

# The Dual Property of Anaphors

Dong-Whee Yang

## 1. Introduction

We claim that an anaphor has a dual property: the property of a clitic as a head and the property of a quantifier as an XP. Thus, we argue, any anaphor may undergo clitic-climbing as a head or quantifier raising (QR) as an XP. Specifically, we argue against the position of Pica (1987), Cole, Hermon, & Sung (1990), and Sung (1990) that only so-called “non-phrasal” anaphors may undergo head-movement whereas only so-called “phrasal” anaphors may undergo XP-movement. Their position is mainly based on the morphological makeup of an anaphor; that is, morphologically simple anaphors like Korean *caki* may only undergo head-movement whereas morphologically complex anaphors like English *himself* may only undergo XP-movement. Note, however, that “non-phrasal” as well as “phrasal” anaphors are equally heads as well as XP’s syntactically. Furthermore, we will show that “non-phrasal” as well as “phrasal” anaphors have properties of clitics (=heads) as well as quantifiers (=XP’s). On the other hand, we will argue that whatever correlations obtain between the morphological makeup of an anaphor and its syntactic distribution would better be captured in terms of a morphological feature-sharing process rather than in terms of the distinction between head-movement and XP-movement.<sup>1</sup>

In section 2, we will motivate the claim that anaphors are a kind of clitics and undergo clitic-climbing (head-movement). In section 3, we will motivate the claim that anaphors are a kind of quantifiers and undergo QR (XP-movement). In section 4, we will discuss implications of our claims and residual problems.

<sup>1</sup> For further arguments for the claim that anaphors undergo both head-movement and XP-movement, see Yang (1989).

## 2. Anaphors as Clitics

The first argument for the claim that anaphors are clitics is due to the fact that some anaphors like French *se* as in (1) are real clitics:

- (1) Les garçons<sub>i</sub> se<sub>i</sub> regardent t<sub>i</sub>.  
 (The boys see themselves.)

In other words, as suggested in Chomsky (1986b), LF raising of an anaphor may be equated with the S-Structure (SS) behavior of the Romance anaphor *se*; both achieve a variable-binding function but at different levels of grammar. This is reminiscent of a typological view of *wh*-movement proposed by Huang (1982); that is, all languages are assumed to incorporate a *wh*-movement rule as a substantive universal, but they may differ in where they use the rule, at SS or at Logical Form (LF). By the same token, it would be desirable if languages incorporated a clitic-climbing rule raising an anaphor as a substantive universal if not at SS, as with Romance *se*, then at LF, as with Korean *caki* or English *himself*. Along this line of reasoning, non-clitic anaphors like English *himself* may be assumed to be clitics at LF like Romance *se* at SS.

The second argument is that, as Chomsky (1986) argues, if we assume that non-clitic anaphors like English *himself* also have some property of clitics and undergo clitic-climbing at LF though not at SS, we can subsume NIC effects under the ECP as we see in (2a, b), whose LF's are (3a, b) after LF clitic-climbing of anaphors:

- (2) a. John<sub>i</sub> believes himself<sub>i</sub> to be clever.  
       b.\*John<sub>i</sub> believes that himself<sub>i</sub> is clever.  
 (3) a. John<sub>i</sub> himself<sub>i</sub>-INFL believe [<sub>IP</sub> t<sub>i</sub> to be clever.]  
       b.\*John<sub>i</sub> himself<sub>i</sub>-INFL believe [<sub>CP</sub> that t<sub>i</sub> is clever.]

By assuming that *himself* undergoes clitic-climbing and adjoins to the matrix INFL at LF as a clitic would do at SS, we can account for the ungrammaticality of (2b), which was assumed to be due to the NIC, as a case of ECP violation as we see in (3b).

The lack of NIC effects in languages like Korean can also be accounted for under the assumption that anaphors undergo clitic-climbing either at SS

or at LF. Consider the Korean example (4), whose LF is (5) after LF clitic-climbing of the anaphor:

- (4) John<sub>i</sub>-nun [<sub>CP</sub> caki<sub>i</sub>-ka yengliha-ta-ko ] sayngkakha-n-ta.  
 - TOP self-NM clever-DEC-COMP think -ASP-DEC<sup>2</sup>  
 (John<sub>i</sub> thinks that self<sub>i</sub> is clever.)

- (5) John<sub>i</sub>-nun [<sub>CP</sub> t<sub>i</sub>-ka yengliha-ta-ko ] sayngkakha-n-caki<sub>i</sub>-ta.  
 -TOP -NM clever-DEC-COMP think-ASP -self<sub>i</sub>-DEC

The grammaticality of (4) indicates that Korean anaphor *caki* does not obey the NIC,<sup>3</sup> and indeed (5), the LF of (4), is well-formed since the trace in the subject position in Korean does not violate the ECP, as in the case of Korean *wh*-questions like (6), whose LF is (7):

<sup>2</sup> Abbreviations are as follows: TOP=Topic Marker; NM=Nominative Marker; AC=Accusative Marker; COMP=Complementizer; DEC=Declarative Marker; ASP=Aspect Marker; PAST=Past Marker; QUES=Question Marker; HON=Honorific Marker

<sup>3</sup> Cole, Hermon, & Sung (1990) claim that in Korean *caki* is not an anaphor but a pronoun, assuming that the following example is ungrammatical:

- (i) \*John<sub>i</sub>-nun caki<sub>i</sub>-lul miweha-n-ta.  
 TOP self-AC hate-ASP-DEC  
 (John<sub>i</sub> hates self<sub>i</sub>.)

The problems with this claim are as follows. First, the majority of Koreans accept (i) as grammatical as far as we know. There are some Koreans who consider (i) as a little less natural than (ii):

- (ii) John<sub>i</sub>-nun caki<sub>i</sub>-uy tongsayng-lul miweha-n-ta.  
 -TOP self 's brother-AC hate-ASP-DEC  
 (John<sub>i</sub> hates self<sub>i</sub>'s brother.)

But we could not find any Korean who considers (i) as completely ungrammatical.

Second, *caki* can never be used as referring to a discourse or contextual entity in a discourse-initial utterance as in (iiia), whereas the pronoun *ku* can as in (iiib):

- (iii) a. \*caki-ka o-ess-ta.  
 self-NM come-PAST-DEC  
 (self came.)  
 b. ku-ka<sup>?</sup> o-ess-ta.  
 he-NM come-PAST-DEC  
 (He came.)

- (6) John-nun [<sub>CP</sub> nwu-ka yengliha -ta -ko ] sayngkakha-ni?  
 -TOP who-NM clever -DEC-COMP think -QUES  
 (\*Who<sub>i</sub> does John think that t<sub>i</sub> is clever?)

- (7) [<sub>CP</sub> nwu<sub>i</sub> [<sub>IP</sub> John-nun [<sub>CP</sub> t<sub>i</sub>-ka yengliha-ta-ko ] sayngkakha-ni]]?  
 Who<sub>i</sub> -TOP -NM clever -DEC-COMP think-QUES

Assuming that *wh*-phrases in -situ move to the CP-SPEC position for their scopes at LF, we derive the LF (7) from (6). Since (6) is well-formed with the interpretation of the wide scope for *nwu* 'who', its LF (7) must be well-formed; therefore, the trace in (7) must be assumed to satisfy the ECP. Thus, we conclude that the trace in (5) is also legitimate.<sup>4</sup>

The third argument for the anaphor's clitic-climbing is that the subject-orientation of anaphors can be accounted for if we assume that anaphors

<sup>3</sup> continued

Third, *caki* shows subject-orientation with respect to its possible antecedent in a higher clause, as in (iv) :

- (iv) John<sub>i</sub>-i Peter<sub>i</sub>-lul [<sub>CP</sub> Bill<sub>k</sub>-i caki<sub>i,k,\*</sub>-lul swumki-ess -ten ]  
 -NM -AC -NM self -AC hide -PAST -COMP  
 pang-ey katwu-ess-ta.  
 room-in keep-PAST-DEC  
 (John<sub>i</sub> kept Peter<sub>i</sub> in a room in which Bill<sub>k</sub> hid self<sub>i,k,\*</sub>.)

