

# BINDING IN ENGLISH AND JAPANESE (I)

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## 0. Introduction

A current theory of generative grammar (the “principles and parameters” theory) takes the “modular” approach in the sense that it consists of several interacting but independent subtheories. Two of the subtheories deal with bounding and binding. At present they are considered to obey distinct principles: the Subjacency Condition and the principles of binding theory, respectively. Several attempts have been made to unify the two modules. For example, Aoun (1985) has proposed the “Generalized Binding Theory,” in which he tries to reduce the syntax of *wh*-elements to the principles of binding theory of Chomsky (1981). Also, Koster (1987) has proposed the “Bounding Condition,” a locality condition that purports to constrain not only syntactic movement but anaphor binding and control as well. In this paper, while following their general lines of unification, I will take an approach to binding rather different from theirs. In particular, I will propose a barrier-based account of binding phenomena. But before going directly into the main discussion, we need to look into the basic array of data regarding Japanese anaphors that will serve as the basis for the ensuing discussion.

## 1. Anaphors in Japanese

### 1.1. The Reflexive Anaphor *Zibunzisin*

Although it has usually been the practice to begin with *zibun* in discussing this topic, I consider it rather misleading to identify it as a true anaphor in Japanese. It has in fact been claimed by Ueda (1984) and Fukui (1984) that *zibun* be regarded as a pronoun rather than an anaphor. As is well known, *zibun* can refer to the matrix subject when it occurs as the direct object of an embedded clause, as illustrated in (1) below.

- (1) John<sub>i</sub>-wa [Bill<sub>j</sub>-ga zibun<sub>i</sub>/??<sub>j</sub>-o hihansita to] omotta.  
-top -nom -acc criticized thought  
“John thought that Bill had criticized him/??himself.”

Fukui goes so far as to claim that in sentences like (1) the reading where *zibun* refers to the embedded subject is rather weak. I can persuade myself that there is

some truth in this observation.

As a matter of fact, it was noted long before that *zibun* sounds awkward for some people in a truly reflexive context, but once embedded, it becomes perfect (see for example Akatsuka (1972)).

- (2) a. (??) John-ga zibun-o nikunde-iru (koto)  
          -nom     -acc hate  
          “John hates himself.”  
      b.     John-ga zibun-no titioya-o nikunde-iru (koto)  
                          -gen father  
          “John hates his own father.”

Thus, there is some reason to claim that *zibun* is not a true anaphor comparable to an English reflexive form. But if that were the case, would it not imply that there is no genuine reflexive anaphor in Japanese and hence create an accidental gap in the Japanese anaphoric system? Maybe not. It was pointed out by Kurata (1986) and also independently by Nakamura (1986) that there exists a form with stricter locality: *zibunzisin*. Compare (1) with the following:

- (3) John<sub>i</sub>-wa [Bill<sub>j</sub>-ga zibunzisin<sub>j</sub>/??<sub>i</sub>-o hihansita to] omotta.  
          -top     -nom                   -acc criticized   thought  
          “John thought that Bill had criticized himself/??him.”

For many people including myself, *zibunzisin* in (3) can only refer to the embedded clause subject *Bill*. Although it appears that judgments are delicate for some people, I consider the contrast here significant enough to show that *zibunzisin* is a true anaphor in Japanese. However, consider the following sentences:

- (4) Johe-wa [zibunzisin-ga tensai-da to] omotte-iru.  
          -top himself-nom genius-is     thinks  
          “(Lit.) John thinks that himself is a genius.”  
  
(5) [Zibunzisin-ga erabareta] koto-ga John-o nayamasete-iru.  
          himself-nom elected-was fact-nom     -acc bothers  
          “(Lit.) That himself was elected bothers John.”

In spite of its anaphorhood, *zibunzisin* can take the matrix subject as its antecedent when it occurs as subject of the embedded clause. It can also refer to the matrix object when a psych verb is used, as in (5). That these are not merely idiosyncratic properties of *zibunzisin* can be shown by the fact that the reciprocal *otagai* “each other,” which has been considered an anaphor in Japanese, exhibits the same paradigm

(see Yang (1983) and Ueda (1984)).

