

On the Anaphor-Agreement Effect

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Anaphors do not occur in syntactic positions construed with agreement. This generalization holds quite systematically in natural languages. It is illustrated by the impossibility of Italian examples like **A loro piacciono se stessi* ('To them please themselves'), in which the postverbal theme, construed with agreement, cannot be an anaphor bound by the preverbal experiencer; the same constraint is illustrated by a systematic gap in the distribution of long distance anaphors in Icelandic and other languages with long distance anaphors. After a presentation of the theoretical background (section 1) and an illustration of the anaphor-agreement effect (sections 2 and 3), this article proposes an interpretation of the effect based on an analogy with the PRO Theorem: if agreement features are intrinsically pronominal, the local construal of an anaphor with agreement involves two elements whose binding requirements are incompatible, whence the ill-formedness of the configuration. The technical adjustments of the Theory of Binding that are needed to achieve this result are shown to provide an immediate account of the well-known disjoint reference effect with subjunctive (in *Mario vuole che Ø venga* 'Mario wants that Ø come', *Mario* and \emptyset are referentially disjoint)*.

The following examples illustrate the well-known fact that a reflexive or reciprocal (henceforth an anaphor) must have its antecedent in the same simple clause. If the antecedent is in a higher clause, the structure is ill-formed:

- (1) Bill thinks that *they* like *each other*
- (2) a. * *They* think that Bill likes *each other*
b. * *They* think that *each other* please Bill

Does the ungrammaticality of (2a) and (2b) represent a genuine linguistic generalization? Different versions of the Binding Theory (or of its antecedents) give different answers. For instance, the classical transformational approach (cf. Lees & Klima (1963) and subsequent work), a *Conditions* type framework and the standard approach to Binding within the Government

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Binding Theory (cf. Chomsky 1981) give a positive answer: there is a particular principle that is violated in both cases (respectively, the Clause Mate Condition, the Tensed S Condition, and Binding Principle A). On the other hand, the approaches to Binding in Chomsky (1980) and Chomsky (1986) give a negative answer, and claim that the two ill-formed examples violate two distinct conditions: (2a) violates the fundamental binding principle (the Specified Subject Condition, subsumed under Principle A), whereas (2b) violates a different condition (the Nominative Island Condition, subsumed under the Empty Category Principle).

In spite of the natural intuitive appeal of the first trend, English already offers rather straightforward empirical evidence favoring the second trend. If we slightly manipulate the structures in (2) by embedding the reciprocal within a NP, an asymmetry emerges: the structure in which the anaphor is embedded within the subject is notably more acceptable:

- (3) a. * They think that Bill likes *each other's* pictures
 b. They think that *each other's* pictures please Bill

The literature on Binding of the last decade shows that it still is formally possible to give a uniform treatment of (2) and (3) through a unique principle, but this result requires a rather artificial definition of the opacity creating factor (the Accessible SUBJECT of Chomsky's *Lectures*). A more promising tack seems to be the one followed in Chomsky (1980, 1986): (3) is the representative paradigm of the operation of the Binding Theory; things are blurred in (2) by the intervention of a disturbing factor which rules out (2b).

This article adopts the latter approach, and tries to give a contribution to the identification of the disturbing factor involved in (2b) and similar examples. After a presentation of the theory of Chomsky (1986) in section 1, we will claim in section 2 that there is a fundamental incompatibility between the property of being an anaphor and the property of being construed with agreement: the anaphor-agreement effect. The third section will deal with the peculiar binding properties of the subject position of subjunctive clauses in Romance, and the fourth section will be devoted to the theoretical interpretation of the anaphor-agreement effect.

1. An ECP based account.

The fundamental empirical fact that all the versions of the theory of Binding have tried to capture is the near complementarity between anaphors and coreferential pronouns. In general, an anaphor is possible in environments in which a pronoun cannot be coreferential and, reciprocally, a pronoun cannot be coreferential in environments in which an anaphor is allowed to occur:

- (4) a. Bill thinks that [they_i like each other_i.]
 b. * Bill thinks that [they_i like them_j.]
 (5) a. * They think that [Bill likes each other_i.]
 b. They think that [Bill likes them_j.]

Still, in some environments the complementarity disappears; the possessive position on a NP in English can host both an anaphor and a coreferential pronoun:

- (6) a. They_i like [their_i books]
 b. [They_i like each other_j's books]

Conversely, the subject position of a subjunctive clause in Romance allows both anaphors and coreferential pronouns: there is no way to express coreference between this position and the superordinate subject (the examples illustrate the effect in Italian):

- (7) a. * Gianni_i vuole che se stesso_i vinca
 'Gianni wants that himself_i win'
 b. * Gianni_i vuole che (lui)_j vinca
 'Gianni wants that he_j win'

Let us postpone the discussion of the Romance case. The approach to Binding proposed in Chomsky (1986) is specifically designed to account for the selective lack of complementarity illustrated in (6). We will now present a simplified version of this approach.

