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Sloppy Identity and Formal Dependency*

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1. Introduction

This paper argues (i) that Principle B is a condition on Formal Dependency, rather than on coindexation, (ii) there are two types of sloppy identity readings (SR1 and SR2) and only one of them (SR1) is based on Formal Dependency. Based on the distinction between SR1 and SR2, I propose that the so-called "interface between the Computational System and language use" contains the Formal Dependency System, as schematized below.¹

Computational System ==>	Formal Dependency System ==>	Other "systems" of grammar, discourse, etc. ==>	Language Use
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I will then argue that local disjointness effects that have been regarded in the literature as effects of Binding Condition B must be understood as arising from different sources, reflecting different components in the

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¹ The operations in the Computational System, other than what is characterized as Merge in Chomsky's recent works, are governed by formal agreement features. Formal Dependency is established in terms of c-command, being subject to Principle B.

above diagram.²

2. Sloppy readings and dependency

Fiengo and May 1994 (F&M) provides a detailed account of the following observations made in Dahl 1974 and discussed in Sag 1976 and Dalrymple, Shieber, and Pereira 1991: (1) allows the readings in (3a,b,c) but not the one in (3d), while (2) allows all of the four readings in (4).

- (1) Max said he saw his mother; Oscar did too.
(Allows (3a,b,c) but not (3d).)
- (2) Max said his mother saw him; Oscar did too. (Allows all of (4).)
- (3) a. Max₁ said he₁ saw his₁ mother; Oscar₂ said he₁ saw his₁ mother.
b. Max₁ said he₁ saw his₁ mother; Oscar₂ said he₂ saw his₂ mother.
c. M₁ said he₁ saw his₁ mother; O₂ said he₂ saw his₁ mother. (Mix 1)
d. M₁ said he₁ saw his₁ mother; O₂ said he₁ saw his₂ mother. (Mix 2)
- (4) a. Max₁ said his₁ mother saw him₁; Oscar₂ said his₁ mother saw him₁.
b. Max₁ said his₁ mother saw him₁; Oscar₂ said his₂ mother saw him₂.
c. M₁ said his₁ mother saw him₁; O₂ said his₂ mother saw him₁.
(Mix 1)
d. M₁ said his₁ mother saw him₁; O₂ said his₁ mother saw him₂.
(Mix 2)

For ease of exposition, I will call the third and the fourth readings MIX 1 and MIX 2, respectively. F&M argues that these interpretive possibilities follow from their Dependency Theory. The aspect of their Dependency Theory that is crucial to our discussion at the moment is that a necessary condition for SR is the use of a β -OCCURRENCE, i.e. a dependent occurrence of a nominal expression.

It is pointed out in Hoji 1990, and further argued in Hoji 1995b that comparative ellipsis (CE) in Japanese provides a syntactic context akin to VP ellipsis (and CE) in English, in regard to the distribution of

² As is evident, this work owes a great deal to the works by many researchers in the area of anaphoric dependence/relation, especially, T. Reinhart, G. Evans, J. Higginbotham, R. Fiengo, R. May and I. Heim. The postulation of the Formal Dependency System, in terms of c-command, can be traced back to Reinhart (1983: 26). The hypothesis that Principle B is a condition on Formal Dependency is that of Evans 1980 and Higginbotham 1983. The proposal in section 5 is an attempt to solve the long-standing problem of how to deal with "coreference effects of Condition B" under the view that Principle B is a condition on Formal Dependency (or on bound variable anaphora). A fuller discussion of the relations of this work with these and other relevant works, especially with that of Fiengo and May's Dependency Theory, will be attempted on a separate occasion.

sloppy and strict identity readings. Japanese CE examples with soko exhibit the same interpretive possibilities as noted for (1) and (2) above.³

- (5) a. Seihu-wa [[A sya-ni yori] sakini]
 government-TOP company A-DAT than early
 [_{VP} B sya-ni [_{CP} soko-ga soko-no komonbengosi-o uttaeta to]
 iw]-ase-ta.
 company B-DAT it-NOM it-GEN attorney-ACC sued that
 say-make-PAST
 'The government made Company B say that it had sued its attorney,
 earlier than (the government made) Company A-DAT (say that it had
 sued its attorney).'
- b. Seihu-wa [[A sya-ni yori] saki-ni]
 government-TOP company A-DAT than early
 [_{VP} B sya-ni [_{CP} soko-no komonbengosi-ga soko-o uttaeta to]
 iw]-ase-ta.
 company B-DAT it-GEN attorney-NOM it-ACC sued that
 say-make-PAST
 'The government made Company B say that its attorney had sued it,
 earlier than (the government made) Company A-DAT (say that its
 attorney had sued it).'