- (6) ??[John to Bill]-ga [Mary-ga otagai-o aisite-iru to] omotte-iru (koto)  
and -nom -nom each other-acc love think  
“??John and Bill think that Mary loves each other.”
- (7) [John to Bill]-ga [otagai-ga hannin-da to] omotte-iru (koto)  
each other-nom culprit  
“(Lit.) John and Bill think that each other are the culprits.”
- (8) [Otagai-ga erabareta] koto-ga [John to Bill]-o nayamasete-iru.  
each other-nom elected-were fact-nom -acc bothers  
“(Lit.) That each other were elected bothers John and Bill.”

These parallelisms show that *zibunzisin* and *otagai* qualify as true anaphors in Japanese and a peculiar fact about them to be explained is that while they generally obey the Specified Subject Condition (SSC), they do not observe the Nominative Island Condition (NIC). Given these systematic results, it would be better to put *zibun* aside for the time being in embarking on a comparative study of binding. Hence, in what follows, we will restrict our attention to *zibunzisin* and *otagai*.

## 1.2. More on *Otagai*

It might seem uncontroversial from the foregoing discussion that *otagai* can be regarded as a true anaphor. However, there are some peculiarities to be noted about it which are not shared by the English reciprocal anaphor *each other*. Hajime Hoji, Masanobu Ueda, and Ken'ichi Mihara independently brought to my attention (in personal communication around 1986) the fact that *otagai* has both a reciprocal use and a non-reciprocal use. Thus, sentences such as the following are ambiguous, as paraphrased by (i) – (iii).

- (9) Karera-wa [otagai-ga tadasii to] omotte-iru.  
they-top each other-nom right think  
(i) Each of them thinks that the other is right.  
(ii) Each<sub>i</sub> of them thinks that he<sub>i</sub> is right.  
(iii) They think as follows: “We are right.”

The first paraphrase expresses reciprocity. On the second and third readings, *otagai* does not express reciprocity or at least not in the same way as it does in (i) but rather it is closer in meaning to *zibun* and its plural form *zibun-tati*. Thus, (9) under the interpretation (ii) is roughly synonymous with (10a) below, and (9) under the

interpretation (iii) with (10b).

- (10) a. Karera-wa (sorezore) [zibun-ga tadasii to] omotte-iru.  
they-top each -nom right think  
“Each<sub>i</sub> of them thinks that he<sub>i</sub> is right.”  
b. Karera-wa [zibun-tati-ga tadasii to] omotte-iru.  
-pl-nom  
“They think as follows: ‘We are right.’”

In (11) below, an actual utterance taken from certain TV news, *otagai* is used in a non-reciprocal sense.

- (11) [Bush daitooryoo to Gorbachev daitooryoo]-wa mazu otagai-no tatiba-o  
president and first each other's position-acc  
setumeisite, ...  
explain  
“President Bush and President Gorbachev first explained their respective positions and then ....”

It is to be pointed out here, however, that (9) and (10a) are not completely synonymous with each other. Although I have been characterizing the contrast under discussion as reciprocal vs. non-reciprocal, this may not be accurate enough, because there is some sort of reciprocity discernible even in (9) under the interpretation (ii). For example, the speaker may imply by uttering (9) that each of them thinks that the other is wrong. Furthermore, if my judgments are right, (9) cannot be used if none of the people referred to by *they* know what the others think, whereas (10a) does not sound strange in the same situation or even when the people do not know each other at all or they are a group of people totally unrelated. In short, in the reciprocal use of *otagai*, reciprocity is explicitly expressed as part of the assertion, whereas in the non-reciprocal use reciprocity is only conversationally implicated to varying degrees. Thus, the term “non-reciprocal” may not be appropriate, but I will continue to use it for expository purposes.

