The Structure of Selo and Its Implication for Binding Theory*

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I suggest that selo in Korean has a complex structure [pro selo] and that [pro selo] is a pronominal in terms of binding theory. This can give a natural account for long distance dependency, split antecedence and the lack of requirement for the c-commanding antecedent of selo, and its asymmetry of readings in local and nonlocal domains in terms of binding theory as reported here.

Key words: binding, reciprocal, pro, pronominal, local, nonlocal

1. Introduction

Hoji (1997ab, 2003) originally claims that otagai in Japanese is not an anaphor in view of the fact that it allows long distance binding, split antecedence and that it does not require a c-commanding antecedent. He thus suggests that otagai is part of a structure including a pronominal element pro, from which these properties of otagai follow. When it comes to Korean, which is typologically akin to Japanese, the Korean counterpart of otagai, selo ‘each other’ has been analyzed as a local anaphor (see Yang 1984 among others) and this view has been taken more or less as a standard one. Now given the current status of research on a local anaphor, the following claims should entail if selo is a local anaphor (see Hoji 1997a, b):

(1) a. Selo is locally bound by the antecedent.
    b. Selo cannot take split antecedent.

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As one can see, the examples below in (2-3) apparently indicate that selo is locally bound and requires a c-commanding antecedent, hence apparently confirming the standard view.

(2) [John-kwa Mary]-ka selo- lul coahanta.
   [John and Mary]-NOM each other-ACC like
   ‘John and Mary, like each other.’

(3) *Selo-ka [John-kwa Mary]-lul coahanta.
   each other-NOM [John and Mary]-ACC like
   *‘Each other likes John and Mary.’

As one further proceeds, the plot thickens, however. As pointed out by Chung and Park (1998), the standard view on selo is difficult to maintain, given that it can enter long distance dependency with its antecedent, take split antecedent and does not need to be c-commanded by the antecedent. In fact, the example below in (4) shows that selo can enter long distance dependence relation with the antecedent John-kwa Bill, ‘John and Bill’ thus without regard to its local domain of governing category. 1)

(4) [John-kwa Bill]-i [Mary-ka selo-lul coahanta-ko]
   [John and Bill]-NOM Mary-NOM each other-ACC like-COMP
   sayngkakhanta.
   think
   ‘John thinks Mary likes Bill and Bill thinks Mary likes John.’
   ‘Johni thinks Mary likes himi and Billj thinks Mary likes himj.’
   ‘[John and Bill] think that Mary likes them.’

In addition, the example below in (5) indicates that selo can have a split antecedent, which is characteristic of a pronominal but not an anaphor, as

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1) I will assume the following definition of governing category throughout, otherwise specified. \( \alpha \) is the governing category for \( \beta \) if and only if \( \alpha \) is the minimal category containing \( \beta \) and a governor of \( \beta \), where \( \alpha = \text{NP or S} \)

(A) An anaphor is bound in its governing category.
(B) A pronominal is free in its governing category.
(C) An R-expression is free. Chomsky (1981, p. 188)
shown below in English in (6).\textsuperscript{2,3)}

(5) John\textsubscript{i} Mary\textsubscript{j} [cp\textsubscript{i}aphulo selo\textsubscript{ij} ka te
John-NOM Mary-DAT future each other-NOM more
yeolsimhi il-ul hayyahanta-ko] malhayssta.
hard work-ACC should do-COMP said
‘John\textsubscript{i} told Mary\textsubscript{j} that they\textsubscript{ij} should work harder in the future.’

(6) a. John\textsubscript{i} told Bill\textsubscript{j} that they\textsubscript{ij} should leave.
   b. *John\textsubscript{i} told Bill\textsubscript{j} that each other\textsubscript{ij} should work harder.

Furthermore, the example in (7) explicitly shows that selo does not need a c-commanding antecedent, which is again characteristic property of a pronominal.

(7) Selol-ka cohta-myen, [John-kwa Mary\textsubscript{j}-nun
each other-NOM ok-if [John and Mary\textsubscript{j}]-TOP
hamkkey wato cohta.
together may come
‘If it is ok for them\textsubscript{i}, [John and Mary\textsubscript{j} may come together.’

Given the examples above in (4-5) and (7) that clearly show that the characteristic properties of a (local) anaphor are apparently violated, one is persuaded to believe that selo is not an anaphor, let alone a local anaphor. Throughout I will gloss selo as each other only for convenience sake.