(5a) allows the two across-the-board readings and Mix 1, but not Mix 2. (5b), on the other hand, allows all of the four readings.

The same interpretive possibilities are also observed with kare, despite the well known generalization that kare cannot be construed as a bound variable, as illustrated below; see Hoji 1991 and the references therein.

- (6) Sensei-wa John-ni yori mo sakini Bill-ni [kare-ga kare-no
 roommate-o nagutta to] mitome-sase-ta.
 'The teacher made Bill admit [that he had hit his roommate] earlier
 than John(-DAT).'
- (7) Sensei-wa John-ni yori mo sakini Bill-ni [kare-no roommate-ga
 kare-o nagutta to] mitome-sase-ta.
 'The teacher made Bill admit [that his roommate had hit him]
 earlier than John(-DAT).'

As noted, it is crucial on F&M's account of the contrast between (1) and (2) that he in (1) and him in (2) can be a β -occurrence. We thus take the patterns of interpretive possibilities observed in (6) and (7) as indicating not only (i) that CE in Japanese is analogous to VP ellipsis in English, as

³ Whether or not there is a pause after the adverbial that is modified by yori 'than' phrase, e.g. [A-sya ni yori] saki-ni 'earlier than Company A' in (5), seems to affect the relevant interpretive possibilities of (5) and other comparative ellipsis examples. For this reason, it should be understood henceforth that the pause as indicated is intended in the relevant examples. Mo can be attached to yori and its presence can be considered optional for the purposes of the present discussion.

independently concluded in Hoji (1990, 1995a), but also (ii) that kare can be a β -occurrence. The fact that kare can be a β -occurrence, giving rise to SR, while being unable to be construed as a bound variable, thus provides support for F&M's conclusion that "the conditions on bound variable anaphora are not coextensive with those on sloppy identity." Being a β -occurrence is a necessary condition for yielding an SR, but not a sufficient condition for yielding a bound variable construal.

3. Principle B and sloppy identity readings

Consider the examples below.⁴

- (8) a. [Toyota to Nissan]₁-ga [CP soko₁-ga soko₁-o suisensita to] happyoo sita (no wa ano kaigi de da)
'(it was at that meeting that) [each of Toyota and Nissan]₁ announced that it₁ had recommended it₁'
- b. seifu-ga [Toyota to Nissan]₁-ni [CP soko₁-ga soko₁-o suisensu-ru beki da to] tutae ta (koto)
'the government told [each of Toyota and Nissan]₁ that it₁ should recommend it₁'

The intended interpretations of (8) are as in (9).

- (9) a. for all x , $x \in \{\text{Toyota, Nissan}\}$ x announced that x had recommended x
- b. for all x , $x \in \{\text{Toyota, Nissan}\}$ the government told x that x should recommend x

Given the coindexation-based view of Principle B, even if its application is restricted to the distribution of bound variable anaphora, (8) should fail to yield the reading indicated in (9). Note that the embedded object soko would be locally bound (by the embedded subject soko). If Principle B is a condition on Formal Dependency, on the other hand, the availability of reading (9) for (8) is not unexpected since both occurrences of soko can depend upon subete no kaisya 'every company,'

⁴ The observation in (8) has been inspired by Heim's (1992) discussion of analogous English examples such as (i), which, according to her, are acceptable only in certain contexts in which "structured meanings" matter. See also Higginbotham (1992: section 4.2).