If the pronoun *ku* is substituted for *caki* in (iv), it can refer to the matrix object *Peter*, just as a pronoun would normally do. One might argue that *caki* is a special pronoun with subject-orientation. But then a case like (v) will be problematic:

- (v) John<sub>i</sub>-i Peter<sub>i</sub>-lul caki<sub>i,j</sub>-uy pang-ey katwu-ess -ta.  
 -NM -AC self -'s room-in hide -PAST -DEC  
 (John<sub>i</sub> kept Peter<sub>i</sub> in self<sub>i,j</sub>'s room.)

In (v) *caki* can refer to the object *Peter*. The fact is that *caki* is subject-oriented with respect to a possible antecedent in a higher clause but not with respect to a possible antecedent within the minimal clause. This fact is language-universal under the assumption that *caki* is an anaphor, and it is exactly predicted by our theory of anaphora, again if *caki* is assumed to be an anaphor and not a pronoun, as we will discuss in the text.

<sup>4</sup> There have been proposals on how the trace in the subject position satisfies the ECP in languages like Korean. We assume that in languages like Korean the trace in the subject position is head-governed by INFL under the assumption that INFL is a head-governor in languages like Korean, or by the adjacent matrix V or P à la Yoon and Yoon (1990). In this paper we assume Rizzi's (1990) conjunctive ECP according to which all traces must be "canonically head-governed".

undergo clitic-climbing. Consider the English example (8) and the Korean example (9):

(8) Jonh<sub>i</sub> told Bill<sub>i</sub> [<sub>CP</sub> that a picture of himself<sub>i,\*i</sub> was on sale].

(9) John<sub>i</sub>-i Bill<sub>i</sub>-lul [<sub>CP</sub> Tom<sub>k</sub>-i caki<sub>i,k,\*i</sub>-lul swumki-ess-ten ]  
 - NM -AC -NM self -AC hide-PAST- COMP  
 pang-ey katwu-ess-ta.  
 room-in keep-PAST-DEC  
 (John<sub>i</sub> kept Bill<sub>i</sub> in the room in which Tom<sub>k</sub> hid self<sub>i,k,\*i</sub>)

In both (8) and (9) the anaphor refers to the subject *John* but not to the object *Bill*; hence, the anaphor is subject-oriented. By assuming that an anaphor undergoes clitic-climbing and adjoins to the matrix INFL and that an anaphor is licensed under the adjacent-government by its antecedent at LF,<sup>5</sup> the subject-orientation of anaphora as in (8) and (9) can be predicted.

Now how can we motivate the long-distance clitic-climbing of the anaphor up to the matrix INFL in (8) and (9)? First of all, we point out that Chomskyian XP barriers (cf. Chomsky 1986a) can be considered as irrelevant to clitic-climbing due to the strict locality of minimality barriers for X<sup>o</sup>-chains, which applies to clitic-climbing, within the framework of Rizzi's (1990) theory of the conjunctive ECP.<sup>6</sup> Thus, in (8) and (9) the anaphor may move up to the matrix INFL through the successive adjunction to each of the heads intervening between the SS position of the anaphor and the matrix INFL, without crossing any relevant XP barriers. But still one more question should be resolved before the subject-orientation of the anaphors in (8) and (9) can be completely predicted; that is what would prevent the anaphor from adjoining to the matrix V and being licensed by the object in terms of the adjacent government, which would result in the non-subject orientation.

Here we propose that anaphors belong to the functional category D just as pronouns do (cf. Postal 1966) and that a functional category may only

<sup>5</sup> We assume that  $\alpha$  is under the adjacent-government by  $\beta$  iff  $\alpha$  and  $\beta$  m-command each other. The adjacent-government requirement for anaphors was originally proposed by Chomsky (1986b).

<sup>6</sup> For a similar view on XP barriers with respect to LF head-movement, see Baltin (1991).

adjoin to a functional category according to a strict version of the Structure-Preserving Hypothesis. Thus, the anaphor as a functional category *D* may adjoin to a functional category like *D*, *I*, and *C* in its head-movement or clitic-climbing. For example, in (8) and (9), the anaphor may only adjoin to the *C* of the embedded clause and then adjoin to the *I* of the matrix clause, since those are the only functional categories that the anaphor encounters in the course of its head-movement or clitic-climbing. Therefore, in (8) and (9), the anaphor may not adjoin to the matrix *V* and may not be licensed by the object in terms of the adjacent government; hence, the subject-orientation of the anaphor. Even if the anaphor may not adjoin to lexical categories like *V*, the lexical categories that the anaphor crosses in the course of its head-movement or clitic-climbing do not function as minimality barriers for the  $X^{\circ}$ -chain of the anaphor, since only a functional category can be the minimality barrier for an  $X^{\circ}$ -chain of a functional category as Baker and Hale (1990) argue.

To sum up, under the assumption that the anaphor is a functional category *D*, the anaphor as a head or a clitic may only adjoin to a functional category according to a strict version of the Structure-Preserving Hypothesis, resulting in the subject-orientation, whereas only the functional category can be the minimality barrier for the  $X^{\circ}$ -chain of the anaphor's head-movement according to a strict version of the conjunctive ECP of Rizzi (1990). Note that what the strict version of the Structure-Preserving Hypothesis requires of the anaphor's head-movement is closely related to what the strict version of the conjunctive ECP requires of the anaphor's head-movement; that is, the anaphor is required to adjoin only to functional categories, which are the only minimality barriers for the anaphor's head-movement. In other words, by adjoining only to the intervening functional categories according to the strict version of the Structure-Preserving Hypothesis, the anaphor's head-movement automatically nullifies the only possible minimality barriers for the  $X^{\circ}$ -chain of the anaphor.

As discussed above, the head-movement of the anaphor may satisfy the antecedent-government requirement of the conjunctive ECP by successive adjunctions to the functional categories. But the head-movement of the anaphor must also satisfy the head-government requirement of the conjunctive ECP. In the case of (8), the initial trace of the anaphor is head-gov-

erned by the *P of*. As for the intermediate trace adjoined to the *C that*, we propose that a trace adjoined to a category needs to satisfy only the antecedent-government requirement, and is exempt from the head-government requirement since the canonical head-government configuration required for the head-government is never met for a trace adjoined to a category.<sup>7</sup> In the case of (9), the initial trace of the anaphor is head-governed by the embedded *V*, but in (5) it is head-governed by the embedded *INFL* under the assumption that *INFL* is a head-governor in languages like Korean as suggested in footnote 4.<sup>8</sup> The intermediate trace adjoined to *C -n* may be exempt from the head-government requirement, as suggested for the case of (8).

We have discussed the subject-orientation of reflexives so far. Reciprocals show the same subject-orientation as we see in the English example (10) and the Korean example (11):

(10) They<sub>i</sub> told us<sub>j</sub> [<sub>CP</sub> that pictures of each other<sub>i,\*j</sub> were on sale.]

(11) kutul-nun wuli-lul [<sub>CP</sub> selo<sub>i,\*j</sub>-uy pwumonim-i kyey-si -n] cip -ulto  
 they -TOP we -AC e.o. -'s parent-NM live -HON -COMP house-to  
 teyliko ka -ess-ta.  
 with go -PAST-DEC.

(They<sub>i</sub> brought us<sub>j</sub> to the house where each other's<sub>i,\*j</sub> parents lived.)

