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Relativized SUBJECT for Reflexives*

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I. Introduction

In this paper we address familiar and long-standing problems of incorporating cross-linguistic variation in the properties of reflexives into the Binding Theory. Our intent is to show how long-distance binding systems can be properly understood without recourse either to movement at LF or parameterization of the binding domain. We shall argue that our approach to reflexive variation is both conceptually more elegant and empirically superior to existing alternatives.

The core problem any account of binding must come to grips with is the variation in what qualifies as an acceptable antecedent for reflexive elements in different languages. This variation manifests itself in two ways: (i) how far up the tree the reflexive can look in order to find its antecedent and (ii) what syntactic positions an appropriate antecedent may occupy. These can be referred to as the "domain" and "orientation" problems, respectively.

This paper is organized as follows: first we briefly discuss standard solutions to the domain and orientation problems, and then propose our alternative, the "relativized SUBJECT" analysis. We next develop this analysis, demonstrating its

explanatory potential and ability to accommodate certain previously overlooked facts. Finally, we compare our approach to current models.

There are in the GB literature two standard types of solutions to binding variation. One tradition, best represented in the work of Wexler and Manzini (1987), holds that reflexives can be lexically parameterized to obtain the observed range of possibilities. Such approaches stipulate that the domain and orientation of individual reflexives can be parameterized such that (i) the size of the relevant domain and (ii) whether or not non-subjects can count as binders independently vary. Another considerably more popular tradition, stemming from work by Pica (1987) and developed in various ways by a number of syntacticians, holds that domain and orientation effects can be made to follow from the idea that anaphors are in some sense referentially incomplete and so must move at LF. Such approaches resolve domain issues in terms of how far the anaphor is able to move. Most LF-movement models rely on Yang's (1983) key insight that morphologically simple (or X^0) reflexives are long-distance anaphors and morphologically complex (or XP) ones are local anaphors. The implication is that X^0 reflexives are somehow able to move further at LF than XP reflexives. A secondary correlation is that X^0 anaphors are subject-oriented. Movement analyses have the additional benefit that this subject-orientation effect can be made to follow from LF movement of the reflexive out of the c-command domain of non-subjects.

Our answer to the variation problem relies crucially on several insights of these other two models, but expresses them in a way that is more explanatory and requires less conceptual machinery. From parameterization models, we preserve the idea that it is indeed the binding domain that varies, although we reject claims that this variation either needs to be stipulated or is driven by learnability theory, as well as the claim that subject-orientation constitutes an independent

parameter. From movement-to-Infl models (cf. Pica (1987)) we preserve the connections between X^0 morphological status and both long-distance binding and subject-orientation, although we achieve this in a novel way that makes no appeal to LF anaphor movement.

Our proposal is simply that the choice of SUBJECT in delimiting the binding domain should be relativized according to the X-bar status of the reflexive (cf. Progovac (1991, to appear)). We assume the Binding Principle A in (1):

(1) A reflexive R must be bound in the domain D containing R and a c-commanding SUBJECT. If R is an X^0 (i.e. morphologically simple) reflexive, then its SUBJECTs are X^0 categories only, i.e. AGR. If R is an X^{\max} (i.e. morphologically complex) reflexive, then its SUBJECTs are X^{\max} specifiers, namely [NP, NP] and [NP, IP].

In other words, the binding domain for any reflexive R must contain a potential antecedent, and this potential antecedent must be "X-bar compatible" with R. This proposal is conceptually akin to Rizzi's (1990) theory of Relativized Minimality, Aoun's (1985) Generalized Binding, and Burzio's (1991) version of Binding Theory. The parallel with movement is immediately obvious: a head must move through other heads, and maximal projections move to Specifier positions, following Baltin's (1982) "Like-Attracts-Like Constraint" and Chomsky's (1986b) "Structure Preserving Principle."

II. Details of the theory

A. Domain effects

We now turn to some examples in order to illustrate how the relativized SUBJECT theory works. AGR is the only possible SUBJECT for an X^0 reflexive by virtue of being the only (salient) c-commanding head with the relevant pronominal features. A

language which does not show morphological AGR, i.e. independent, referential AGR (as opposed to Borer's "Anaphoric AGR") will allow X^0 reflexives to be bound in an unlimited domain. This is true of AGR-less languages in general. The contrast between (2) and (3), taken from Cole, Hermon and Sung (1990), illustrates that in Chinese the simple reflexive *ziji* can be bound long-distance, while the complex reflexive *ta ziji* must remain local (the reflexives are underlined):