2. The Structure and Interpretation of Selo

With our preliminary discussion of the status of selo in mind, now let us turn to its syntactic structure and interpretation. First when it comes to the structure of selo, I will essentially adopt the structure in (8) as origi-
inally proposed by Hoji (1997a, b, 2003) for Japanese counterpart *otagai* such that long distance binding in (4), split antecedence in (5) and the lack of requirement in (7) for the c-commanding antecedent of *selo* are essentially attributed to the existence of *pro*.

(8) \[ NP \text{pro} [N \text{selo}] \]

Next, let us turn to the interpretation of *selo*. It will be shown that the structural representation of *selo* in (8) will be further justified in its possible interpretations in binding theoretic local and nonlocal domains. Before I further proceed, I will briefly discuss Hoji (1997b) regarding the interpretation of the reciprocal *otagai* in Japanese. Hoji (1997b, p. 34) reports that *otagai* in Japanese in principle can admit cross reading, parallel reading and coreference reading in a configuration as below.

(9) [John and Bill] V [pro₁ *otagai*]

To make explicit what he means by these readings, I will repeat the example above in (4) below in (10).

(10) [John-kwa Bill]-i [CP Mary-ka selo₁-lul coahanta-ko] [John and Bill]-NOM Mary-NOM each other-ACC like-COMP sayngkakhanta.

think
‘John thinks Mary likes Bill, and Bill thinks Mary likes John.’
‘John₁ thinks Mary likes him₁ and Bill₁ thinks Mary likes him₁.’
‘[John and Bill₁] think that Mary likes them₁.’

The first reading above in (10) is cross reading, whereas the second and the last readings are parallel reading and coreference reading, respectively. Hoji (1997a, b) further claims that cross reading and parallel reading are an instance of bound variable reading whereas group reading is an instance of coreference. 4) It should be noted that coreference is not sensitive

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An anaphoric relation between two nominal expressions is either (i) coreference or (ii) bound variable anaphora. (i) When each of the two nominal expressions is used to refer
to structural relation as formulated in terms of c-command in contrast to bound variable reading which is subject to c-command as shown below in (11-12).5)

(11)  a. Hisi mother likes Johni.
    b. Johni likes hisi mother.

    \forall x, x a person, x's mother likes x.
    b. Everyonei likes hisi mother.
    \forall x, x a person, x likes x's mother.

Hence although his can take John as its antecedent via coreference in (11a), the same expression in (12a) cannot be construed as a bound variable with everyone as its antecedent.

Now back to the readings of selo, I crucially observe that it admits only cross reading when it is locally bound by the antecedent as in (2), in terms of binding theory, whereas it admits cross reading, parallel reading and coreference reading when it is long distance bound as in ((4)=(10)).6)

The present observation, if correct, suggests that selo somehow behaves differently from the Japanese counterpart otagai regarding possible interpretations in that the former admits only a cross reading, when locally bound in contrast to Japanese counterpart.7) The present observation also diverges from Chung and Park (1998), who claims that selo can in principle have cross and parallel reading when it is long distance bound as well as

5) I will use the definition of c-command in terms of the first branching node by Reinhart (1976, p. 32) as given below, although nothing in the present discussion of the bound variable reading crucially hinges on the particular definition of c-command:

Node A c(constituent)-commands node B if neither A nor B dominates the other and the first branching node which dominates A dominates B.

6) The intuition regarding (10), however, is not that straightforward as noted by a reviewer who claims that it is hard to get a coreference reading.

7) According to Hoji (1997b, p. 34), otagai can have a parallel reading when locally bound as below.

[John to Bill]-ga  hissinnatte [pro otagai]-o urikonde ita (koto)
John and Bill-NOM very:hard -ACC was promoting fact
locally bound, but with no coreference reading. With respect to their intu­
ition regarding coreference reading of *sela*, the example above in ((4)=(10)),
however, clearly shows that *sela* can also have the coreference reading
when it is not locally bound. This can be confirmed by the fact that one
can add *kongtong* ‘joint’ and can still have a coherent reading of *sela*
when it is not locally bound, as shown below in (13-14).

(13) a. [John-kwa Bill]-i [sela-uy kongtong]
    John and Bill-NOM each other-POSS joint
    yeonkwu nonmwun]-lul palpyohayssta.
    research paper-ACC presented
    ‘John and Bill presented their paper.’

b. [Twu nala]-ka [sela-uy kongtong kyengpi
    two country each other-POSS joint surveillance
    kwuyeok]-ulopwuthe cheolsuwahyssta.
    area-from withdrew
    ‘The two countries withdrew from their joint surveillance area.’

(14) John-i-i Bill-ekey [LI-ka
    John-NOM Bill-DAT LI-NOM each other-POSS joint
    yeonkwu nonmwun-ul kecehaciankilohayssta-ko] malhayssta.
    research paper-ACC rejected-COMP said
    ‘John told Bill that LI rejected their joint paper.’