Our theory of anaphora accounts for the subject-orientation of reciprocals as shown in (10) and (11) in exactly the same way as it does for the subject-orientation of reflexives as shown in (8) and (9), except that in the case of English *each other* what undergoes head-movement is *each* instead

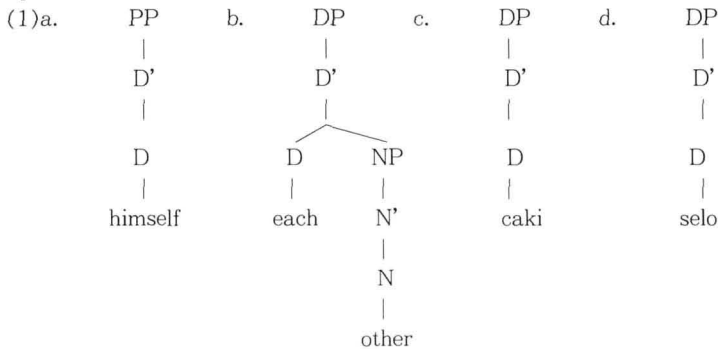
<sup>7</sup> Note that Rizzi's (1990) theory of the conjunctive ECP is developed under the assumption that no trace is in an adjoined position. In fact, his theory does not recognize adjunction to *VP* (or any category) at *SS* since *VP* is not an inherent barrier in his theory, nor deal with *LF* movements which normally involve adjunction operations. Therefore, his theory has to be adjusted anyway if it is to be applied to *LF* movements like the anaphor-movement that we are discussing. For further discussion on the extension of Rizzi's (1990) theory of relativized minimality to *LF* movements like *QR*, see Ryoo (1991).

<sup>8</sup> We might consider the nominative Case marker *-ka* left behind in the anaphor-movement as the head-governor of the trace of *caki* in (5), since Rizzi (1990) considers the dummy *P of*, a virtual Case marker, as a head-governor of a trace.

of *each other* since the latter is not a head but a phrase.<sup>9</sup> For the head-government of the trace of *each* in the LF of (10), we propose that the head-government of an XP flows down to the head of the XP; thus in (10) the head-government of DP *each other* by the P *of* flows down to the trace of *each*, which is the head of the DP. In (11), the trace of the reciprocal *selo* is head-governed by *-uy* “s’.<sup>10</sup>

Note that if we assume that the so-called “phrasal” anaphors like English *himself* and *each other* may only undergo XP-movement as Pica (1987) and Sung (1990) do, there would be no way to account for the fact that the “phrasal” anaphors are subject-oriented just in case their antecedents are outside of the minimal clause containing them, as we see in (8) and (10), since the XP-movement of the “phrasal” anaphors would adjoin to VP as well as IP and such “phrasal” anaphors would be licensed by the object as well as the subject in terms of the adjacent government. But there are cases where the “phrasal” anaphors behave differently from the “non-phrasal” anaphors, as we see in the English example (12) and the Korean

<sup>9</sup> We assume the following syntactic structures for English and Korean anaphors:



<sup>10</sup> Korean reciprocal *selo* has three meanings, ‘reciprocal’, ‘respective’, and ‘joint’, as illustrated in (i):

- (i) *kutul-nun selo-uy ai-lul salangha-n-ta*  
 they-TOP e.o. -’s child-AC love-ASP-DEC  
 a. They<sub>i</sub> love each other’s<sub>i</sub> children. (reciprocal)  
 b. They<sub>i</sub> love their<sub>i</sub> children. (respective)  
 c. They<sub>i</sub> love their (own) children. (joint)

For further discussion on the syntax and semantics of *selo*, see Yang (1983) and Ahn (1989). In this paper, we are only concerned with *selo* with the reciprocal meaning.



example (13):

(12) John<sub>i</sub> believes [<sub>CP</sub> that Bill<sub>i</sub> loves himself<sub>i,\*i</sub>].

(13) John<sub>i</sub>-nun [<sub>CP</sub> Bill<sub>i</sub>-i caki<sub>i</sub>-lul salangha-n-ta-ko] mit -nun-ta.  
 -TOP -NM self-AC love-ASP-DEC-COMP believe-ASP-DEC  
 (John<sub>i</sub> believes that Bill<sub>i</sub> loves self<sub>i,i</sub>.)

In (12) the English anaphor *himself* cannot refer to the matrix subject *John*, but in (13) the Korean anaphor *caki* can. In order to account for this difference, we propose the following principle of feature percolation (14):

(14) An agreement-sensitive element induces feature percolation.

We assume that the so-called “phrasal” anaphor like the English *himself* is an agreement-sensitive element whereas the so-called “non-phrasal” anaphor like the Korean *caki* is not, since the former is agreement-sensitive with respect to some phi-features whereas the latter is not.<sup>11</sup>

Now suppose that in (12) *himself* has the index *i*, then there would occur a feature conflict on the node of the embedded INFL when the anaphor *himself* with the index feature *i* adjoins to the embedded INFL and the index feature *i* is percolated to the embedded INFL according to (14), since the embedded INFL would have received the index feature *j* through the SPEC-Head Agreement from its SPEC *Bill*. Thus, (12) would be ungrammatical if the anaphor *himself* has the index *i*; hence, the English *himself* shows the SSC effect. On the other hand, under the assumption that the Ko-

<sup>11</sup> The exact criterion for “agreement-sensitivity” cannot be given now. As one of the reviewers noted, Korean *caki* is not entirely agreement-insensitive since it takes only a third-person antecedent, even if it is much less agreement-sensitive than English *himself*. Therefore, our notion of “agreement-sensitivity” remains rather intuitive for now. But we keep this intuitive notion of “agreement-sensitivity” since the notion is necessary if the theory of anaphor-movement is on the right track, hoping that the explicit criterion for “agreement-sensitivity” will eventually be worked out. It might, however, be the case that such an explicit universal criterion for “agreement-sensitivity” cannot be available in view of the wide variation of anaphora across languages. In that case, we have to assume that “agreement-sensitivity” is determined by lexical properties of each anaphor to some extent at least. After all, it might be the case that some lexical idiosyncrasies are really involved in anaphora, as usual in other areas of grammar.

rean anaphor *caki* is not an agreement-sensitive element since it is not agreement-sensitive with respect to phi-features as the English anaphor is, we can account for the fact that the Korean anaphor *caki* does not show the SSC effect unlike the English anaphor *himself*. In other words, in (13) even if *caki* has the index *i* there would be no feature conflict on the embedded INFL since the index *i* would not be percolated from the *caki* adjoined to the embedded INFL according to (14); hence, the *caki* is free to move to the matrix INFL. Thus, to the extent that our theory of clitic-climbing of anaphors is motivated, it is also motivated to capture whatever correlations may be between the morphological makeup of anaphors and their distribution in terms of a morphological feature-sharing process due to (14).

As for reciprocals, however, not only English *each other* but also Korean *selo* shows the SSC effect, as we see in the English example (15) and the Korean example (16):

(15) They<sub>i</sub> believe [<sub>CP</sub> that we<sub>i</sub> love each other<sub>,i</sub>].

(16) kutul<sub>i</sub>-nun [<sub>CP</sub> wuli<sub>i</sub>-ka selo<sub>,i</sub>-lul salangha-n-ta-ko]  
 they-TOP we-NM e.o.-AC love-ASP-DEC-COMP  
 mit -nun -ta.  
 believe-ASP-DEC

(They<sub>i</sub> believe that we<sub>i</sub> love each other<sub>,i</sub>.)

In fact, reciprocals show the SSC effect across languages. This is due to the fact that reciprocals are semantically agreement-sensitive elements in the sense that they require their antecedents to be plural as we see in the ungrammaticality of (17) and that a distributive (or reciprocal) dependency, not a simple anaphoric dependency, is required between a reciprocal and its antecedent as we see in the ambiguity of (18):

(17) \*[John and Mary]<sub>i</sub> decided that Mary should visit each other<sub>i</sub>.

(18) [John and Mary]<sub>i</sub> decided that they<sub>i</sub> should visit each other<sub>i</sub>.

The ungrammaticality of (17) is predicted in our theory if we assume that the reciprocal *each (other)* is an agreement-sensitive element since it requires an agreement in number with its antecedent; that is, when *each* adjoins to the embedded INFL and percolates its features to the embedded INFL according to (14),<sup>12</sup> a number feature conflict occurs on the node of the INFL since the INFL would have received the [−plural] feature from

<sup>12</sup> We assume that a head shares features with its maximal projection due to the Head-Projection Agreement of Williams (1982). Thus, we assume that *each* shares all the features including the referential index with its maximal projection *each other*.

its SPEC *Mary* through the SPEC-Head Agreement. Since the antecedent-government requirement makes it impossible for the clitic-climbing of *each* to skip over the adjunction to the embedded INFL, (17) is ungrammatical even if the matrix subject agrees with the reciprocal in number and index.