- (2) Zhangsan_i renwei [Lisi_j zhidao [Wangwu_k xihuan ziji_{i/j/k}]]
 thinks knows likes self
 'Zhangsan thinks that Lisi knows that Wangwu likes self'.
 (3) Zhangsan_i renwei [Lisi_j zhidao [Wangwu_k xihuan
 ta ziji_{i/j*/k}]]
 he self

In a language with AGR, such as Russian, the domain for an X^0 reflexive extends only up to the first finite clause. Consider (4) from Rappaport (1986):

- (4) Profesor_i poprosil assistenta_j [PRO_j čitat' svoju_{i/j}
 professor-NM asked assistant-AC to-read self's
 doklad]
 report-AC

This is so because infinitivals host no referential AGR which can qualify as a SUBJECT for the X^0 reflexive *svoj*, and the domain extends accordingly. As opposed to Chinese, a reflexive in Russian cannot "skip" a finite AGR in its search for an antecedent, as illustrated in (5).

- (5) Vanja_i znaet [č to Volodja_j ljubit svoju_{i/j} ženu]
 -NM knows that -NM loves self's wife-AC

The reflexive possessive *svoju* can only be bound to the embedded subject *Volodja* because the finite AGR counts as a SUBJECT and thereby delimits the binding domain. The

RELATIVIZED SUBJECT

difference between Chinese finite clauses (cf. (2)) and Russian finite clauses (cf. (5)) thus follows without any stipulation under our analysis.

The relativized SUBJECT approach also correctly predicts that the domain for complex anaphors in subject position extends only one clause up, as in Japanese (6).

- (6) John_i-wa Peter_j-ga kare-zisin*_{i/j}-ga Bill-o hihansita-
- TOP -NM he -self -NM -AC criticized-
- to ommotteiru koto -o sitteiru
- COMP think Comp-AC know
- 'John_i knows that Peter_j thinks that himself*_{i/j} criticized Bill'.

Since there is no c-commanding specifier with pronominal features in the most subordinate clause, the domain extends up to the first available specifier, the subject of the immediately dominating clause. Since this specifier counts as a SUBJECT for the reflexive, the domain cannot extend any further, and the matrix subject is not a possible binder for *kare-zisin*.

B. Orientation effects

As has long been noticed, long-distance anaphors usually display subject-orientation effects, i.e., they can be bound only to subjects. Consider the Chinese example in (7) and the Russian example in (8), from Batistella and Xu (1990) and Rappaport (1986), respectively.

- (7) Zhangsan_i songgei Lisi_j ziji*_{i/j} de shu.
 gave self 's book
- (8) Milicioner_i rassprasival arestovannogo_j o sebe*_{i/j}.
 policeman questioned suspect about self

Subject-orientation follows naturally from our assumption that

X⁰ reflexives can be bound only to X⁰ categories. Since AGR is the only c-commanding head with pronominal features, it is the only possible binder for a simple reflexive. Once a reflexive is bound to AGR, it is automatically bound to the subject coindexed with that AGR.

In order to derive this result, we adopt Borer's (1989) claim that null AGR is not missing altogether, but is instead anaphoric. Once a reflexive is bound to the local AGR, if this AGR is coindexed with a higher AGR, the reflexive will also be bound to the higher AGR (Jim Huang, p.c.) thus extending its domain. This approach is confirmed by the existence of blocking effects in Chinese, as discussed in Huang and Tang (1988):

- (9) Zhangsan_i AGR-1 shuo [wo_j AGR-2 zhidao [Lisi_k AGR-3 chang
say I know often
piping ziji_i/*_j/_k]].
criticize self

In (9), AGR-2 cannot be bound to AGR-1, due to a feature conflict. Thus, the domain cannot extend. On the other hand, if the pronominal features of all intervening AGR's are compatible, the domain will extend, as in (10).

- (10) Zhangsan_i AGR-1 shuo [wo_j AGR-2 zhidao [Lisi_k AGR-3
say I know
chang piping ziji_i/_j/_k]].
often criticize self

In (10), AGR-3 is bound to AGR-2, which is in turn bound to AGR-1, since there is no feature conflict. The reflexive is thus bound to AGR-1, and by transitivity to all the higher AGRs, and the binding facts follow.