(i) (based on Heim (1992: (20))

Everyone said that what he had in common with his siblings was that his sister admired him, his brother admired him, and he (himself) admired him. Unlike their English counterparts, examples like (8) allow the bound reading without any special contexts. This is not surprising, given the sharp contrast between (iia) and (iib).

(ii) a. *it₁ recommended it₁

b. soko₁-ga soko₁-o suisen sita 'it recommended it'

My conclusion here differs from Heim's (1992), however. I claim that Principle B consists solely of the inviolable part of Heim's Principle B, i.e. that part of the principle that regulates dependency, excluding the other part of her Principle B, i.e. that part of her Principle B that regulates codetermination, which is violable due to her "Exceptional Coindexing Rule."

and such dependencies are not local. If Dependency itself is local as in (10), the bound reading is not possible.⁵

- (10) a. *[Toyota to Nissan]₁-ga soko₁-o suisen sita (no wa sensyuu no kaigi-de da)
'(it was at the meeting last week that) [each of Toyota and Nissan]₁ recommended it₁
b. *seifu-ga [Toyota to Nissan]₁-ni soko₁-o suisen sita (koto)
'the government recommended to [Toyota and Nissan]₁ it₁'

I have argued in the preceding section that sloppy readings are based on Formal Dependency. Given that Principle B is a condition on Formal Dependency, we predict that the distribution of SR is constrained by Principle B, even (i) when there is no quantificational antecedent involved and (ii) when kare is used. This indeed seems to be a correct prediction, as illustrated below.

- (11) a. seihu-ga A-sya-ni yori mo sakini B-sya-ni soko-o suisens-ase-ta (koto)
'the government made Company B recommend it earlier than Company A-DAT' (SR highly marginal to impossible)
b. seihu-ga A-sya-ni yori mo sakini B-sya-ni soko-o suisensi-ta (koto)
'the government recommended Company B₁-DAT it₁-ACC earlier than Company A-DAT' (SR highly marginal to impossible)

The highly marginal to impossible SR for (11) should be compared with SRs observed in (5) above as well as (12) below.⁶

- (12) seihu-ga A-sya-ni yori mo sakini B-sya-ni [soko-no bengosi]-o suisens-ase-ta (koto)
'the government made Company B₁ recommend its₁ attorney earlier than Company A-DAT' (SR possible)

The same contrast obtains also with kare.

⁵ One may object that if Principle B is on Formal Dependency rather than on coindexation, there should not be anything wrong, in principle, with coreference in examples like he recommended him and it recommended it. I will return to this in section 5.

⁶ The SR in (11) (and in (13) below) might be felt to be not totally impossible. I assume that such marginal acceptability of the SR is due to the marginal possibility of analyzing comparative ellipsis as an instance of comparative deletion, as in (i) below, despite the absence of the overtly realized predicate in the clause that is the complement of yori 'than'.

- (i) seihu-ga [A-sya₁-ni ec₁ suisens-ase-ru yori mo sakini] B-sya₂-ni soko₂-o suisens-ase-ta
'the government made Company B₂ recommend it₂ earlier than (the government) made Company A₁ recommend ec₁'

Clear impossibility of the SR results if we consider the Mix readings, as discussed in Hoji 1996, but space limitation prevents me from providing the relevant empirical materials here.

- (13) Mary-ga John-ni yori mo sakini Bill-ni kare-o erab-ase-ta (koto)
'Mary made Bill(-DAT) choose (elect) him(-ACC) earlier than
John(-DAT).' (SR highly marginal to impossible)
- (13) should be compared with (6) and (7) as well as with (14).
- (14) Mary-ga John-ni yori mo sakini Bill-ni [kare-no hon]-o erab-ase-ta
'Mary made Bill(-DAT) choose his book earlier than John(-DAT)'
(SR possible)

In all of (6), (7) and (14), the SR is possible, but not in (13). This observation is significant since examples like Bill-ga kare-o eranda 'Bill_i chose him_i' and soko-ga soko-o eranda 'it_i chose it_i' allow coreference, unlike their English counterparts.⁷ In fact, (11a) allows the strict reading on which the value of soko is Company B or Company A. Similarly, (13) allows the strict reading on which the value of kare is Bill or John.

