
A Note on the Binding Theory

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Source: *Linguistic Inquiry*, Vol. 14, No. 3 (Summer, 1983), pp. 554-561

Published by: The MIT Press

Stable URL: <http://www.jstor.org/stable/4178346>

Accessed: 03/11/2009 22:42

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A NOTE ON THE BINDING
THEORY

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1. In this note I will juxtapose two problems with the binding theory of Chomsky (1981) and propose a minimal modification that will solve them both. I will be solely concerned with the two binding conditions in (1):

- (1) a. An anaphor is bound in its governing category.
- b. A pronominal is free in its governing category.

The conjunction of (1a) and (1b) has the consequence that positions in which disjointness of reference is required are exactly positions where anaphor binding is possible, and conversely. While this prediction is largely correct, there is a systematic set of counterexamples, some of which have been fairly well known, that illustrate environments in which anaphors and pronouns are not mutually exclusive:

- (2) a. *They saw each other's pictures.*
- b. *They saw pictures of each other.*
- c. *They expected that pictures of each other would be on sale.*
- d. *They expected that for each other's pictures to be on sale would be possible.*
- e. *They expected that for each other to come would be possible.*
- f. *They expected that it would be possible for pictures of each other to be on sale.*
- (3) a. *They saw their pictures.*
- b. *They saw pictures of them.*
- c. *They expected that pictures of them would be on sale.*
- d. *They expected that for their pictures to be on sale would be possible.*
- e. *They expected that for them to come would be possible.*
- f. *They expected that it would be possible for pictures of them to be on sale.*

According to one version of the binding theory considered in Chomsky (1981, 188ff), a governing category is defined as follows:

- (4) α is the governing category for β if and only if α is the minimal category containing β and a governor of β , where $\alpha = \text{NP or S}$.

Under this definition, condition (1b) correctly allows pronominal coreference in each of the sentences in (3), but condition (1a) wrongly excludes each of those in (2) as ill formed. To allow for the possibility of anaphor binding in (2), Chomsky (1981, 211ff) suggests (5) in place of (4):

- (5) α is a governing category for β if and only if α is the minimal category containing β , a governor of β , and a SUBJECT accessible to β .

The SUBJECT of a category is either the subject in the ordinary sense (subject of S or of NP) or Agr. Of relevance to the working of (5) are principles (6)–(8):

- (6) Agr is coindexed with the NP it governs.
- (7) * $[\gamma \dots \delta \dots]$, where γ and δ bear the same index.
- (8) α is accessible to β if and only if α is in the c-command domain of β and assignment to β of the index of α would not violate (7).

Chomsky points out a number of advantages in adopting definition (5). For one thing, this formulation permits collapsing the Nominative Island Condition (NIC) and the Specified Subject Condition (SSC) of Chomsky (1980), thus eliminating certain conceptual problems associated with the older framework. Furthermore, including an accessible SUBJECT in (5) makes it unnecessary to stipulate NP and S as the only possible governing categories, since these are the only categories having accessible SUBJECTs. Empirically, (5) enables one to correctly allow the sentences in (2) as well formed under condition (1a), since each anaphor in these sentences is bound in the root clause, its governing category according to (5)–(8).

Note, however, that although the sentences in (2) cease to be a problem under this new formulation, the sentences in (3) become a problem now, as (1b) now wrongly assigns disjoint reference to each of the italicized pairs in (3). Thus, for any number of the sentences of the sort represented by (2) and (3), either formulation of the binding theory admits only half of them as unmarked, but must treat the other half as exceptions. This is an undesirable situation, as (2) and (3) appear to represent equally well-formed cases of anaphora and neither should be excluded from the core. Furthermore, there is evidence showing that the kind of empirical problem under consideration persists systematically across languages, thus ruling out as implausible any solution in markedness terms. For example, in Chinese, pronouns and anaphors are in complementary distribution under normal conditions as they are in English. This complementary distribution also breaks down in environments parallel to (2)–(3):

- (9) a. *Zhangsan* kanjian-le *ziji* de shu.
Zhangsan see-aspect self 's book
'Zhangsan saw his own books.'
- b. *Zhangsan* renwei *ziji* de shu zui hao.
Zhangsan think self 's book most good
'Zhangsan thinks that his own books are the best.'
- (10) a. *Zhangsan* kanjian-le *ta* de shu.
Zhangsan see-aspect he 's book
'Zhangsan saw his books.'
- b. *Zhangsan* renwei *ta* de shu zui hao.
Zhangsan think he 's book most good
'Zhangsan thinks that his books are the best.'