(18) has at least two readings, (19a) and (19b):

- (19) a. John and Mary decided that John should visit Mary whereas  
Mary should visit John.  
b. John decided that John should visit Mary whereas Mary decided  
that Mary should visit John.

The ambiguity of (18) is predicted in our theory if we assume that the reciprocal *each* (*other*) is an agreement-sensitive element since it requires a distributive (or reciprocal) dependency between it and its antecedent; that is, when *each* adjoins to the embedded INFL and percolates its features to the embedded INFL according to (14), no feature conflict occurs on the embedded INFL, and *each* may remain adjoined to the embedded INFL and be licensed by the embedded subject *they* in terms of the adjacent government; hence, (18) may have the narrow scope reading for *each*, i.e., (19a). But *each* is free to move further as long as it does not violate any grammatical principle, according to the basic idea of Move- $\alpha$ ; thus, when it further moves up to the matrix INFL and percolates its features again to the matrix INFL according to (14), again no feature conflict occurs on the matrix INFL and *each* may remain adjoined to the matrix INFL and is licensed by the matrix subject *John and Mary* in terms of the adjacent-government; hence, (18) may have the wide scope reading for *each*, i.e., (19b).

If we assume that the English reciprocal *each other* only undergoes XP-movement because it is “phrasal” anaphor and may not move beyond the minimal clause due to the constraints of XP-movement, we cannot account for the wide scope reading for *each* like (19b). On the other hand, if we assume that the Korean reciprocal *selo* only undergoes head-movement simply because it is a “non-phrasal” anaphor and may move beyond the minimal clause, we cannot account for the SSC effect of *selo* as in (16). Sung (1990: 125) proposes Feature Percolation Principles (20) but her theory of anaphora cannot account for the fact that reciprocals across languages obey the SSC whether they are “phrasal” or “non-phrasal”, since (20) does not refer to the concept of the “agreement-sensitive element”:

## (20) Sung's (1990) Feature Percolation Principles

- A) The features of the mother node and the features of the daughter nodes will be identical;
- B) If the features of the daughter nodes conflict, the mother node will have the features of the head node;
- C) Complements of lexical heads cannot participate in feature percolation while those of functional heads, specifiers and adjuncts can.

Furthermore, since Feature Percolation Principles (20) are simply structure-dependent they cannot deal with different behaviors of anaphors due to their different lexical properties. That is, they cannot account for different behaviors of anaphors with the same type of morphological makeup within a language. For example, as we have just discussed above, in Korean both the reflexive *caki* and the reciprocal *selo* are “non-phrasal” but their behaviors are different apparently under the same structural contexts. For such cases, her Feature Percolation Principles make wrong predictions. Anyway, in order to account for the above-discussed phenomena properly, her theory of anaphora should also incorporate the lexical property of agreement-sensitivity in one way or another.

Our theory of anaphora predicts that the reciprocal phenomena shown in the English examples (17) and (18) hold true across languages. Indeed, the Korean counterparts of (17) and (18) show the same effects, as we see in (21) and (22):

- (21) \*[John-kwa Mary]<sub>i</sub>-nun Mary-ka selo<sub>i</sub>-lul pangmwunha-ki-lo  
 -and -TOP -NM e.o. -AC visit -to -COMP  
 kyelcengha-ess -ta  
 decide -PAST -DEC  
 ([\*John and Mary]<sub>i</sub> decided that Mary should visit each other<sub>i</sub>.)
- (22) [John-kwa-Mary]<sub>i</sub>-nun kutul<sub>i</sub> -i selo<sub>i</sub>-lul pangmunha-ki-lo  
 -and · -TOP they -NM e.o.-AC visit-to -COMP  
 kyelcengha-ess-ta.  
 decide-PAST-DEC  
 ([John and Mary]<sub>i</sub> decided that they<sub>i</sub> should visit each other<sub>i</sub>.)

The ungrammaticality of (21) is accounted for in the same way as that of (17), and the ambiguity of (22) is accounted for in the same way as that

of (18).

The principle (14) captures SSC effects. As for NIC effects the principle (14) is irrelevant. Indeed, the English reciprocal *each other* shows the NIC effects just as the English reflexive *himself* does, whereas the Korean reciprocal *selo* does not show the NIC effect just as the Korean reflexive *caki* does not, as we see in (23) and (24):

(23) \*They<sub>i</sub> think [<sub>CP</sub> that each other<sub>i</sub> made a mistake].

(24) kutul-nun [<sub>CP</sub> selo<sub>i</sub>-ka calmotha-ess-ta-ko]  
 they -TOP e.o.-NM make a mistake-PAST-DEC-COMP  
 sayngkakha-n-ta.  
 think-ASP -DEC  
 (They<sub>i</sub> think that each other<sub>i</sub> made a mistake.)

The ungrammaticality of (23) is accounted for as an ECP violation just as that of (2b) is. In the LF of (23) after *each* is moved, the trace of *each* is in no way head-governed; hence, the head-government requirement of the conjunctive ECP is violated.<sup>13</sup> On the other hand, the grammaticality of (24) is accounted for just as that of (4) is. In the LF of (24) after *selo* is moved, the trace of *selo* is head-governed as suggested in footnote 4 and antecedent-governed as discussed earlier; hence, it satisfies the conjunctive ECP.

Consider other cases of SSC effects like (25) and (26) and see how the principle (14) accounts for them:

(25) John<sub>i</sub> considers [<sub>IP</sub> Bill<sub>i</sub> proud of himself<sub>i,\*i</sub>].

(26) John<sub>i</sub> saw [<sub>DP</sub> Bill's<sub>i</sub> picture of himself<sub>i,\*i</sub>].

In order to account for the SSC effects in a small clause as in (25) by the principle (14), we have only to assume that a small clause is an IP with an empty INFL,<sup>14</sup> so that the anaphor *himself* may adjoin to the empty INFL to be licensed by *Bill* in terms of the adjacent government in case it has the index *j*, whereas it will induce a feature conflict in case it has the index *i*.

<sup>13</sup> In the LF of (23) the trace of *each* cannot be head-governed by *other* since *other* is not in the position of the canonical head-governor for the trace, nor head-governed by *that*, which is not a head-governor at all.

<sup>14</sup> For some independent motivation for the claim that a small clause is an IP with an empty INFL, see Hornstein and Lightfoot (1984).

In order to account for the SSC effect within a DP as in (26) by the principle (14), we have only to assume that the SPEC-Head Agreement holds within a DP so that the anaphor *himself* may adjoin to D to be licensed by *Bill* in terms of the adjacent government in case it has the index *j*, whereas it will induce a feature conflict in case it has the index *i*.

The principle (14) may also be used to account for anaphoric constraints other than the SSC. For example, we can account for the so-called “blocking effect” of the Chinese reflexive *ziji* as in (27) by the principle (14), if we assume that *ziji* is an agreement-sensitive element with respect to phi-features though not with respect to referential index features:<sup>15</sup>

- (27) John<sub>i</sub> renwei [wo<sub>i</sub> zhidao [<sub>CP</sub> Bill<sub>k</sub> xihuan ziji<sub>k,\*,\*}</sub>]].  
 (John<sub>i</sub> thinks that I<sub>i</sub> know that Bill<sub>k</sub> likes self<sub>k,\*,\*}</sub>.)