Given the assumption that SRs require the formal dependency of a nominal upon another, such as soko depending on B-sya 'Company B' in (11), and kare depending upon Bill in (13), the local disjointness effects observed in (11) and (13) confirm that Principle B is a condition on Formal Dependency.

4. Two kinds of sloppy identity readings

It has been argued that SRs arise in the soo su construction, as in (15), and in the Null Object construction, as in (16).⁸

- (15) John-wa {kare/zibun}-no kuruma-o aratta; Bill-mo soo sita.
John-TOP {he/self}-GEN car-ACC washed; Bill-also that way did
'John washed his car; Bill did {it too/the same}.'
- (16) John-wa {kare/zibun}-no kuruma-o aratta; Bill-mo ec aratta
John-TOP {he/self}-GEN car-ACC washed; Bill-also washed
'John washed his car; Bill washed ec too.'

Both (15) and (16) allow the interpretation in (17).

- (17) John washed John's car; Bill washed Bill's car.

Clearly, the examples in (15) and (16) look less complicated than the CE examples noted above. One might thus wonder why I have used CE examples in the foregoing discussion instead of examples of simpler structures as in (15) and (16), to illustrate that kare can yield SRs. One might further wonder why I have used the availability of the Mix readings in the "many-pronouns puzzle" examples rather than the mere availability of SRs, in demonstrating the availability of SRs in the

⁷ I will return to the contrast between Japanese and English in section 5.

⁸ Otani and Whitman 1991, following Huang 1988, argues that the Null Object construction (NOC) such as in (16) can be analyzed on a par with English VP ellipsis. Hoji 1995b contains arguments against their analysis. The empirical considerations such as those given below in the case of the soo su construction are applicable to the NOC as well (although they will not be included here due to space limitation), thereby providing further confirmation for the conclusion reached in Hoji 1995b.

Japanese CE, since the use of the mere availability of the SRs would have simplified the relevant examples considerably. In this section, I will illustrate why such complications had to be invoked.⁹ For ease of exposition, I will refer to the soo su and the Null Object constructions as the non-CEs.

4.1. Notice first that the SR has been said to be impossible in examples like (18) even if we suppress Condition C effects.

(18) John washed John's car; Bill did too.

Similarly, the SR is highly marginal to impossible in the CE in (19).

(19) Sensei-wa John-ni yori mo sakini Bill-ni [_{CP} Mary-ga Bill-o butta to] iw-ase-ta
 'The teacher made Bill say that Mary had hit Bill earlier than John-DAT.'

This is as expected, given that Names cannot be a β -occurrence.

By contrast, non-CE examples allow SRs even with a Name.¹⁰

(20) John-wa John-no kuruma-o aratta; Bill-mo soo sita.

'John washed John's car; Bill did it too.'

(21) Sam-wa Bill-ni (Sue-no mae-de) [_{CP} Mary-ga Bill-o butta to] iw-ase-ta;

(Sam-wa) John-ni mo soo s-ase-ta

'Sam made Bill say (in front of Sue) that Mary had hit Bill;

(Sam) made John do that too.'

Analogous to the SR in these Japanese examples is the SR in English (22).

(22) John washed John's car (on that rainy day); Bill did {the same/²that too}.

Given the natural assumption that Names cannot be β -occurrences, and given that (the interpretive consequence of) Formal Dependency requires the use of a β -occurrence, it follows that the SR in these examples cannot be based on Formal Dependency. In the terms of Hankamer and Sag 1976 (H&S), the same and that as in (22) are deep anaphora, and their values can be obtained by the pragmatic context in which they are used. The value of that in (22) is the act of washing one's own car (on that rainy day). Based on the parallelism between (20) and (22), I conclude, as in Hoji (1990: Ch. 1), that soo su can be deep

⁹ Hoji (1990: Ch. 5) contains discussion of empirical materials that motivate the use of the dative ni-marked NP in the foregoing discussion, the essential point of which is that the use of the bare NP, as in NP-yori, has the effects that are similar to the use of soo su, in the relevant respect.