Besides this empirical problem, there is also a conceptual problem here. Although the formulation (5) has a number of desirable properties, one might wonder why the notion of an accessible SUBJECT should be involved for both an anaphor and a pronoun. Consider the definition of accessibility given in (8). Note that the two requirements on accessibility—c-command and nonviolation of the $*[{}_i \dots i \dots]$ filter—are also requirements on what may qualify as the antecedent of an anaphor. The sentences in (11) are ruled out because the antecedent of an anaphor fails to c-command it, and (12) is ruled out because the antecedent properly contains the anaphor, a situation that violates filter (7):¹

- (11) a. **Each other's* pictures pleased *the men*.
 b. **Pictures of the men* pleased *each other*.
 (12) **[A picture of itself]_i* is on the table.

That these two requirements on the antecedent of an anaphor should be used to jointly define accessibility suggests that “to be accessible to α ” is just another way of saying “to be capable of serving as the antecedent of α ”, namely that accessibility is not an independent notion solely invented for the purpose of defining a governing category. The fact that this notion is relevant in characterizing the governing category for an anaphor now makes sense: since anaphors need antecedents, what the binding theory says is that they must be bound in the minimal domain whose SUBJECT is a possible antecedent (i.e. accessible).

What we have just seen to be quite reasonable, however, ceases to make sense when we consider pronouns. First, it is well known that the antecedent of a pronoun need not c-command it (cf. (11)):

- (13) a. *Their* pictures pleased *the men*.
 b. Pictures of *the men* pleased *them*.

Given this, one has reason to wonder why, according to (5), the governing category for a pronoun must contain a potential antecedent that c-commands it. In fact, one has reason to wonder why it must contain a potential antecedent at all, since it is also well known that pronouns need no antecedents. Furthermore, as (1b) already indicates, a theory of pronouns should be concerned with characterizing environments under which disjoint reference is required, not when coreference is required or how its reference is determined. The requirement that a potential antecedent be present for a pronoun within a domain

¹ There is reason to believe that filter (7) expresses a special case of a more general phenomenon of unacceptable “referential circularity”. For more discussion, see Higginbotham and May (1981), Brody (1981), and Higginbotham (1982).

where disjoint reference is required seems to be totally without reason. Also, note that (1b) only requires a pronoun to be free in its governing category; it does not require it to be “anti-bound”, or to search for a noncoreferential NP in some domain.² Even if there is a noncoreferential NP in the governing category of a pronoun, the former certainly need not be accessible to the latter. In *John’s mother saw him*, the word *John* certainly can be noncoreferential with the word *him* without c-commanding it. Also, in *the picture of it*, the pronoun *it* certainly can be noncoreferential with *the picture*, though coindexing the two would violate filter (7). In short, the conceptual problem with the binding theory is that, although there is some good motivation for assuming (5) as the right formulation for a governing category in the case of an anaphor, there appears to be no similar motivation for making the same assumption in the case of a pronoun.

2. The two problems we have seen suggest that the domain for defining anaphor binding and the domain for defining pronominal noncoreference are not identical, though they overlap to a large extent. There are a number of plausible ways to instantiate this idea. I will now propose what I believe to be the best instantiation, and show how the problems are solved. In section 3 I will consider an alternative, and show that the proposal made here fares better.

My proposal is to minimally modify the definition of a governing category, as follows:

- (14) α is a governing category for β if and only if α is the minimal category containing β , a governor of β , and a SUBJECT that, if β an anaphor, is accessible to β .

This formulation differs from (5) only in that it takes the accessibility of a SUBJECT to be irrelevant as far as pronouns are concerned.