The general complementarity is captured by the fact that anaphors and pronouns have opposite binding requirements within the same local domain, their Governing Category (GC):¹

- (8) Binding Principles:
 A. An anaphor must be bound in its GC
 B. A pronominal must be free in its GC

So, in general, wherever an anaphor can survive (hence it can be bound), a pronoun must be free, non coreferential. The partial lack of complementarity in such environments as (6) is accounted for through a proper definition of what counts as the Governing Category for a given element:

- (8bis) Governing Category: Z is the Governing Category for X iff Z is the minimal category with a subject containing X, a governor G for X, and where the binding requirements of X are satisfiable.

This system gives the correct result in the cases of (4), (5) and (6) (the governing categories are indicated by the brackets). In (4a), (5a) the GC of the anaphor is the lower clause, the minimal category with a subject containing the anaphor, a governor for the anaphor (the verb) and where the binding requirements of the anaphor are satisfiable in principle, under some indexation (the clause contains a position, the subject position, which can function as a binder for the anaphor in object position). In this system, assignment of the GC is done in part on the basis of the *virtual* binding properties (presence or absence of a position that could, under some indexation, function as a binder

¹ An element X is bound in a given domain iff there is another element Y in the same domain which c-commands X and is coindexed with X. Y c-commands X iff neither Y dominates X nor vice versa, and the first branching node dominating Y dominates X as well. An element is free in a given domain when there is no other element in the same domain which binds it.

der). Once this operation is performed, the *actual* binding properties are checked. The anaphor is in fact bound in its GC in (4a) but not in (5a), which is then ruled out by the Binding Principle. In (4b), (5b), the GC of the pronominal is again the embedded clause, the minimal category with a subject containing the pronominal, its governor and where the binding requirements of the pronominal can be fulfilled in principle. The actual binding properties are then checked: by Binding Principle B the pronominal must be free in its GC, as is the case in (5b), but not in (4b). Consider now (6a-b). In (6b) the minimal category with a subject containing the anaphor and its governor is the NP *each other's books*; still, the anaphor couldn't possibly have its binding requirements fulfilled within the NP: *qua* anaphor it should be bound, but there is no possible binder for it within the NP. So the binding properties of the anaphor are not satisfiable within the NP, the NP does not meet the definition of GC, and we have to move to the next higher category with a subject, the whole clause. Here the binding requirements of the anaphor are satisfiable, as there is a potential binder for it, the subject of the clause. The definition of GC is thus met. As the anaphor is in fact bound in its GC, the Binding Principle is satisfied. Consider now (6a). If we try to compute the GC of the possessive pronominal, the first candidate is the NP *their books*, the smallest category with a subject (the pronominal itself) containing the pronominal and its governor (the noun). Moreover, the binding requirements of the pronominal are satisfiable within the NP; as pronominals must be free, this condition will always be trivially fulfilled in a structure in which there is no possible antecedent. So, the NP qualifies as the GC for the pronominal: as the pronominal is free in its GC, Binding Principle B is met, and the structure is well formed even if the pronominal is bound outside its GC, as is the case in (6a). The theory of Chomsky (1986) thus achieves the result of accounting for the non-complementary distribution shown in (6) through a unique definition of GC for anaphors and pronominals, which correctly predicts the complementarity manifested in the other cases.²

This system also correctly accounts for the contrast between (3a) and (3b):

- (3) a. * They_i think that [Bill likes each other_i's pictures]
 b. [They_i think that each other_i's pictures please Bill]

² A problem for this approach is raised by the fact that in (some) languages with a reflexive possessive the pronominal possessive is disjoint in reference. Danish is a case in point (examples adapted from Vikner 1985):

- (i) Peter_i læste sin_i artikel
 'Peter read SELF's article'
 (ii) * Peter_i læste hans_i artikel
 'Peter read his article'

On the other hand in Italian the existence of the anaphoric possessive form *proprio* (Giorgi 1984) does not affect the possibility of a coreferential pronominal possessive:

- (i) a Gianni ama la propria casa
 'Gianni loves self's house'
 b Gianni ama la sua casa
 'Gianni loves his house'

We will leave this question open here. Cf. Burzio (1988) for important discussion.

In (3a) the GC of the anaphor is the embedded clause, the anaphor is not bound in it, hence the structure is ill-formed. In (3b) the embedded clause does not qualify as a GC for the anaphor (there is no possible antecedent for it), therefore we must move to the main clause, which meets the definition of GC. The anaphor is in fact bound in the main clause, hence the structure is well-formed.

But this system appears to make the wrong prediction on paradigm (2):

- (2) a * They_i think that [Bill likes each other_i.]
 b * [They_i think that each other_i please Bill]

The ill-formedness of (2a) is accounted for, but (2b) is not: the embedded clause does not qualify as the GC for the anaphor because there is no possible binder for it. The main clause qualifies as the GC, and the anaphor is bound in it. So, the structure should be well-formed, contrary to fact. Chomsky (1986) is thus lead to the conclusion that (2b) is not ruled out by the Binding Theory. He must then resort to an independent principle for this case. The proposal sketched out by Chomsky is the following. Suppose that anaphors move in the syntax of Logical Form to a position adjacent to (governed by) their antecedent; i.e., at LF sentence (9a) has a representation like (9b), resembling the S-structure order of elements in the corresponding Romance examples:³