Ahn (1989) shows that the Korean reciprocal *selo* exhibits similar properties. Citing the observation by Dong-Whee Yang, he claims that *selo* can be interpreted in three different ways, as illustrated by (12).

- (12) Ku twul-i selo-uy ai-lul salanghanta.  
the two-nom each other-gen child-acc love  
a. “The two love each other’s children.”  
b. “The two love their respective children.”  
c. “The two love their (shared) children.”

(12a) shows that *selo* produces a sense of reciprocity (the reciprocal reading); (12b) shows that it may be interpreted like a reflexive (the respective reading); and finally (12c) shows that it may be interpreted like a plural pronoun (the joint reading). The same possibilities of interpretation may be true of Japanese *otagai*. Consider the following sentence:

- (13) Sono hutari-wa otagai-no kodomo-o aisite-iru.  
 the two-top each-other-gen child-acc love  
 a. "The two love each other's children."  
 b. "The two love their respective children."  
 c. "The two love their (shared) children."

It is not entirely clear to me, however, whether the distinction between the respective reading and the joint reading is significant. It might be the case that all that is important is the distinction between the reciprocal interpretation and nonreciprocal interpretation. Hajime Hoji (personal communication) raised doubts about the reading (13c) and also (9iii). More generally, he doubts that *otagai* can receive group interpretation, providing examples like (14) below.

- (14) [Egawa to Yamakura]-wa [otagai-ga saikoo-no batterii-da to]  
 and -top each other-nom best-gen battery be COMP  
 omotte-ita.  
 thought  
 "Egawa and Yamakura thought that they were the best battery."

He insists that (14) is odd and if so, (13c) should also be out. He might be right, but I am not entirely certain about the status of (13c). For example, I have seen examples like (15) and I have often heard people say something like (16).

- (15) Mosi otagai-no uti-no hitori-ga sikkyakusita toki-wa, ...  
 if each other-gen one-nom lose position time-top  
 "If one of us two loses his position, ..."  
 (16) Otagai-no tigail  
 each other-gen difference  
 "the differences between the two"

These are clearly cases where *otagai* is used on the joint or group interpretation. In what follows, I will assume that (9) and (13) are three-way ambiguous, as indicated above, though much more study is required on this subject, for example, by means of a large-scale questionnaire.

## 2. Binding Theories

### 2.1. Chomsky (1981)

In the previous section we have seen that the distribution of Japanese anaphors is much more systematic than has been thought. In this section we will examine how the facts concerning Japanese anaphors pointed out above are accommodated in the major theories of binding proposed so far in the principles and parameters framework: Chomsky (1981) and Chomsky (1986a). Let us take up these theories in turn.

The entire binding theory of Chomsky (1981) takes the following form:

- (17) (A) An anaphor is bound in its governing category.  
(B) A pronominal is free in its governing category.  
(C) An r-expression is free.
- (18) (I) AGR is coindexed with the NP it governs.  
(II)  $\beta$  is a governing category for  $\alpha$  if and only if  $\beta$  is the minimal category containing  $\alpha$ , a governor of  $\alpha$ , and a SUBJECT accessible to  $\alpha$ .
- (19)  $*[\gamma \dots \delta \dots]$ , where  $\gamma$  and  $\delta$  bear the same index.
- (20)  $\alpha$  is accessible to  $\beta$  if and only if  $\beta$  is in the c-command domain of  $\alpha$  and assignment to  $\beta$  of the index of  $\alpha$  would not violate the *i*-within-*i* condition (19).

The SUBJECT of a category is taken to refer to either the subject in the ordinary sense (the subject of S or of NP) or AGR contained in INFL.