The well-known Icelandic facts, however, would seem to pose a challenge for this approach. Namely, in Icelandic it is possible to bind an X⁰ reflexive out of a subjunctive clause, although

subjunctives host morphological AGR. The following example (from Yang (1983)) illustrates the contrast between an X⁰ and an XP reflexive, which must remain local:

- (11) Jon_i segir ad Petur_j raki sig_{i/j} / sjalfan-sig_{*i/j}.
 says that shaves-SUBJ self himself

It is argued in Progovac (in preparation) that the extension of the domain in subjunctives is achieved through the LF transparency ("invisibility") of recoverable functional categories, e.g. Infl and Comp in the spirit of Lasnik and Saito (1984). As opposed to indicative Infl, subjunctive Infl is recoverable since it does not host an independent TENSE (cf. Anderson (1982), Pica (1984), Everaert (1984), Jakubowicz (1984), Johnson (1985)). The other Infl processes -- Case Assignment and AGR-hopping -- take place prior to LF, at S-structure or PF. Thus, subjunctive AGR does not count as a SUBJECT for a reflexive because it deletes at LF together with the Infl node. The AGR marker on the verb, which is the result of AGR-hopping, cannot c-command a reflexive and therefore cannot count as a SUBJECT. Notice, moreover, that it is only under a relativized approach that one can derive the contrast between X⁰ and XP reflexives indicated in (11): XP reflexives are never long-distance bound over subjunctives since they recognize the [NP, IP] subject of the subjunctive clause. The tense-coindexing condition alone cannot prevent long-distance binding of the complex reflexive *sjaflan-sig*.

C. Anaphors inside NPs

The relativized SUBJECT theory correctly predicts that complex reflexives embedded in subject NPs should be bound only one clause up, just as complex anaphors in subject position are, as was shown in (6). The reason is that it is the matrix [NP, IP], rather than the embedded AGR, which delimits the binding domain, giving rise to a "pseudo-LD-binding" pattern that is technically local. Significantly, this type of pseudo-LD-binding

fails to induce any subject-orientation effect, as shown in Japanese (12), from Nakamura (1989):

- (12) John_i-ga Tom_j-ni [kare-zisin_{i/j}-no e-ga
 -NM -DT him -self -POSS picture-NM
 uri-ni dete-iru] to hanasi-ta
 on-sale told
 'John_i told Tom_j that a picture of himself_{i/j} was on sale.'

This is precisely the expected result if this is in fact a type of minimally extended local binding. Correspondingly, we also find English (13) ambiguous, contrary to claims in Chomsky (1986a) of subject-orientation.

- (13) They_i told us_j [that [pictures of each other_{i/j}] would be on sale].

Examples (12) and (13) are of course traditionally analyzed in terms of the so-called "i-within-i" effect, according to which the embedded AGR is prevented from counting as an accessible SUBJECT due to a stipulative coindexation prohibition. Under our approach, the irrelevance of AGR in these examples follows immediately from the relativization of SUBJECT to the X-bar status of the anaphor -- these XP anaphors necessarily ignore X⁰ potential antecedents. Sentences of the type illustrated in (14) should be excluded by principles unrelated to the binding theory. We believe that the ECP may be implicated here, following the suggestion of Lebeaux (1983):

- (14) *John considers [that himself AGR is intelligent].

A reflexive with no unrecoverable features can become empty in LF, as suggested in Lebeaux. This way it can be subject to the ECP even if it does not move (cf. also Kayne (1984)).

Striking confirmation for the claim that only specifiers count as SUBJECTs for complex reflexives comes from a

consideration of X⁰ reflexives contained inside subject NPs. In the same kind of i-within-i configuration, they do not display the "i-within-i" effect, as shown by Russian (15), due to Rappaport (1986):

- (15) *Vanja_i znaet [čto [stat'ja o sebe_i]
 -NM knows that article-NM about self
 pojavilas' v gazete]
 appeared in newspaper

The X⁰ reflexive *sebja*, which recognizes AGR as a SUBJECT, does not extend its domain across AGR. We feel that an important empirical advantage of our approach over other analyses lies in its ability to derive the contrast between (13) and (15). In addition, our approach offers a means for dispensing with the supplementary "potential coindexation" requirement in order to exclude complex anaphors from so-called i-within-i environments.

Although XP reflexives are necessarily blind to the X⁰ AGR, it is not the case that X⁰ reflexives invariably ignore potential XP antecedents. This can be seen from the fact in Russian (16), drawn from Rappaport (1986), that simple reflexives may be bound by c-commanding NPs without the mediation of AGR.

- (16) Ja_i čital [ego_j stat'ju o sebe_{i/j}]
 I read his article about self

In (16), the reflexive *sebe* can be bound either by the subject of the NP *ego* ('his') or by AGR, which is coindexed with the sentential subject *ja* ('I'). This fact, however, follows from a more careful consideration of the phrase structure of X⁰ reflexives. Following e.g. Katada (1991), we assume that these are actually N⁰s exhaustively dominated by NPs, as in (17).

- (17)
- | |
|----------------|
| NP |
| |
| N ⁰ |
| |
| self |

Hence, a morphologically simple reflexive actually has two distinct X-bar options: it may either be taken as an X⁰ element and require an X⁰ SUBJECT, or it may be taken as an XP element and require an XP SUBJECT. The two possibilities exhibited by (17) correspond directly to these two options. Under the movement-to-Infl analysis it is surprising that [NP,NP] can be a binder. This is so because their explanation for subject-orientation rests on the following two assumptions: (i) that a reflexive must be in Infl at LF, and (ii) that the reflexive itself must be c-commanded by the antecedent.

