator.

In sum, the Strong Crossover Effect provides another bit of supporting evidence for the syntactic movement analysis of Korean relativization.<sup>8</sup>

### 3.2. Parasitic Gaps

Chomsky (1986) argues that parasitic gaps are in fact traces of empty operators since the movement obeys the Subjacency condition. According to him, parasitic gaps are licensed by the following condition:

#### (30) Parasitic Gap Licensing Condition

A parasitic gap is licensed iff

- (a) A parasitic gap and its licensing gap are coindexed,
- (b) The empty operator of the parasitic gap is subjacent to the licensing gap, and
- (c) A licensing gap is the final member of an A'-Chain headed by a Wh-operator.

That is, parasitic gaps are licensed by an S-Structure Wh-trace or other

<sup>8</sup> See Imai (1987) for the similar discussion of the Strong Crossover Effect on Japanese relativization.

operator-bound trace, to which the empty parasitic operator is subjacent. Note that we assume the Subjacency condition given in (6).

Let us first consider typical examples of parasitic gap constructions in English:

(31) a. [<sub>C</sub> Which report<sub>i</sub> did [<sub>I'</sub> you file t<sub>i</sub> [<sub>I'</sub> without [<sub>C</sub> OP<sub>i</sub> [<sub>I'</sub> PRO reading e<sub>i</sub>]]]]]

b. [<sub>C</sub> [<sub>I'</sub> This is the report [<sub>C</sub> which<sub>i</sub> [<sub>I'</sub> you filed t<sub>i</sub> [<sub>I'</sub> without [<sub>C</sub> OP<sub>i</sub> [<sub>I'</sub> PRO reading e<sub>i</sub>]]]]]]]

(31a) involves movement of a Wh-phrase and (31b) involves movement of a relative pronoun. Examples in (31) satisfy the parasitic gap licensing condition given in (30): the lower CP is not a barrier since it is L-marked by P. The adjunct PP is a barrier for the empty parasitic operator *OP*, but the real gap *t* is contained in the maximal projection immediately dominating this PP, namely the matrix VP. Thus, the empty parasitic operator *OP* is subjacent to the real gap. Furthermore, the real gap is a variable A'-bound by a Wh-operator. Therefore, the parasitic gap is properly licensed by this variable.

Having seen under what conditions parasitic gaps are allowed, let us consider the case of Korean relativization.

If the assumption that Korean relative clause constructions involve an empty operator movement at S-Structure is correct, then it is expected that parasitic gaps should be allowed in Korean relative clauses. This prediction is correct in Korean, as shown below:

(32) a. John-i            ilkei    anhko    peri-n                    pyenci  
           John-NOM    read    without    threw away-REL    letter  
           'the letter which John threw away without reading'

b. John-i            checkha-ci    anhko    fileha-n    report  
           John-NOM    check            without    file-REL    report  
           'the report which John filed without checking'

The grammaticality of (32) clearly shows that the canonical parasitic gaps are allowed in Korean relative clauses. Under the movement analysis of Korean relativization, then the S-structure representations for (32) would be (33), where *OP<sub>i</sub>* is an empty relative operator and *OP<sub>j</sub>* is an empty parasitic operator.



#### 4. Conclusion

In this paper, the movement analysis of Korean relativization has been discussed within the framework of the current generative grammar presented in Chomsky (1986), and Lasnik and Saito (1991).

It was argued that relative clause formation in Korean involves movement of an empty relative operator to the specifier position of CP. The supporting evidence for this movement analysis is of three kinds: (i) Korean relativization is constrained by a condition on movement such as the Subjacency Condition and the ECP, (ii) the Strong Crossover Effect is obtained in Korean relative clauses, and (iii) canonical parasitic gaps are allowed in Korean relative clause constructions.

From the discussion above, therefore, it is concluded that the empty category in Korean relative clauses is a variable created by the syntactic movement of an empty relative operator.

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