To see how the system works for Japanese, let us consider the question of why there is a disparity in NIC violation between English and Japanese: English observes the NIC, whereas Japanese does not. We might here follow Yang (1983) for the moment in suggesting that the difference under discussion be attributed to the presence of AGR in English and the lack thereof in Japanese. Compare the following pairs:

- (21) a. John-wa [zibunzisin-ga tensai da to] omotte-iru.  
          -top himself-nom genius is thinks  
      b. \*John thinks that himself is a genius.
- (22) a. [John to Bill]-wa [otagai-ga tensai da to] omotte-iru.  
          and -top each oter-nom genius think  
      b. \*John and Bill think that each other are geniuses.

Given the above assumption on AGR in Japanese, the difference here follows from

the binding theory of LGB. Japanese has no overt agreement morphology, so that the null hypothesis would be that it does not have AGR. Let us further assume that no reference to the governor of the anaphor in question is required in Japanese, replacing the notion of “binding category” for that of the governing category in (18II). Chomsky himself raises some doubts about the reference to the notion of governor in defining the local domain for anaphors in English because it is only needed in the case of ECM constructions. Under these assumptions, then, the facts of (21) and (22) follow. In Japanese, the binding category for an anaphor in the subject position in an embedded clause is always the next higher clause, because the embedded clause has no AGR that serves as an accessible SUBJECT. In English, on the other hand, the binding category for an anaphor in the same position is the embedded clause if it is tensed, because the AGR of the embedded clause counts as the accessible SUBJECT, assuming with Chomsky for the moment that the clause structure is NP-INFL-VP.

It thus appears that Japanese anaphors fall under the theory of binding as formulated in Chomsky (1981). However, this line of account relies heavily on the notion of AGR as a potential binder and the related notion of accessible SUBJECT. If these notions should turn out to be dubious, then the entire account based on them would also be cast into doubt.

## 2.2. Chomsky (1986a)

A rather radical revision of the binding theory of LGB was proposed in Chomsky (1986a). Following Huang (1983), Chomsky claims that anaphors and pronominals, though close to complementary, differ with respect to their domains and that this difference should follow from the intrinsic properties of each type of element; an anaphor has to seek an antecedent in some local domain, while a pronominal does not have to do so if there is not any. The new version of the binding principles is thus given in the following form:

- (23) Where  $I$  is an indexing and  $\beta$  is a local domain,  $I$  is BT-compatible with  $(\alpha, \beta)$  if:
- (A)  $\alpha$  is an anaphor and is bound in  $\beta$  under  $I$ .
  - (B)  $\alpha$  is a pronominal and is free in  $\beta$  under  $I$ .
  - (C)  $\alpha$  is an r-expression and is free in  $\beta$  under  $I$ .
- (24) The licensing condition for a category  $\alpha$  governed by a lexical category  $\gamma$  in the expressions  $E$  with indexing  $I$ : For some  $\beta$  such that (i) or (ii),  $I$  is BT-compatible with  $(\alpha, \beta)$ :
- (i)  $\alpha$  is an r-expression and (a) if  $\alpha$  heads its chain or (b) otherwise
    - (a)  $\beta = E$
    - (b)  $\beta$  is the domain of the head of the chain of  $\alpha$ .

- (ii)  $\alpha$  is an anaphor or pronominal and  $\beta$  is the least CFC containing  $\gamma$  for which there is an indexing J BT-compatible with  $(\alpha, \beta)$ .

②5 A “Complete Functional Complex” (CFC) is the minimal phrase in which all grammatical functions compatible with its head are realized (i.e. S or NP).

The shift from the LGB version to this one is motivated by examples such as the following:

- ②6 a. The children thought that pictures of each other were on sale.  
b. The children thought that pictures of them were on sale.

The binding theory of LGB defines the same domain for the anaphor and the pronominal in ②6, namely, the matrix S, because it is the minimal category containing the anaphor or the pronominal, its governor *of*, and the SUBJECT accessible to it. Hence, the LGB version of principle B excludes (26b) as ungrammatical, which is a wrong prediction. Under the new formulation, the matrix S is the local domain for the reciprocal anaphor in (26a), because it is the least CFC that contains the reciprocal, its governor, and its nearest possible antecedent *the children*. Since it is actually bound in this domain, the sentence is ruled in. On the other hand, the local domain for the pronominal in (26b) is not the matrix clause but the embedded clause, because it is the least CFC where the binding theory for a pronominal could in principle be satisfied (recall that a pronoun does not need any antecedent with which it is disjoint). Since it is actually free in this domain, the sentence is correctly ruled in.