III. Comparisons and Advantages

We believe that the relativized SUBJECT approach has several important advantages (cf. Progovac (1991) for a more detailed discussion). It can account for both domain and orientation effects by invoking the natural assumption that binding requires X-bar compatibility, just as movement does. Furthermore, it correctly predicts that X⁰ reflexives should exhibit different binding domains in AGR-less languages, such as Chinese, and languages with AGR, such as Russian, without any extra stipulation. This account fares better than movement accounts in light of the fact that long-distance binding does not obey island effects. Consider, for example, the relative clause island in (18), from Huang and Tang (1988):

- (18) Zhangsan bu xihuan [neixie piping ziji_i/j de ren]
 not like those criticize self REL person
 'Zhangsan does not like those people who criticize self.'

RELATIVIZED SUBJECT

This condition is otherwise obeyed by LF head-movement in Chinese, as shown in example (19), from Huang (1982) :

- (19) *Ni zui xihuan ta mai-bu-mai de shu?
 you most like he buy-not-buy REL book

Furthermore, movement-to-Infl analyses have to make certain stipulations which do not hold in other areas of grammar. For example, subject-orientation is derived within this kind of analysis by claiming that an X^0 reflexive must move to Infl, with the result that it is no longer c-commanded by any non-subject material. This line of argumentation relies on the implicit assumption that binding is not sensitive to the D- or S-structure position of the reflexive -- in other words, traces of reflexives do not count. If they did, objects would be possible binders. However, it is well-known that neither S-structure nor LF-movement bleeds the binding possibilities, as illustrated in (20) and (21), respectively:

- (20) Which picture of himself_{i/j} does [_{IP} John_i think
 [_{CP} t [_{IP} Peter_j has seen t]]]?
 (21) Who_i said that Bill_j wants Peter_k to buy [which picture of
himself_{i/j/k}]?

The relativized SUBJECT approach finds further empirical support in acquisition facts. Wexler and Manzini's (1987) approach predicts that the acquisition of reflexives should obey the Subset Principle. Children acquiring a long-distance reflexive are thus expected initially to assume a local domain and only to broaden it on the basis of subsequent positive evidence; children acquiring a local reflexive should never entertain a long-distance domain. Most experimental results, however, fail to confirm these predictions. In a variety of independent studies, it has been demonstrated that early grammars allow long-distance binding even for reflexives that are local in the adult language (cf. Solan (1987), Hyams and Sigurjonsdottir (1990), Chien and Wexler (1990), Franks and

Connell (1990), Connell and Franks (1991)). We contend that this result follows from the absence of AGR in early child grammars, as argued in e.g. Clahsen (1991), Meisel and Muller (1990), and Radford (1990), as well as from the lack of awareness of the morphological complexity of reflexives. In short, we predict that children will narrow their binding domain only after (i) mastering INFL and AGR and (ii) realizing that reflexives are morphologically complex. It is worth pointing out that this view of reflexive acquisition does not call into question the validity of the Subset Principle as a learning strategy per se, but only the idea that it can be used as an argument in favor of parameterization approaches to binding variation.

Interestingly, the availability of two different factors relevant to binding domains allows for transitional stages. Consider the following developmental scenario: if children have acquired AGR, but are not yet analyzing their reflexives as complex, we predict that they will have long-distance binding only up to the first finite clause. In fact, Solan (1987) has found that English-speaking children allow a significantly higher percentage of long-distance binding out of infinitivals than out of finite clauses.

Second language acquisition facts also support our analysis. Progovac and Connell (1991), for example, observe that there is a correlation between lack of consistent AGR in second-language learners of English and the possibility of long-distance binding. They also forced adult learners of English as a second language who otherwise displayed long-distance binding effects to parse English reflexives as morphologically complex. Interestingly, for some individuals this induced local binding. These results provide striking confirmation of the relevance both of AGR and the morphological status of reflexives in establishing the domain.

IV. Conclusion

We have argued that, in order to determine the relevant binding domain for an anaphor, the notion of SUBJECT should be relativized along lines of X-bar compatibility. We showed how the relativized SUBJECT hypothesis, although primarily designed to accommodate issues of cross-linguistic variation in binding domain and antecedent orientation, also derives the "i-within-i" accessibility effect precisely where it is needed. Finally, our proposal extends to a range of first and second language acquisition facts that are problematic for alternative accounts of binding variation.

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RELATIVIZED SUBJECT

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