At the LF of (27), *ziji* may adjoin to the INFL of the lowest clause and percolate its phi-features to the INFL according to (14) without inducing a feature conflict and be licensed by *Bill* in terms of the adjacent government; hence, *ziji* may refer to *Bill*. But if *ziji* moves again and adjoins to the INFL of the intermediate clause and percolates its phi-features to the INFL according to (14), then a person feature conflict occurs on the node of the INFL since the INFL would receive the third person feature from *ziji* by (14) and the first person feature from *wo* ‘I’ by the SPEC-Head Agreement; hence, as soon as *ziji* adjoins to the INFL of the intermediate clause, the sentence becomes ungrammatical. Since *ziji* may not adjoin to the INFL of the matrix clause without first adjoining to the INFL of the intermediate clause due to the antecedent-government requirement, it is impossible for *ziji* to refer to the matrix subject *John* in (27). The assumption that the Chinese reflexive *ziji* is an agreement-sensitive element only with respect to phi-features is rather stipulatory. But the stipulatory nature of the assumption reflects the peculiarity of the blocking effect since the blocking effect has been found only with respect to the Chinese reflexive *ziji* so far.<sup>16</sup>

We can also use the principle (14) to account for the blocking effect of [+indicative] INFL in languages like Italian and Icelandic as shown in the Italian example (28):

<sup>15</sup> For the argument that phi-features are crucially involved in Chinese anaphora, see Huang and Tang (1989).

<sup>16</sup> Cole, Hermon & Sung (1990) and Sung (1990) assume that the blocking effect is not peculiar to the Chinese reflexive *ziji* but universal. They, however, fail to present any data in support of the assumption except the case of the Korean reflexive *casin* as in (i):

- (28) Gianni, me ha ditto [<sub>CP</sub> che tu<sub>i</sub> sei(IND) innamorato della propria<sub>i,\*</sub>  
 me told that you were[ +ind] in love with self's  
 moglie].  
 wife  
 (Gianni, told that you<sub>i</sub> were in love with self's<sub>i,\*</sub> wife.)

In (28) the reflexive *propria* may refer to the matrix subject *Gianni* if the embedded [ +indicative] INFL is replaced by a [ –indicative] INFL; hence, the [ +indicative] INFL blocks the anaphoric binding in languages like Italian and Icelandic.

We can account for this blocking effect by the principle (14) if we assume that in languages like Italian and Icelandic the [ +indicative] INFL is an agreement-sensitive element and that when an INFL is agreement-sensitive it induces the percolation of features from the element adjoined to the INFL according to (14).<sup>17</sup> In other words, in (28) if the reflexive *propria* has the index *j* of the embedded subject *tu*, then no feature conflict would occur when the index feature of *propria* percolates to the INFL, and *propria* is licensed by the embedded subject in terms of the adjacent-government. But if *propria* has the index *i* of the matrix subject, then a feature conflict would occur when the index feature of *propria* percolates to the INFL since the INFL would have received the index *j* from the embedded subject through the SPEC-Head Agreement; hence, *propria* may not refer to the matrix subject.

<sup>16</sup> continued.

- (i) \*John<sub>i</sub>-nun [<sub>CP</sub> nay-ka casin<sub>i</sub>-lul salangha-n-ta-ko] sayngkakha-n-ta.  
 -TOP I-NM self-AC love-ASP-DEC-COMP think-ASP-DEC  
 (John<sub>i</sub> thinks that I love self.)

They claim that in (i) the reflexive *casin* may refer to the matrix subject *John* if the embedded subject *nay* is replaced by a third person noun like *Bill*. Hence, they argue, (i) shows the blocking effect. But as far as we know no native speaker of Korean feels such a sharp contrast in grammaticality between (i) and the same sentence (i) with the embedded subject replaced by a third person like *Bill*. Therefore, their claim on the universality of the blocking effect is not tenable yet.

<sup>17</sup> No independent motivation for the assumption that in languages like Italian and Icelandic the [ +indicative] INFL is an agreement-sensitive element (whereas [ –indicative] INFL is not) is available now. But this assumption is worth serious consideration if the anaphor-movement hypothesis is essentially on the right track, as we discuss in the text.

In order to account for this blocking phenomenon in terms of constraints on anaphor-movement, Sung (1990) assumes that the COMP of the clause with [+indicative] feature is a barrier to the head-movement of the reflexive in languages like Italian and Icelandic. But the stipulation of such a barrier is highly ad hoc since it is only for the movement of reflexives in these specific languages. Furthermore, it makes a wrong prediction, as we see in the Italian example (29):

- (29) Gianni<sub>i</sub> sospetta [<sub>CP</sub> che tu abbia(SUB) affermato [<sub>CP</sub> che  
 suspect that you [+sub] affirm that  
 la propria<sub>i</sub> moglie e(IND) innamorato di un altro]].  
 self's wife [+ind] in love with another man  
 (Gianni<sub>i</sub> suspects that you affirmed that self's<sub>i</sub> wife is in love with  
 another man.)

In (29) the lowest clause which contains the reflexive *propria* is of [+indicative]; hence, the COMP of the clause should be a barrier to the reflexive movement according to Sung (1990). But that is not the case; in fact, *propria* can refer to the matrix subject *Gianni*. Our theory, however, makes a correct prediction for (29). According to our theory, in the LF of (29) *propria* may move to the COMP of the lowest clause directly without stopping at the INFL of the clause;<sup>18</sup> hence, the [+indicative] INFL of the lowest clause has no chance to induce the feature percolation from the reflexive *propria*. Therefore, *propria* may move up to the matrix INFL without inducing any feature conflict and can be licensed by the matrix subject *Gianni* in terms of the adjacent government.

We can also use the principle (14) to account for the blocking effect of the [+finite] INFL in languages like Russian and Hindi as shown in the Russian example (30):

- (30) Vanja<sub>i</sub> znaet [<sub>CP</sub> chto Volodja<sub>i</sub> ochen'(FIN) ljubit sebja<sub>i,\*i</sub>].  
 know that love[+fin] very much self  
 (Vanja<sub>i</sub> knows that Volodja<sub>i</sub> loves self<sub>i,\*i</sub> very much.)

<sup>18</sup> Strictly speaking, *propria* moves to the COMP of the lowest clause through the adjunction to D, the head of the subject DP that contains *propria*. The adjunction to D is irrelevant here since D does not have the feature [+indicative] that induces the feature percolation from an element adjoined to it.



In (30) the reflexive *sebja* may refer to the matrix subject *Vanja* if the embedded [+finite] INFL is replaced by a [-finite] INFL; hence, the [+finite] INFL blocks the anaphoric binding in languages like Russian and Hindi.

We can account for this blocking effect by the principle (14) if we assume that in languages like Russian and Hindi the [+finite] INFL is an agreement-sensitive element and that when an INFL is agreement-sensitive it induces the percolation of features from the element adjoined to the INFL according to (14). In other words, in (30) if the reflexive *sebja* has the index *j* of the embedded subject *Volodja*, then no feature conflict would occur when the index feature of *sebja* percolates to the INFL, and *sebja* is licensed by the embedded subject in terms of the adjacent government. But if *sebja* has the index *i* of the matrix subject, then a feature conflict would occur when the index feature of *sebja* percolates to the embedded INFL since the INFL would have received the index *j* from the embedded subject through the SPEC-Head Agreement; hence, *sebja* may not refer to the matrix subject.

In order to account for this blocking phenomenon in terms of constraints on anaphor-movement, Sung (1990) again assumes that the COMP of the clause with [+finite] feature is a barrier to the head-movement of the reflexive in languages like Russian and Hindi. But the stipulation of such a barrier is highly ad hoc since it is only for the movement of reflexives in these specific languages. On the other hand, our theory accounts for such language-particular blocking effects in terms of lexical properties like agreement-sensitivity of morphemes with respect to the principle (14) rather than in terms of syntactic properties like barriers to movements. Since it has been recognized that language-particular idiosyncracies or parameters would best be captured as lexical properties rather than syntactic properties, our theory rather than Sung's (1990) theory is on the right track.<sup>19</sup>

<sup>19</sup> One of the reviewers argues that the COMP of a [+finite] clause is a barrier for overt extractions in languages like Hindi, claiming that Sung's (1990) approach for anaphor-movement is superior to ours. Note, however, that here we are concerned with the head-movement of anaphors at LF within the theory of Rizzi (1990). Furthermore, our theory has defined the head-movement of anaphors such that an anaphor as a head may adjoin to a functional head and nullify the potential barrierhood of the functional head. In fact, it had been shown that the head-movement of anaphors at LF and the overt XP-movement are subject to quite different constraints. Comp may happen to be a barrier to both of the two types of movements; but it does not prove that the two types of movements are systematically subject to the same constraints.