What remains to be explained is a case of NIC violation such as ②7 below:

②7 \*They<sub>i</sub> expected that each other<sub>i</sub> would win.

Following Lebeaux (1983), Chomsky suggests that anaphors undergo LF-movement to the INFL-position, leaving a trace in the manner of clitic anaphors in Romance languages. According to this analysis, the LF-representation of ②7 would be ②8.

②8 they<sub>i</sub> [<sub>i</sub>each other<sub>i</sub> -INFL] expect that e<sub>i</sub> would win.

Condition (A) now holds not of the antecedent-anaphor relation but of the anaphor-trace relation. The antecedent-anaphor relation is now taken as a government relation. If binding theory or at least condition (A) is restricted to LF, then it will not apply to overt anaphors directly but rather to the anaphor-trace relation. The relation will still satisfy SSC, but we might eliminate the NIC for anaphors. This analysis is desirable in another respect: it amounts to eliminating the artificial

assumption that AGR can be a binder for the subject of a finite clause. We may furthermore dispense with the *i*-within-*i* condition and the related concept of accessible SUBJECT, since the governing category for such an element will not be the embedded clause but the larger clause in which it is embedded. To bar an anaphor in this position, then, we would appeal not to binding theory but to the ECP, which excludes a trace of *wh*-movement in this position in such sentences as (29).

(29) \*Who<sub>i</sub> do you think that e<sub>i</sub> saw Bill?

Chomsky thus claims to have reduced the NIC to the ECP, eliminating a redundancy between the two conditions.

Indeed, the new version of binding theory seems to have some attractiveness. (i) Anaphors and pronominals are not necessarily in complementary distribution and what are relevant in defining their domains are such notions as BT-compatibility and Complete Functional Complex; (ii) Anaphors move at LF and the traces they leave behind are subject to the ECP; and (iii) the notion of AGR as a potential binder and its related concept of accessible SUBJECT and the *i*-within-*i* condition may be eliminated altogether. I think these revisions are on the right track and I will basically assume them in the ensuing sections. On the other hand, I do not find the LF-movement analysis of anaphors particularly appealing. For one thing, the assimilation of (27) to case (29) seems spurious. While the presence or absence of the complementizer *that* affects the acceptability of (29) greatly, it has little effect on (27). Second, we would like to assume that Subjacency is a condition on representation rather than on movement only. The LF-movement analysis of anaphors is incompatible with that assumption.

(30) They think that pictures of each other are on sale.

(31) they<sub>i</sub> [each other<sub>i</sub>-INFL] think that pictures of e<sub>i</sub> are on sale.

(32) \*Who do you think (that) pictures of e are on sale?

The one step movement of the reciprocal in (31) should lead to a Subjacency violation as it does in (32). One might say that this case constitutes evidence for the assumption that Subjacency is a condition on syntactic movement only. But since we would like to maintain that Subjacency also holds in LF, we will have to bear the burden of explaining the disparity between (30) and (32).

Let us return to Japanese anaphors. We have seen that Japanese anaphors obey SSC but not NIC. Consider again the following sentences:

- ③ a. John-wa [zibunzisin-ga tensai-da to] omotte-iru.  
       -top himself-nom genius is thinks  
 b. \*John thinks that himself is a genius.
- ④ a. [John to Bill]-wa [otagai-ga tensai-da to] omotte-iru.  
       and -top each other-nom genius think  
 b. \*John and Bill think that each other are geniuses.

An account was proposed above within the framework of LGB: Japanese lacks AGR, so that the local domain for an anaphor subject of an embedded clause is always the next clause up. But recall that this solution only makes sense under the assumption that AGR can be a potential binder. Since we have determined that AGR does not play any role in defining a domain for an anaphor, we will have to look for another explanation.