Empirically, (14) is intended to have the effect of (5) for anaphors and the effect of (4) for pronouns. In the case of an anaphor, (14) is identical with (5), so the sentences in (2) fall under (14) as they do under (5). To have the sentences in (3) also fall under (14), we must have (14) do the work of (4) in the case of a pronoun. To see how this can be done, consider the notion SUBJECT. Chomsky uses this term to include the subject of S, the subject of NP, and Agr. Suppose we generalize

² Chomsky (1981, 211) says, “The intuitive idea . . . is that an anaphor or a pronominal searches for the closest SUBJECT to which it can be linked, where linking involves coreference for an anaphor and disjoint reference for a pronoun.” The view that a pronoun must be linked to some noncoreferential NP seems to be groundless in view of well-formed examples like *He is here*.

the notion slightly, as follows:

- (15) The SUBJECT of a maximal phrase A is the subject of A or the nominal head of A.

As before, only NP and S have SUBJECTs. Furthermore, every S, regardless of its tense, has a subject in English. A tensed S, in addition, may have Agr as a SUBJECT, if it is assumed that S is the maximal projection of Infl.³ An NP may or may not have a subject, but always has a SUBJECT, i.e. its nominal head. Therefore, α has a SUBJECT if and only if α is NP or S. It follows that (14) is equivalent to (4) as far as pronouns are concerned. The sentences in (3) therefore fall under (14) as much as they do under (4).⁴

We have seen that the empirical problem posed by sentences (2)–(3) disappears under our modification (14). Since this formulation takes the accessibility of a SUBJECT to be irrelevant for pronouns, it should be evident that the conceptual problem noted above also ceases to exist.

3. In the proposal presented above, a minimal modification is made in the definition of a governing category, while the binding conditions in (1) are left in their original form. A plausible alternative is to maintain a uniform definition of a governing category for both pronouns and anaphors, but to modify the statement of the binding conditions in some minimal way. In particular, one might plausibly suggest keeping definition (4) as originally stated for both pronouns and anaphors, while restating the binding conditions as follows:

- (16) a. An anaphor is bound in its minimal governing category with an accessible SUBJECT.
b. A pronoun is free in its governing category.

As far as the two problems we have discussed are concerned, this alternative is as good as the one proposed in section 2, as the reader can determine. The alternatives differ, however, in two nontrivial ways.

First, note that since the newer alternative takes (4) as the

³ That Infl is the head of S is a fairly well-known assumption (see for example Chomsky (1981), Stowell (1981), Akmajian, Steele, and Wasow (1979)). There is also reason to assume that S' is in fact Comp', thus that S is a maximal phrase. Some support for this latter assumption comes from the fact that head-final languages (e.g. SOV) have clause-final Comps, whereas head-initial languages (e.g. VSO) have clause-initial Comps. This assumption concerning the head of S' also agrees with the view that S' is PP.

⁴ We will assume that the referential index of a head N comes (i.e. percolates) from the maximal NP node. Thus, the head N *pictures* as a SUBJECT in *pictures of α* is not accessible to α , since coindexing the head and α necessarily violates filter (7). The NP *pictures of α* is a governing category for α if α is a pronoun, but not if it is an anaphor.

definition of a governing category, it has precisely the same conceptual problems as the earliest theory embodying (1) and (4). That is, it is necessary to stipulate NP and S as the only possible governing categories, and it is impossible to collapse the NIC and the SSC into one condition. An important question concerning the clustering of NP and S, and of the NIC and the SSC, is thus left unexplained. On the other hand, our earlier proposal does not suffer from this defect. Since the existence of a SUBJECT is taken in (14) to be relevant for both anaphors and pronouns, our proposal has precisely the same advantage over the newer alternative as does Chomsky's (5) over (4).

Second, and more significantly, the newer alternative, but not our proposal, loses an important consequence concerning the distribution of PRO, namely the theorem (17):

(17) PRO is ungoverned.

Chomsky assumes that PRO is a pronominal anaphor because it is on a par with both pronouns and anaphors. According to (1a) and (1b), if PRO has a governing category, then it must be both bound and free in this category—a contradiction. By reductio ad absurdum, then, PRO cannot have a governing category. In order to have no governing category, PRO must be ungoverned.⁵ This theorem, derivable free as a consequence of the binding theory, is a desirable one. Thus, PRO can only appear in the subject position of an infinitival or a gerundive clause:

- (18) a. John tried [[PRO to go]].
 b. John preferred [[PRO going alone]].