### 3. Anaphors as Quantifiers

The first argument for the claim that anaphors are quantifiers is due to the fact that anaphors are a kind of non-referential expressions like quantifiers. In other words, anaphors do not have a referring function and are only bound by their antecedents in a syntactic domain (cf. Katada, 1991).

The second argument is due to the fact that an anaphor behaves like a quantifier with respect to pronominal binding in languages like Korean and Chinese. Consider the following Korean examples:

- (31) John<sub>i</sub>-nun ku<sub>i</sub>-uy emeni -lul miweha-n-ta.  
 -TOP he -'s mother-AC hate-ASP-DEC  
 (John<sub>i</sub> hates his<sub>i</sub> mother.)
- (32) <sup>??</sup>nwukwunka<sub>i</sub>-ka ku<sub>i</sub>-uy emeni -lul miweha-n-ta.  
 someone-NM he-'s mother-AC hate-ASP-DEC  
 (Someone<sub>i</sub> hates his<sub>i</sub> mother.)
- (33) ?\*nwu<sub>i</sub> -ka ku<sub>i</sub>-uy emeni -lul miweha-ni?  
 who -NM he -'s mother - AC hate - QUES  
 (Who<sub>i</sub> hates his<sub>i</sub> mother?)
- (34) \*John<sub>i</sub> - nun [<sub>CF</sub> caki<sub>i</sub> -ka ku<sub>i</sub>-uy emeni -lul miweha - n - ta - ko]  
 -TOP self - NM he -'s mother - AC hate - ASP - DEC - COMP  
 sayngkakha - n - ta.  
 think - ASP - DEC  
 (John<sub>i</sub> thinks that self<sub>i</sub> hates his<sub>i</sub> mother.)

(31) shows that in Korean a pronoun can be bound by a referential expression like *John*. But (32) and (33) show that a pronoun tends to resist being bound by a quantifier like *nwukwunka* 'someone' or *nwukwu* 'who' within the minimal clause, and (34) shows that a pronoun also resists being bound by a reflexive in the minimal clause.<sup>20</sup> This fact can be accounted for naturally under the assumption that anaphors are quantifiers.

<sup>20</sup> Aoun & Li (1988) state that the same phenomena hold in Chinese and propose the following principle (i) to account for the phenomena:

(i) A pronoun must be A' - free in the minimal CFC containing a c-commanding subject and the pronoun.

The third and most crucial argument is due to the fact that both anaphor-movement and QR obey the same constraints. For example, QR shows SSC effects just as anaphor-movement does. Consider the following English examples:

- (35) Everyone believes [someone to be proud of John]. (ambiguous)  
 (36) Everyone believes [John to be proud of someone]. (unambiguous)  
 (37) Everyone believes [that John is proud of someone]. (unambiguous)  
 (38) Everyone believes [John's story of someone]. (unambiguous)

In (35) either the matrix subject *everyone* or the embedded subject *someone* may take the wide scope whereas in (36)–(38) only the matrix subject *everyone* may take the wide scope. This fact can be interpreted in terms of QR as follows: the embedded quantifier *someone* may move up to the matrix IP in (35) but not in (36)–(38). A most plausible way to account for the constraint on the QR of the embedded quantifier *someone* in (36)–(38) would be to assume that QR obeys a kind of SSC; that is, in (36)–(38) *someone* may not move to the matrix IP due to the intervening embedded subject *John*.

For another similar case, consider (39) and (40):

- (39) What<sub>i</sub> did [pictures of everyone] show t<sub>i</sub>? (ambiguous)  
 (40) What<sub>i</sub> did [John's pictures of everyone] show t<sub>i</sub>? (unambiguous)

In (39) either *what* or *everyone* may take the wide scope, whereas in (40) only *what* may take the wide scope. The fact can be interpreted in terms of Aoun & Li's (to appear) theory of quantification as follows: *everyone* may move to IP and c-command the trace of *what* in (39), but not in (40).<sup>21</sup> A most plausible way to account for the constraint on the QR of *everyone* in (40) would be to assume that QR obeys a kind of SSC; that is, in (40) *everyone* may not move to IP due to the intervening subject *John* of the DP subject.

The same holds true in Korean. Consider (41) and (42):

- (41) [<sub>CP</sub>[<sub>IP</sub> motun haksaying-i t<sub>i</sub> conkyengha-nun] O<sub>i</sub>] etten kyoswunim<sub>i</sub>

<sup>21</sup> Aoun & Li's (to appear) Scope Principle is as follows:

(i) A quantifier  $\alpha$  has scope over a quantifier  $\beta$  in case  $\alpha$  c-commands  $\beta$  or a member of the chain containing  $\beta$ .

- every student-NM    respect-ASP/COMP    certain professor  
 (A professor who every student respects.) (ambiguous)
- (42) [<sub>CP</sub>[<sub>IP</sub> t<sub>i</sub> motun haksayng-lul    salangha-nun]<sub>O<sub>i</sub></sub>] etten kyoswunim,  
           every student-AC    love-ASP/COMP    certain professor  
 (A professor who loves every student.) (unambiguous)

In (41) either *motun haksayng* ‘every student’ or *etten kyoswunim* ‘a professor’ may take the wide scope, whereas in (42) only *etten kyoswunim* may take the wide scope. This fact can be interpreted in terms of QR as follows: the embedded quantifier *motun haksayng* ‘every student’ may move out of the relative clause structure so that it can c-command the quantifier *etten kyoswunim* in (41) but not in (42). A most plausible way to account for the constraint on the QR of *motun haksayng* in (42) would be to assume that QR obeys a kind of SSC; that is, in (42) *motun haksayng* ‘every student’ may not move out of the relative clause structure due to the intervening subject trace.<sup>22</sup>

QR also shows NIC effects just as anaphor-movement does, as we see in the English example (43) and the Korean example (44):

- (43) Someone believes [<sub>CP</sub> that everyone is foolish]. (unambiguous)
- (44) motun salam-i [<sub>CP</sub> nwukwunka-ka papo-i-la-ko]  
       every man-NM    someone -NM foolish -be-ASP-COMP  
       mit    -nun -ta. (ambiguous)  
       believe-ASP-DEC  
       (Everyone believes that someone is foolish.)

In (43) the embedded quantifier *everyone* may not take the wide scope, which means that *everyone* may not move to the matrix IP. This phenomenon is due to the ECP or the NIC effect of anaphor-movement; namely, the

<sup>22</sup> In order to account for how the embedded quantifier phrase *motun haksayng* ‘every student’ moves out of the relative clause structure in the LF of (41), we have to assume that the embedded quantifier phrase first adjoins to the IP of the relative clause and then adjoins to the CP of the relative clause, since the relative clause itself is not an argument, to avoid the possible XP barriers with respect to antecedent-government for the trace of the embedded quantifier in (41). As for the head-government of the trace of the embedded quantifier, note that the trace in the subject position in Korean is always head-governed as suggested in footnote 4.

trace in the subject position of a tensed clause in English cannot be head-governed unless an AGR is licensed in the COMP position as the head-governor of the subject trace.

Therefore, in (43) the embedded quantifier may not move at all and must remain in situ, which is possible according to Aoun and Li (to appear) who assume that QR is to satisfy the  $\Theta$ -Criterion and that a quantifier in a  $\Theta$ -position need not undergo QR. In the case of anaphor-movement, which is to satisfy the requirement of the adjacent-government of the anaphor by its antecedent, however, the anaphor may not remain in situ; therefore, English examples like (2b) which contain an anaphor in the subject position are ungrammatical.