Below, I will argue that the asymmetric readings manifest in local and
nonlocal binding of *sela* follow from binding theory, given the proposal for
*sela* having a complex structure of [pro *sela*], which I will crucially assume
is a pronominal in terms of binding theory. It will be shown that the
asymmetric readings of *sela* in these two domains will be neatly accounted
for in strictly binding theoretic terms with the complex structural represen­
tation of *sela*, together with the corresponding more fine-grained indexing
notation of the binding theory, hence avoiding somewhat arbitrary interpre­
tive procedure of the reciprocal as in Hoji (1997a, b, 2003). It should be noted
that he fails to specify what type of expressions [pro *otagai*] belongs to in
terms of binding theory, hence it is not entirely clear how cross reading, parallel
reading and coreference reading of [pro *otagai*] obtain in his system.8)

8) The same point also applies to Chung and Park (1998), which also fails to specify the status
Now let us consider cross reading of locally bound selo as in (2) first, which is repeated below as (15).

(15) [John-kwa Mary]-ka selo-lul coahanta.
     [John and Mary]-NOM each other-ACC like
     'John and Mary like each other.'

I will assume the indexing mechanism of the reciprocal by Heim, Lasnik, and May (1991). According to them, the structure of reciprocal each other in English as in (16) is rather complex, consisting of the distributor each and the reciprocator other with the former undergoing LF movement, based on the proposal by Bennett (1974).

(16) [John and Mary]i love each other.

They thus suggest that syntactically the example in (16) has the following structural representation and indexing at LF in (17), which accounts for the bound variable reading of so called cross reading of ‘each loving the other,’ which is in fact the only reading available in (16):

(17) [[John and Mary]i eachzjz love [ez other]3

Intuitively, the structural representation in (17) is intended to express any two distinct individuals of John and Mary are such that the first loves the second. Abstracting away from the detailed discussion of the semantics of the reciprocal by Heim, Lasnik and May (1991). I will suggest that the example above in (15) will also be analyzed in the same way by giving the following structural representation in (18) for the cross reading with D roughly corresponding to distributor each in English, and selo [e

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9) The interpretation of the reciprocal each other by Bennett (1974) as cited in Heim, Lasnik and May (1991, p. 68) is as below.

each other\(x:=\lambda x \forall x_i (x_i \cdot \top x) \lor x_j (x_j \cdot \top x \land x_i \neq x_j)\)

Each other is an operator introducing a universal quantification over two variables \(x_i\) and \(x_j\). It further specifies that each of the two variables is restricted to atomic parts of the value of \(x\), requiring that only assignments giving different values for \(x_i\) and \(x_j\) are allowed.
other], given the present assumption that \([pro \ selo]\) is a pronominal:\(^{10}\)\(^{11}\)

\[
(18) \ [s [NP_i \ D_k]_k \ V \ [pro_k [selo]]_k]
\]

As one can notice, the only difference between the English representation in (17) and the Korean one in (18) is that the latter has \(pro\) instead of the trace of each in the former. The representation in (18) essentially accounts for the cross reading of (16).\(^{12}\) Throughout I will use head initial notation for LF representations for convenience sake.

Now the question is why then coreference and parallel reading of selo do not obtain in (2). Given the present assumption that selo has the complex structure of \([pro \ selo]\) and that \([pro \ selo]\) is a pronominal, the NP \([pro \ selo]\) should not be coindexed with the antecedent in its local domain of S, otherwise Binding Condition B will be violated. Thus the coreference reading in (19a) and parallel reading in (19b), both of which require coindexing of the pronominal \([pro \ selo]\) with the relevant antecedent in a local domain of S as illustrated below are out of the question.

\[
(19) \ a. \ [s \ NP_i \ V \ [pro_i [selo]]_i]
\]

\[
(19) \ b. \ [s [NP_i \ D_k]_k \ V \ [pro_k [selo]]_k]
\]