The following sentences may be ruled out because PRO is governed:

- (19) a. *John said that Bill knows PRO.
 b. *John saw Bill's pictures of PRO.
- (20) a. *They saw PRO's pictures.
 b. *They saw pictures of PRO.
 c. *They expected that pictures of PRO would be on sale.
 d. *They expected that for PRO's pictures to be on sale would be possible.
 e. *They expected that for PRO to come would be possible.
 f. *They expected that it would be possible for pictures of PRO to be on sale.

Consider now the newer alternative embodying (16) and

⁵ According to (5), a PRO may be governed and still fail to have a governing category by virtue of having no accessible SUBJECT. See Chomsky (1981, 219f) for independent motivations for ruling out this possibility.

(4). It is easy to see that (16a) and (16b) jointly rule out the sentences in (19), as desired. This is because in each of (19a,b) the minimal category containing PRO and a governor of PRO also contains a SUBJECT accessible to PRO (i.e. *Bill*). Therefore, PRO must be bound and free in the same category—a contradiction. Note that the situation with (20) is different. Here, the minimal category containing PRO and a governor of PRO does *not* contain a SUBJECT accessible to PRO. The minimal such category containing an accessible SUBJECT is the root clause in each case. These are precisely sentences in which pronouns and anaphors are not in complementary distribution (cf. (2)–(3)). As a pronominal, PRO in each of (20a–f) may be free in its governing category (an embedded S or NP) in accordance with (16b). As an anaphor, PRO may be bound to *they* in the root clause, satisfying (16a). The theory thus fails to rule out the sentences in (20) as ill formed.

One might try to rule out (20a–f) by a separate principle barring PRO from occurring, say, in a Case-marked position. Besides having the defect of being a pure stipulation, however, this move does not provide a means to rule out sentences with non-Case-marked, governed PROs. The sentences in (21) would be well formed, with PRO having arbitrary reference on a par with (22), if PRO needed only to be non-Case-marked:

- (21) a. *It seems [PRO to be honest].
 b. *It was ridiculed PRO.
 (22) It is unclear [what [PRO to do]].

The contrast between (21) and (22) is an automatic consequence, however, in a theory that requires PRO to be ungoverned.

It appears, then, that there is a serious drawback to the formulation (16) as a modification of the binding theory. It remains now to show that proposal (14) does not have this drawback and that it still has the desired property from which to derive the theorem that PRO is ungoverned.

It is relatively easy to see that (14) does have this desired property. According to (14), the governing category for an anaphor must have an accessible SUBJECT. Since PRO is an anaphor (i.e. a pronominal one), if it has a governing category, then the governing category must always have an accessible SUBJECT. (Conceptually, this is what we would expect. Since PROs do look for antecedents, accessibility is relevant.) The fact that it is also a pronominal does not make it possible for a PRO to have in addition a governing category without an accessible SUBJECT, since PRO is both anaphoric and pronominal, *not* either anaphoric or pronominal. Since both the stricter requirement (that it have an accessible SUBJECT) and the looser requirement must be satisfied by PRO, the stricter requirement must always be satisfied. Thus, if PRO has a gov-

erning category at all, it has one governing category at most. Now the conditions (1a) and (1b) require PRO to be bound and free in this single category. Q.E.D.

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MORE EFFECTS OF SUCCESSIVE CYCLIC MOVEMENT

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In Torrego (1981) I gave evidence from Spanish in favor of deriving the apparent unboundedness of *Wh* Movement from successive cyclicity (Chomsky (1973)). The evidence I offered concerns the distribution of obligatory inversion in certain Spanish *wh*-constructions. On the basis of obligatory inversion, I also argued that Rizzi's (1982a) approach to boundedness is valid for Spanish.

In this note I will present additional evidence from Spanish which strongly suggests that both successive cyclicity and a theory of bounding nodes are needed in the theory of grammar. The evidence involves *wh*-extraction in clausal complements of the *lamentar* class of verbs.

1. In Spanish, verbs such as *lamentar* 'to lament' (*alegrarse* 'to be glad', *preocuparse* 'to be worried', *esperar* 'to hope', *sentir* 'to be sorry', *convenir* 'to be convenient', etc.) and some verbs of saying allow the complementizer *que* 'that' of the

I want to thank N. Chomsky, R. Kayne, and T. Stowell for their helpful comments.