In (44) either the matrix subject *motun salam* 'every man' or the embedded subject *nwukwunka* 'someone' may take the wide scope, which means that the embedded quantifier *nwukwunka* 'someone' may move to the matrix IP. This is possible because in Korean the trace in the subject position is always licensed, as suggested in footnote 4. Therefore, there is no NIC effect for anaphor-movement in Korean, as discussed earlier with respect to the grammaticality of (4). Thus, both the ambiguity of (44) and the grammaticality of (4) can be accounted for naturally if we assume that in principle both QR and anaphor-movement are subject to NIC effects.<sup>23</sup>

Given the above arguments for the similarity between anaphors and quantifiers (or between anaphor-movement and QR), we assume that anaphors as XP's may adjoin to non-argument XP's like VP and IP just as quantifier phrases do. And for the fact that both anaphors and quantifiers show SSC effects, we propose to extend Rizzi's (1990) notion of the "typical potential governor" for the minimality barriers to the effect that for anaphor-movement as well as QR not only "A'-specifiers" (or A'-elements) but also "A-specifiers" function as the "typical potential governors" for the minimality barriers for the A'-chains headed by anaphors and quantifiers.

<sup>23</sup> There might be found some cases where QR does not seem to obey the SSC or the NIC. In such cases, I suspect, some other factors are involved in the QR. In fact, QR and anaphor-movement are not exactly the same; for one thing, QR is to satisfy the  $\Theta$ -Criterion and the Scope Principle whereas anaphor-movement is to satisfy the adjacent-government requirement between the anaphor and its antecedent.

Since it is motivated that anaphors as XP's may undergo QR and adjoin to VP, we can account for the cases of the non-subject-orientation, as we see in the English example (45) and the Korean example (46):

(45) John<sub>i</sub> told Bill<sub>j</sub> about himself<sub>i,j</sub>.

(46) John<sub>i</sub>-i Bill<sub>j</sub>-lul caki<sub>i,j</sub>-uy pang-ey katwu-ess -ta.  
 -NM -AC self -'s room-in keep -PAST-DEC  
 (John<sub>i</sub> kept Bill<sub>j</sub> in self's<sub>i,j</sub> room.)

In other words, in (45) and (46) the anaphor as an XP may move and adjoin to VP and be licensed by the object *Bill* in terms of the adjacent government.<sup>24</sup> If the anaphor moves further and adjoins to IP, then it will be licensed by the subject *John* in terms of the adjacent government.<sup>25</sup> Thus, when an anaphor is coreferential with a subject, there would be two ways to license the coreferentiality: either by XP-movement of the anaphor or by head-movement of the anaphor. This seeming redundancy can be justified to some extent by the fact that when both the subject and the object can be the antecedent of an anaphor within a clause as in (45) and (46), the subject is always preferred over the object as the antecedent of the anaphor across languages.

For the cases of subject-orientation like (8) and (9) as discussed earlier, the XP-movement of anaphors up into the matrix clause is blocked apparently by the barrier of the subject phrase in (8) and by the minimality barrier of the A-specifier *Tom* in (9):

(8) John<sub>i</sub> told Bill<sub>j</sub> [<sub>CP</sub> that a picture of himself<sub>i,\*j</sub> was on sale].

(9) John<sub>i</sub> -i Bill<sub>j</sub>-lul [<sub>CP</sub> Tom<sub>k</sub>-i caki<sub>i,k,\*j</sub> -lul swumki-ess-ten]  
 -NM -AC -NM self -AC hide-PAST-COMP  
 pang-ey katwu-ess-ta.  
 room-in keep-PAST-DEC

<sup>24</sup> When an anaphor as an XP adjoins to VP, the anaphor and the object under the VP m-command each other if we assume for m-command that  $\alpha$  dominates  $\beta$  even if only one segment of  $\alpha$  dominates  $\beta$ ; hence, the anaphor will be licensed by the object in terms of the adjacent government.

<sup>25</sup> When an anaphor adjoins to IP, the anaphor and the subject under the IP m-command each other under the assumption as in footnote 24; hence, the anaphor will be licensed by the subject in terms of the adjacent government.

(John<sub>i</sub> kept Bill<sub>j</sub> in the room in which Tom<sub>k</sub> hid self<sub>i,k,\*j</sub>.)

In other words, in cases like (8) and (9) the anaphor may move out of the embedded clause only through head-movement; hence, the subject-orientation is maintained.

Our theory, however, predicts that if the XP-movement of the anaphor is permitted into the matrix clause out of the embedded clause then the subject-orientation may not be maintained in the matrix clause. Indeed, this prediction is borne out, as we see in the Korean example (47):

(47) John<sub>i</sub>-nun Bill<sub>j</sub>-lul [<sub>CP</sub> caki<sub>i</sub>-ka ka-ko sipheha-nun] tayhak-ey  
 -NM -AC self -NM go-to want -COMP college-to  
 ponay-ess-ta.

send-PAST-DEC

(John<sub>i</sub> sent Bill<sub>j</sub> to the college where self<sub>i,i</sub> wanted to go.)

As suggested in footnote 22, the subject of a relative clause may move out of the relative clause at LF in Korean; hence, in (47) *caki* as an XP may move out of the relative clause through QR or XP-movement. Thus, in (47) if *caki* as an XP adjoins to the matrix VP then it will be licensed by the matrix object *Bill* in terms of the adjacent government, whereas if *caki* moves further and adjoins to the matrix IP, then it will be licensed by the matrix subject *John*.

To conclude, when an anaphor as an XP undergoes QR or XP-movement, it cannot move over an A-specifier or a subject (SSC effect) across languages due to the A-specifier minimality barrier posited for the A'chain of QR. But "non-phrasal" reflexives in languages like Korean may avoid the SSC effect through another route: clitic-climbing or head-movement.

#### 4. Implications and Residual Problems

In this paper we have shown that if the anaphor-movement hypothesis proposed by Chomsky (1986b) is essentially correct, an anaphor must be subject to both head-movement or clitic-climbing and XP-movement or QR. Why this is the case is a very interesting and significant question we have to pursue as our next research topic. But for now we would like to point out that this conclusion is exactly what our theory of grammar leads

to and that this conclusion may indeed reflect the true peculiar character of the anaphor, which has puzzled so many linguists.

The “amphibious” character of the anaphor proposed in this paper entails some redundancy in our theory of grammar: the redundancy in licensing the coreference with the subject and the redundancy in capturing the SSC effect. The former redundancy is due to the fact that an anaphor’s coreference with the subject, in many cases, may be licensed by the anaphor’s adjunction to INFL through head-movement as well as by the anaphor’s adjunction to IP through XP-movement. The latter redundancy is also due to the fact that SSC effects may be captured by the feature percolation through head-movement as well as by the A-specifier minimality barriers through XP-movement. Note, however, that some redundancy is unavoidable in our highly modular theory of grammar in any case. For example, the passive movement is licensed by the Case Filter, the Chain Condition, the Binding Theory (A), the ECP, the Projection Principle, the Predication Theory, etc. Therefore, redundancy in our theory is not necessarily undesirable; that is, redundancy may be legitimate if the theory entailing the redundancy is well-motivated.

We feel our theory of anaphora is quite motivated in that it can accommodate most of observed variations of anaphora. For example, Korean has the so-called “phrasal” anaphors, *na-casin* ‘myself,’ *ne-casin* ‘yourself,’ *ku-casin* ‘himself,’ etc, which we have not discussed yet. And these “phrasal” reflexives are locally bound and non-subject-oriented as we see in (48) and (49):

- (48) John<sub>i</sub>-nun [<sub>CP</sub> Bill<sub>i</sub>-i ku-casin<sub>i,\*i</sub> -lul miweha-n-ta-ko]  
 -TOP -NM himself -AC hate-ASP-DEC-COMP  
 sayngkakha-n-ta.  
 think-ASP-DEC

(John<sub>i</sub> thinks that Bill<sub>i</sub> hates himself<sub>i,\*i</sub>.)