¹⁰ For reasons of space, I will henceforth discuss the soo su examples only. But the Null Object construction shares with the soo su construction the relevant properties to be discussed below. It is, however, not the case that the relevant properties for these constructions are to be accounted for in the same way. For the analysis of the Null Object construction and of the SRs observed in it, see Hoji 1995b.

anaphora.¹¹ Given this conclusion, it follows that the SR in non-CEs such as in (15) and (16) too **may** be on a par with the SR in (20) and (22), i.e. not based on Formal Dependency.

4.2. It has been known since the works by Sag and Williams in the 70's that English VP ellipsis examples like (23) do not allow the reading in (24). Let us call such a reading as this the EXCHANGE READING.

(23) John recommended Bill's student; but Bill didn't.

(24) John recommended Bill's student; but Bill didn't recommend John's student.

Similarly, the CE does not seem to allow the exchange reading.

(25) Sensei-wa [Bill-ni yori mo sakini] John-ni Bill-no gakusei-o
suisens-ase-ta

'The teacher made John recommend Bill's student earlier than
Bill-DAT.'

We have seen above that Japanese soo su **can** be deep anaphora. Hence, we expect that the availability of the exchange reading in the soo su construction depends upon whether the value of soo 'that (way)' can be the act of recommending one's {counterpart/partner}'s student, given an appropriate context. In fact, given a context where John and Bill have agreed that if one recommends the other's student, then the reciprocal action will ensue, the exchange reading is indeed possible in the soo su example.

(26) John-wa Bill-no gakusei-o suisensita; sikasi Bill-wa soo sinakatta.
'John recommended Bill's student; but Bill did not do it.'

The examples in (26) can mean "John recommended Bill's student but Bill did not recommend John's student," given the context just mentioned. By contrast, (23) above cannot give rise to the exchange reading even in this context. It is interesting to note that the English translation given in (26) does seem to allow the exchange reading in this context. This is not unexpected, since it can be deep anaphora.

¹¹ Soo in soo su 'do so' consists of the demonstrative so and o. See the well known demonstrative paradigms as illustrated in (i); cf. traditional works by Sakuma and Mikami.

(i) The ko/so/a/do demonstrative paradigms.

a. {ko/so/a/do}+re '{this/that/that over there/which thing}

b. {ko/so/a(so)/do}+ko '{this place/that place/that place over there/which place}

c. {ko/so/a/do}+itu '{this guy/that guy/that guy over there/which guy}

d. {ko/so/a/do}+tira '{this area/that area/that area over there/which area}

e. {ko/so/a/do}+o '{in this manner/in that manner/in that manner/in which manner (how)} (ao => aa)

Hence, that way, in that way or in the way under discussion may be a more appropriate English rendition of Japanese soo than English so is. Given the demonstrative nature of the Japanese so, the differences between English do so and Japanese soo su are not particularly surprising, as noted in Hoji (1990: Ch. 1).

4.3. There is thus a clear distinction between SRs observed in the CE and those in the non-CEs. Let us call the former SR1 and the latter SR2. I suggest that SR1 is based on Formal Dependency, but SR2 is not. I further suggest that the former arises only in surface anaphora in the sense of H&S. That a relevant (ellipsis) site γ , a linguistic object, is surface anaphora means γ is a "reconstruction" of another linguistic object δ in the sense of F&M, except that Formal Dependency is here established in terms of c-command, unlike in F&M. That two linguistic objects are "reconstructions" of each other means that they are identical except for β -occurrences in them that appear in the identical structural configurations with respect to what they depend upon; see F&M (sections 2.2 and 3.1).¹²

Let us now turn to why I used the Mix readings in the preceding sections. In the preceding sections, we have observed that the CE gives rise to Mix readings. The non-CEs, by contrast, do not give rise to Mix readings, as illustrated below. The non-CE example in (27) does not seem to allow the reading indicated in (28), while the CE in (29) does allow the reading indicated in (30).