Next, let us turn to the cross, parallel and coreference readings manifest in nonlocal domain as in (10) repeated below as (20). Given that \([pro \ selo]\) is a pronominal, the example in (20) can have the following representations in (21):

\[
10) \ One \ may \ suggest \ that \ the \ first \ occurrence \ of \ selo \ in \ the \ example \ below \ is \ the \ overt \ realization \ of \ the \ distributor \ corresponding \ to \ each \ in \ English.
\]

\[
\text{Kutulï selo-ka selo-lul coahanta}
\]

\[
\text{[they each]-NOM the other-ACC like}
\]

\[
\text{‘They each like the other.’}
\]

\[
11) \ A \ reviewer \ wonders \ whether \ the \ indexing \ in \ (18) \ is \ an \ instance \ of \ \(i\)-within-\(i\) \ violation. \ For \ this \ matter \ one \ may \ remove \ the \ out \ most \ index \ \(k\), \ on \ which \ nothing \ crucially \ depends \ in \ the \ present \ analysis.
\]

\[
12) \ A \ reviewer \ notes \ that \ given \ the \ indexing \ of \ [e \ other] \ and \ [pro \ selo] \ in \ (17) \ and \ (18) \ both \ should \ be \ viewed \ as \ a \ pronominal, \ which \ however \ is \ not \ necessarily \ the \ case. \ It \ should \ be \ noted \ that \ nothing \ prohibits \ the \ indexing \ of \ [e \ other] \ in \ (17) \ from \ being \ an \ instance \ of \ an \ \(R\)-expression \ in \ terms \ of \ binding \ theory.
\]
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(20) [John-kwa Bill]-i [cp Mary-ka selo-lul coahanta-ko]
[John and Bill]-NOM Mary-NOM each other-ACC like-COMP
sayngkakhanta.
think
‘John thinks Mary likes Bill, and Bill thinks Mary likes John.’
‘Johni thinks Mary likes himi and Billj thinks Mary likes himj.’
[John and Bill], think that Mary likes themi.

(21) a. [NPi Dk]k V [cp NP V [prok [selo]]]
b. NPi V [cp NP V [proi [selo]]]
c. [NPi Dk]k V [cp NP V [proi [selo]]]

As one can see, the structure in (21a) is responsible for cross reading,
where as the one in (21b) accounts for the coreference reading, and the
one in (21c) the parallel reading.\(^3\) None of the above representations
violate Binding Condition B, since the pronominal [pro selo] is not coindexed
with their respective antecedent in a local domain, hence admitting all
three readings of selo in (20).

Now let us turn to the example in (3), repeated below as (22), which appar­
tently seems to be an argument for selo as an anaphor.

(22) *Selo-ka [John-kwa Mary]-lul coahanta.
each other-NOM [John and Mary]-ACC like
‘Each other likes [John and Mary].’

One may wonder why the above example is ungrammatical, given that
selo is a pronominal that does not require a c-commanding antecedent.
We need to account for why it is ungrammatical in the present system.
The example does not admit cross, parallel and coreference readings. The
question is why none of the readings obtain in (22). Please recall that selo

\(^3\) In fact, [pro selo] as a pronominal is also responsible for the parallel and coreference reading
in selo when it is not locally bound as in (20) in contrast to each other in English as below,
which does not admit the readings.

?The men, demanded that each other be arrested.

The example above admits cross reading only. The contrast in the available readings
between Korean and English in nonlocal domain will follow by assuming that [e other] in
English is an R-expression but not a pronominal in terms of binding theory, which is
actually what Heim, Lasnik and May (1991, p. 73) suggest.
has the complex structure of \([pro\: selo]\) which is a pronominal, hence coreference reading and parallel reading as represented below in (23a) and (23b) respectively will lead to Binding Condition C (Chomsky 1981, among others) and Strong Crossover violation (Postal 1971, Wasow 1972, Lasnik 1976), respectively.\(^{14}\)

\[
(23)\quad \text{a. } \llbracket\text{pro}_i [selo]\rrbracket-ka \llbracket\text{John-kwa Mary}\rrbracket-lul coahanta.
\text{b. } \llbracket\text{pro}_k [selo]\rrbracket-ka \llbracket\text{John-kwa Mary}\rrbracket D_k-lul coahanta.
\]

Why then does cross reading not obtain either in (22)? The relevant LF representation will be the following in (24) in the present system:

\[
(24)\quad \llbracket\text{pro}_k [selo]\rrbracket-ka \llbracket\text{John-kwa Mary}\rrbracket D_k-lul coahanta.
\]

As one can see, the above representation is a typical instance of Weak Crossover violation (Postal 1971, Wasow 1972, Chomsky 1976, Higginbotham 1980, Koopman and Sportiche 1982, Reinhart 1983, and Safir 1984, among others), hence ungrammatical. As it turns out, the ungrammaticality of the example in (22) has noting to do with the status of \(selo\) as an anaphor, which needs a c-commanding antecedent. The present argument ruling out the ungrammaticality of the example in (22) as a violation of independent constraints of the grammar such as Binding Condition C, Strong crossover and Weak Crossover can be further supported by the following example in (25), which is more or less acceptable, as originally observed by Chung and Park (1998, p. 428).\(^{15}\)

\[
(25)\quad \llbracket\text{selo}-uy coach\rrbracket-ka \llbracket\text{John-kwa Mary}\rrbracket-lul chingchanhayssta.
\]

The question is why it is that (25) is grammatical. The present proposal

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\(^{14}\) A reviewer wonders whether a distributor can serve as a variable too. In fact what serves as a variable is the \(pro\) within \([pro\: selo]\) in the present analysis.