- (49) John<sub>i</sub>-i Bill<sub>i</sub> -lul ku-casin<sub>i,\*i</sub>-uy pang-ey katwu-ess-ta.  
 -NM -AC himself -’s room-in keep-PAST-DEC  
 (John<sub>i</sub> kept Bill<sub>i</sub> in himself’s<sub>i,\*i</sub> room.)

According to our theory, in (48) *ku-casin* ‘himself’ cannot refer to the matrix subject *John* since *ku-casin* as an XP may not move to adjoin to the



matrix IP due to the intervening A-specifier minimality barrier, nor may it as a head move to adjoin to the matrix INFL due to the feature conflict on the embedded INFL since *ku-casin* is an agreement-sensitive element in that it contains some of the phi-features such as person, number, gender, etc. Therefore, it has to be locally bound. In (49), *ku-casin* may be licensed by the object *Bill* under the adjacent government when the anaphor as an XP moves to adjoin to VP, though not when the anaphor as a head moves to adjoin to INFL. Therefore, *ku-casin* is not subject-oriented.

But problems remain. Another “phrasal” reflexive in Korean, *caki-casin* is always subject-oriented even in the minimal clause, as we see in (50):

- (50) John<sub>i</sub>-i Bill<sub>i</sub>-lul caki-casin<sub>i,\*</sub>-uy pang-ey katwu -ess -ta.  
 -NM -AC himself-'s room-in keep -PAST-DEC  
 (John<sub>i</sub> kept Bill<sub>i</sub> in himself's<sub>i,\*</sub> room.)

For this problem I can only point out that *casi-casin* is an emphatic form of either *caki* or *casin* since in (50) *caki* or *casin* alone could be used in place of *caki-casin*; hence, the behavior of *caki-casin* can be erratic, i.e., subject-oriented even in the minimal clause. Anyway, we have to assume for the time being that the erratic behavior of *caki-casin* is a lexical property rather than a systematic syntactic one.<sup>26</sup>

Another such case in Chinese “phrasal” reflexive *ta ziji* ‘himself,’ which is also subject-oriented even in the minimal clause, as we see in (51):

- (51) John<sub>i</sub> gaosu Bill<sub>i</sub> ta ziji<sub>i,\*</sub> de shenshi.  
 tell himself's life-story  
 (John<sub>i</sub> told Bill<sub>i</sub> about himself's<sub>i,\*</sub> life.)

<sup>26</sup> Katada (1991) argues that cases like (50) in Japanese can be accounted for under the assumption that *zibun-zisin*, the Japanese counterpart of the Korean *caki-casin*, is locally subject-oriented like the Korean *caki-casin* since *zibun* of *zibun-zisin* can only adjoin to the nearest VP due to the ECP and be bound by the local subject but not the local object. Thus, her account for the local subject-orientation of *zibun-zisin* involves various assumptions which our theory does not incorporate. Furthermore, her theory has to assume that local binding property of *kare-zisin*, the Japanese counterpart of the Korean *ku-casin*, is due to the binding domain or governing category à la Chomsky (1981). Note that our theory does not stipulate any binding domain for anaphora.

For this problem, I can only point out that it is due to the problem of the “non-phrasal” reflexive *ziji* ‘self’ since *ziji* is also subject-oriented even in the minimal clause. Thus, Yang (1989) proposes that *ziji* has the lexical feature [+clitic], which means that the element with the feature can only function as a head like a clitic, and that any “phrasal” anaphor containing a [+clitic] element also can only function as a head. Therefore, both *ziji* and *ta ziji* can never adjoin to VP as an XP; hence, they are always subject-oriented. But again this is not a systematic syntactic explanation but a lexical stipulation.

Another case where a systematic syntactic explanation is difficult is the difference between the two Korean “non-phrasal” reflexives, *caki* and *casin*. Cole, Hermon, & Sung (1990) claim that *casin* is the only Korean “non-phrasal” reflexive whereas *caki* is a pronoun. We have shown in this paper that *caki* is also a “non-phrasal” reflexive. Then, what about *casin*? I can only say that it is another Korean “non-phrasal” reflexive whose exact characterization is very difficult. Consider (52):

- (52) John<sub>i</sub>-nun [<sub>CP</sub> nay<sub>i</sub>-ka casin<sub>ṛ<sub>i</sub>, ṛ<sub>i</sub></sub>-lul salanghan-ta-ko]  
 -TOP I-NM self-AC love-ASP-DEC-COMP  
 sayngkakha-n-ta.  
 think-ASP-DEC  
 (John<sub>i</sub> thinks that I<sub>i</sub> love self<sub>ṛ<sub>i</sub>, ṛ<sub>i</sub></sub>.)

Cole, Hermon, & Sung (1990) claim that in (52) *casin* can never refer to *John*. Most of the Korean native speakers including myself claim that in (52) *casin* can definitely refer to *John*. But some Korean speakers find (52) an improper sentence and say that in (52) *casin* should be replaced either by *na-casin* ‘myself’, which can only refer to the embedded subject *na* ‘I’, or by *caki*, which can only refer to the matrix subject *John*. Still some other Korean speakers, though very few in number, claim that in (52) *casin* may refer to either *John* or *na* ‘I’.

Given this situation, it is very difficult to say about (52) anything significant and systematic except some statistics for now. This is why Korean grammarians including myself usually deal with *caki* rather than *casin* as the Korean “non-phrasal” reflexive. For a theoretically significant and systematic characterization of *casin*, I think, we have to wait till our theory

of anaphora or our grammatical theory becomes more refined and sophisticated than now and we reach a deeper level of understanding on *caki* first.

To conclude, even if our theory of anaphora accounts for most of major phenomena of anaphora across languages, there would remain many problems and loose ends. But some of the problems would be due to lexical idiosyncracies or other non-syntactic factors and not susceptible to systematic syntactic explanation, as we have discussed above. So, if we set aside such problems due to non-syntactic factors, it is not impossible to hope that the remaining problems can be resolved in one way or another within the general framework of our theory of anaphora.

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## ABSTRACT

### The Dual Property of Anaphors

Dong-Whee Yang

In this paper we argue that every anaphor has the dual property of a clitic and a quantifier and may in principle be subject to both clitic-climbing as a head at S-Structure or LF and quantifier-raising (QR) as an XP at LF.

Clitic-climbing may involve feature-percolation as Kayne (1987) shows. Thus, if we assume that anaphors as clitics only adjoin to functional catego-

ries since anaphors belong to the functional category D and that agreement-sensitive anaphors like English *himself*, which contain the full set of phi-features, induce feature-percolation when they undergo clitic-climbing, whereas agreement-insensitive anaphors like Korean *caki*, which do not contain the full set of phi-features, do not, then we can account for the language universals on anaphora (1) and (2):

- (1) An anaphor is subject-oriented when its antecedent occurs outside of the minimal clause containing the anaphor.
- (2) An agreement-sensitive anaphor (like English *himself*) obeys the SSC whereas an agreement-insensitive anaphor (like Korean *caki*) does not.

We can also account for the language universal (3) by our hypothesis of anaphoric clitic-climbing:

- (3) A reciprocal obeys the SSC.

(3) is due to the fact that a reciprocal is semantically agreement-sensitive whether it is morphologically agreement-sensitive or not, in that it requires its antecedent to be plural and in a distributive (or reciprocal) dependency relation. We also propose to account for variations in the SSC across languages in terms of possible parameterization of the agreement-sensitive element and/or its feature-percolating capacity.

By motivating the hypothesis that every anaphor is a quantifier and undergoes QR as an XP, we can account for the language universals on anaphora (4) and (5):

(4) An anaphor may disobey the NIC only when the language allows movement from the subject position of a tensed clause.

(5) An anaphor is non-subject-oriented just in case it can be adjoined to non-argument XP's under the assumption that it can undergo QR as a quantifier.

For example, the English anaphor *himself* may not disobey the NIC whereas the Korean anaphor *caki* may, since English does not allow QR (or any movement) from the subject position of a tensed clause due to the ECP whereas Korean does.

Department of English  
Seoul National University  
San 56-1 Shillim-dong, Kwanak-ku  
Seoul 151-742  
Korea