It should be noted that there are some complications with the data of ③ and ④. For one thing, Lebeaux (1983) points out that there is a contrast between a reflexive and a reciprocal in the subject position of a finite clause, as indicated below (the judgments are his):

- ⑤ a. \*\*John thinks that himself will win.  
 b. ??John and Bill think that each other will win.

Lebeaux attributes this disparity to the following conditions, in particular to (36bii):

- ⑥ a. Reciprocals are subject to the binding theory.  
 b. Reflexives (i) are subject to the binding theory.  
       (ii) must be properly governed.

He further reduces the property (36bii) to the ECP, proposing that a reciprocal undergo *each*-movement and the entire form of a reflexive move at LF, leaving traces to be properly governed respectively. See Lebeaux (1983) for further details.

Second, I would like to point out some peculiarity of Japanese anaphors. Consider the following sentences:

- ⑦ a. John-wa [ZIBUNZISIN-GA asita ikubeki da to] omotte-iru.  
       -top HIMSELF-NOM tomorrow go-should thinks  
       “(Lit.) John thinks that HIMSELF should go tomorrow.”  
 b. ??John-wa [ASITA zibunzisin-ga ikubeki da to] omotte-iru.  
       TOMORROW  
       “(Lit.) John thinks that himself should go TOMORROW.”

- (38) a. [John to Bill]-wa [OTAGAI-GA            asita            ikubeki da to] omtte-iru.  
           and    -top EACH OTHER-NOM tomorrow go-should    think  
           “(Lit.) John and Bill think that EACH OTHER should go tomorrow.”  
       b.??[John to Bill]-wa [ASITA            otagai-ga            ikubeki da to] omotte-iru.  
           and    -top TOMORROW each other-nom go-should    think  
           “(Lit.) John and Bill think that each other should go TOMORROW.”

When the anaphor in question is preceded by a focused phrase and hence does not occupy the clause-initial position, as in the b-sentence of each pair, it is difficult to interpret the anaphor as referring to the matrix subject. By contrast, when it occupies the peripheral position of an embedded clause, the anaphor can correctly take the matrix subject as its antecedent, more easily if it is heavily stressed<sup>1</sup>.

These considerations cast doubt on the analysis that ascribes the disparity between English and Japanese simply to the presence or absence of AGR in one language or the other. Consider again the sentences below:

- (39) a. [John to Bill]-wa [otagai-ga            katu to] omotte-iru.  
           and    -top each other-nom win            think  
       b.??John and Bill think that each other will win.

Some reasons are conceivable for the low acceptability of (39b). It is well known that dependent elements in general are bad in the subject position of an English finite clause, as further illustrated by (40b) below:

- (40) a. ?I know perfectly well who thinks that he's in love with who.  
       b. \*I know perfectly well who thinks that who is in love with him. (Kayne (1979))

This is probably because the dependent element in question is not head-governed (or L-marked in Chomsky's (1986b) terms); head-governed elements in contrast can be licensed by those elements in higher clauses, as exemplified by (40a).

So far we have seen some basic array of data concerning binding phenomena in English and Japanese, and we have also examined some previous analyses of binding: Chomsky (1981) and Chomsky (1986a). In the second part of the present paper, I will propose an alternative analysis that will account for English and Japanese data in a unified manner.

#### NOTES

1. People might object that they cannot recognize any substantial differences between (37a) and (37b) or between (38a) and (38b). It should be noted, however, that (37b), if it is acceptable at all, means "John thinks that one should go tomorrow by oneself," something

like the arbitrary PRO interpretation in control phenomena. Under the interpretation in which *zibunzisin* refers to John, the sentence is worse than (37a). Similarly, (38b) is acceptable only insofar as it is understood with *otagai* as having a non-reciprocal meaning. Under the purely reciprocal interpretation, (38b) is quite bad, I think.

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