- (27) Sensei-wa Bill-ni [kare-ga kare-no roommate-o nagutta to] iw-ase-ta;
 John-ni mo soo s-ase-ta.
 'The teacher made Bill say [that he had hit his roommate]; (the teacher) made John do so too.'
- (28) The teacher made Bill₁ say that he₁ had hit his₁ roommate; the teacher made John₂ say that he₂ had hit his₁ roommate. (Mix 1)
- (29) Sensei-wa John-ni yori mo sakini Bill-ni [kare-ga kare-no roommate-o nagutta to] iw-sase-ta
 'The teacher made Bill say [that he had hit his roommate] earlier than John(-DAT).'
- (30) The teacher made Bill₁ say that he₁ had hit his₁ roommate earlier than the teacher made John₂ say that he₂ had hit his₁ roommate. (Mix 1)

The availability of Mix readings in the CE as in (29) is as expected, just as it is under F&M's theory. The nominal that is understood as "sloppy" is a β -occurrence and the one that is understood as "strict" is an α -occurrence. The failure of the non-CEs to give rise to Mix readings, as illustrated in (27), indicates that the relevant (ellipsis) sites therein **cannot** be surface anaphora¹³, and hence the SRs observed in them

¹² In terms of the schematic organization of the interface given above, the formal basis of SR1 must be established in the Formal Dependency System. The SR2, on the other hand, is not based on Formal Dependency; it is based on what a given linguistic expression, as "deep anaphora", can express, given the pragmatic context in which it is used; see Dalrymple et al. 1991 and Hestvik 1995.

¹³ Given the way SRs are understood to be possible in the non-CEs, this

cannot be based on Formal Dependency. Hence the SRs in the non-CEs (i.e. SR2) with kare does not show that kare can be a β -occurrence. The Mix readings with kare in the CE, on the other hand, unequivocally indicates that the SR involved there is based on Formal Dependency (i.e. SR1), thereby constituting evidence that kare can be a β -occurrence.

The major result in this section is that we need to distinguish between SRs observed in the CE and those in the non-CEs (SR1 and SR2). Given the result that the non-CEs are obligatorily deep anaphora and the SRs therein (i.e. SR2) are not based on Formal Dependency, and given the proposal that Principle B is on Formal Dependency, we predict that the SR in the non-CEs (i.e. SR2) should be allowed even in the local context. This is indeed the case, as illustrated by the following examples.

- (31) a. A sya-ga soko-o urikonda;
 Company A-NOM it-ACC promoted
 B sya-mo soo sita.
 Company B-also that way did
 'Company A₁ promoted it₁; Company B also did the same.'
- b. John-ga [A-sya-ni soko-o urikom]-ase-ta;
 John-Nom Company A-DAT it-ACC promote-cause-PAST
 B sya-ni-mo soo s-ase-ta
 Company B-DAT-also that way do-cause-PAST
 'John made Company A₁ promote it₁; (he) also made Company B do the same.'

The availability of the SR2 in (31) thus confirms the proposal that Principle B is a condition on Formal Dependency, according to which the coreference between A-sya and soko in (31) is not regulated by Principle B. Furthermore, as long as the value of soo in (31) can be taken as the act of self-promoting, the SR2 can arise. This is just as we expect, given the discussion in the preceding sections.

5. The Formal Dependency system and the organization of the "interface"

We have observed that SR1 gives rise to Mix readings but SR2 does not. We have further observed that SR1 is subject to Principle B, but SR2 is not. I have argued that these distinct properties of SR1 and SR2 follow if we assume (i) that Formal Dependency is established in the Formal Dependency System, (ii) that Principle B is a condition on Formal Dependency and (iii) that Formal Dependency is a necessary condition for Mix readings.

I propose that the LF representation, i.e. the output of the Computational System, is related to language use in the way schematized in section 1. Under this view, robust and uniform

observation means that it is not possible for a linguistic expression, as "deep anaphora", to have a value that corresponds to a Mix reading.

judgments are likely to be reflections of properties of the Computational System and the Formal Dependency System. Murky judgments, on the other hand, perhaps indicate that they are affected by considerations outside these two formal systems.

I now turn to why coreference in (32) is strongly disallowed, in contrast to its Japanese analogue in (33), which readily allows coreference; cf. Hoji 1995a.