\(^{15}\) The example in (25) in my intuition is slightly deviant. Please note that one can relatively easily have the coreference reading in the following example:

\[
\llbracket\text{selo}-uy chinkwu\rrbracket-ka \llbracket\text{John-kwa Bill}\rrbracket-lul paysinhayssta.
\]

'Their friend betrayed [John and Bill].'
for the structure of *sela* as *[pro sela]* and its status as pronominal in fact predicts that the example above in (25) is acceptable, only if *sela* is construed as having a coreference reading.\(^{16}\) Indeed, the prediction is born out. Let us see why. The example above in (25) will have the following representation for the coreference reading in the present system:

\[(26) [[[pro, [sela]],-uy coach],-ka [John-kwa Mary],-lul
\]
\[each \text{ other-POSS} \quad \text{coach-NOM} \quad [John \text{ and Mary}],-ACC\]
\[chingchanhayssta. \quad \text{praised} \\
\]
\[\text{Their coach praised [John and Bill],'}\]

Given that coreference does not require c-command between the related expressions, nothing blocks the reading in (25). Next let us turn to cross and parallel readings in (25). The respective representation will be the following in (27) again in the current system:

\[(27) \text{ a. } [[[pro, [sela]],-uy coach],-ka [John-kwa Mary], D_k]-lul
\]
\[each \text{ other-POSS} \quad \text{coach-NOM} \quad [John \text{ and Mary}],-ACC\]
\[chingchanhayssta. \quad \text{praised} \]
\[\text{b. } [[[pro, [sela]],-uy coach],-ka [John-kwa Mary], D_k]-lul
\]
\[each \text{ other-POSS} \quad \text{coach-NOM} \quad [John \text{ and Mary}],-ACC\]
\[chingchanhayssta. \quad \text{praised}.\]

As one can see, neither of the two readings in (27ab) obtains, given that they all lead to Weak Crossover. Now interestingly when the example in (22) is embedded as in (28), the three readings all obtain. This is also predicted under the present analysis.

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\(^{16}\) Chung and Park (1998) observes that the example in (25) has cross and parallel reading, diverging from the present intuition. Hoji (1997a, b) reports that the Japanese example with *otagari* in the same configuration as the one in (25) admits only a coreference reading.
(28) [John-kwa Bill]-un [selo-ka Mary-lul coahanta-ko] 
[John and Bill]-TOP each other-NOM Mary-ACC like-COMP
sayngkakhanta.

think
'John thinks that Bill likes Mary and Bill thinks that John likes Mary.'
'John_i thinks that he_i likes Mary and Bill_j thinks that he_j likes Mary.'
'[John and Bill]_i think they_i like Mary.'

The representation below in (29a) is for cross reading and the ones in
(29b) and (29c) are for parallel reading and coreference reading, respectively. As one can see, none of the representations for cross, parallel, and coreference readings in (29) violate Binding Condition B, given that [pro selo] as a pronominal is not locally bound by the antecedent.

(29) a. [NP_i D_k] V [CR[pro_k [selo]_i] V NP]
 b. [NP_i D_k] V [CR[pro_k [selo]_k] V NP]
c. NP_i V [CR[pro_i [selo]_i] V NP]

Hence, as it turns out, to the extent that one claims that selo is an anaphor and hence requires a c-commanding antecedent, based on the example as in (22), the claim is crucially flawed: The ungrammaticality of (22) actually follows from independent principles of the grammar, rather than the particular property of selo as an anaphor, which requires a c-commanding antecedent.

3. Conclusion

As shown thus far, selo is not a local anaphor (Yang 1984 for Korean, also see Kitagawa 1986, Saito 1992, Miyagawa 1997, for Japanese counterpart otagai). It is not a long distance anaphor either (Harbert 1995, Napoli 1993). It has the complex structure of [pro selo], which is pronominal in terms of binding theory. The complex structure of [pro selo], which is a pronominal, is responsible for split antecedence, long distance dependence and the lack of requirement for c-commanding antecedent. From the complex structure [pro selo] as a pronominal, which in turn is subject to Binding Condition
B, follows our noble observation of the asymmetry in the readings of *selo* manifest in local and nonlocal domain.

References


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