(32) it recommended it

(33) soko-ga soko-o suisensita

I have argued above that SR2, unlike SR1, is not based on Formal Dependency and that its availability is crucially affected by factors outside the two formal systems.¹⁴ Likewise, the availability of the coreferential relation among nominals, unlike bound variable anaphora, should not be contingent upon the establishment of Formal Dependency.

One might attribute the impossibility of the coreference in (32) to factors other than Principle B. Reinhart's 1983 pragmatic account, which may be considered as the representative of such an approach, faces problems of various sorts, as discussed in F&M and the references therein. When we consider the relevant empirical materials from Japanese, the problems with the Reinhartian account become even more serious.

Let us thus pursue the possibility that the impossibility of coreference in (32) is indeed due to Principle B, as argued in Hoji 1995a. Under the present proposal, Principle B is on Formal Dependency and the input to the Formal Dependency System is generated by operations that are based on formal agreement features (in addition to the concatenation operation). This in turn means that in the LF representation of (32), unlike in the case of (33), Formal Dependency must be "forced" as the result of the presence of formal agreement

¹⁴ The present analysis also makes the following prediction. Given that Formal Dependency is established based on c-command, the SR in (i), which F&M takes as crucial evidence for dissociating the structural conditions on the distribution of bound variable anaphora and those on the distribution of sloppy identity readings, must be SR2, rather than SR1.

(i) (F&M p. 108, "adapted from examples due to M. Wescoat, cited in Dalrymple, Shieber, and Pereira 1991")

The policeman who arrested John read him his rights, and the one who arrested Bill did too.

Hence we predict that examples of the structure as in (ii), in which Formal Dependency cannot be established due to the failure of c-command, do not give rise to Mix readings.

(ii) The policeman who arrested John said that he had hit his girlfriend; and the one who arrested Bill did too.

The demonstration of how this prediction is borne out will have to be a topic of a separate work, but the relevant Japanese data indicate that this is indeed a correct prediction.

features. In the terms of the present discussion, we can rephrase the suggestion made in Hoji 1995a as follows. The formal agreement features have to be licensed in some way in the Computational System, such as by raising to appropriate positions. If a nominal consists solely of formal agreement features, then this operation results in a structure that in effect "forces" Formal Dependency in the local domain in the case of the derivation of the LF representation such as for (32), for reasons yet to be understood.¹⁵ Given that soko does not consist solely of formal agreement features, as I argued elsewhere, the LF representation of (33) does not "force" Formal Dependency, thereby not making it subject to Principle B. This account of the contrast between (32) and (33) fits nicely in the proposed organization of the "interface" between the Computational System and language use, although serious questions still remain, as just noted.¹⁶

I also argued in Hoji 1995a that the status of (34a) has nothing to do with Principle B based on the similar observation in (35).

(34) a. *kare-ga kare-o nagusameta (koto)

'he consoled him'

b. ?kare-ga kare-o eranda (koto)

'he elected him'

(35) a. *John-ga John-o nagusameta (koto)

'John consoled John'

b. ?John-ga John-o eranda (koto)

'John elected John'

It is further observed there that the coreference is possible in (36) because HIM consists not only of grammatical ϕ -features but also of some content under N, which presumably has to do with demonstration of some sort, and hence does not undergo the process described above.

(36) John recommended HIM

When Formal Dependency is required as in (37a) under the interpretation in which HIM is construed as bound to no linguist, Principle B is violated, even when the Computational System does not "feed" the relevant Formal Dependency.

(37) a. *No linguist recommended HIM for that lucrative project.

b. No linguist recommended HIS student for that lucrative project.

Principle B effects in Japanese observed in the discussion in the preceding sections are then analogous to Principle B effects in (37a).

To summarize, local disjointness effects that have been considered in various works in the literature as effects of Binding

¹⁵ What goes on here is perhaps closely related, if not identical, to what goes on in the case of cliticization, as suggested to me by J. Emonds (p.c. 1990).

¹⁶ This account can be regarded as an immediate consequence, if we accept, as I in fact do, the essentials of the proposals made in Fukui 1986 and Kuroda 1988, namely, that Japanese does not have formal agreement features; see Hoji (1995a; section 3).

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