- (9) a They saw each other
 b They each other saw t
 c Loro si videro t

Under this assumption, the LF representation of (2b) would be the following:

- (10) * They each other think that t please Bill

This representation is ruled out by the Empty Category Principle, the principle that limits possible occurrences of traces to properly governed positions.⁴

The impossibility of (2a) is thus traced back to the fact that an embedded subject is not extractable, neither by syntactic nor LF movement:

- (11) a * Who do you think that t likes Bill
 b * Mary seems that t likes Bill
 c * Gianni la ritiene che t ami Piero
 'Gianni her believes that likes Piero'
 d * Je n'exige que personne soit arrêté
 'I neg demand that nobody be arrested'
 e * Personne [je n'exige que t soit arrêté]

³ The hypothesis of anaphor movement in LF was originally made by Belletti (1982) for the case of Romance non-clitic reciprocals, and by Lebeaux (1985) for various cases in English. See also Heim, Lasnik & May (1988).

⁴ According to the standard definition of Chomsky (1981), proper government is either government by a lexical category or government by an antecedent. Neither case of proper government is met in (10). Various more recent refinements of the ECP (e.g. Rizzi 1990 and references cited there) are compatible with this interpretation.

(11a) is a case of *wh* movement, (11b) a case of NP movement (raising), (11c) a case of clitic movement, (11d) a case of LF movement of the negative quantifier, with LF representation (11e) (cf. Kayne 1984: ch.2 for discussion). According to Chomsky's proposal, the disturbing factor determining the asymmetry of paradigms (2)-(3) then is the ECP (cf. also an earlier proposal by Kayne (1984: ch. 8) in terms of his Connectedness condition). This principle rules out (2b), a structure which would otherwise be ruled in by the Binding Theory.

2. On the incompatibility between *anaphors* and *agreement*.

In this section we will discuss cases somewhat analogous to (2b), but such that neither the ECP nor the Binding Principle can draw the appropriate distinction to deal with them. The alternative we would like to explore originates from the observation that in (2b), but not in (3b) or (6b) is the anaphor directly construed with verbal agreement. It could then be that there is an intrinsic incompatibility between the property of being an anaphor and the property of being construed with agreement, an incompatibility which could turn out to be more fundamental than current approaches would suggest.

The first case to be considered involves different classes of psychological verbs in Italian.

- (12) a Loro amano lei
 'They love her'
 b A loro piace lei
 'To them pleases her'

The verb agrees with the preverbal experiencer in (12a) and with the postverbal theme in (12b), which receives nominative case.

There are reasons to believe that the dative experiencer in (12b) can be in subject position: it has subject-like properties with respect to the theory of bounding, the theory of control, etc. (cf. Belletti & Rizzi 1988, Perlmutter 1983). Now, the experiencer can bind an anaphoric theme in the first case, but not in the second:

- (13) a Loro amano se stessi
 'They love themselves'
 b *A loro piacciono se stessi
 'To them please themselves'

An even more minimal pair is offered by the following cases:

- (14) a A me importa solo di loro
 'To me matters only of them'
 b A me interessano solo loro
 'To me matter only they'

Importare takes a dative experiencer and a genitive theme, and *interessare* takes a dative experiencer and a nominative theme construed with agreement, like *piacere*. Again, the theme can be an anaphor in the first case, but not in the second:

- (15) a A loro importa solo di se stessi
 'To them matters only of themselves'
 b *A loro interessano solo se stessi
 'To them interest only themselves'

The well-formedness of (15a) is important, in that it shows that the dative experiencer can function as the binder of an anaphor. What rules out (13b)-(15b)? Not the Binding Principle, as there is a binder available in the same simple clause. ECP cannot be relevant either, as the postverbal position, lexically governed by the verb, is a possible extraction site:

- (14) I libri che a Gianni sono piaciuti di più...
 'The books that to Gianni pleased most ...'

Of course, the property singling out (13b)-(15b) is that only in these examples is the anaphor construed with agreement. We thus have a case of anaphor-agreement effect not (immediately) reducible to the Binding Principle or to the ECP.

This is the clause-internal equivalent of a well-known case involving long-distance anaphors in Icelandic (Anderson 1981, Maling 1982). Icelandic allows an anaphor in object position of a subjunctive clause to be bound by a superordinate subject; this option does not exist if the anaphor is the nominative subject construed with agreement in the subjunctive clause (examples from Maling 1982):

- (15) a Jón segir að María elski sig.
 'Jon says that Maria love+SUB SELF'
 b *Jón segir að sig elski María
 'Jon says that SELF love+SUB Maria'

That the crucial discriminating factor is not the subject/non-subject status, but the presence or lack of construal with agreement is shown by the following: if the verb selects a quirky (non nominative) case for the subject and the latter does not trigger agreement, then a long distance anaphor in subject position becomes possible:

- (16) Hún sagði að sig vantaði peninga
 'She said that SELF+ACC lacked+SUB money'

Moreover, verbs with a quirky subject and a nominative object construed with agreement do not allow the long distance anaphor to appear in object position; if the object is prepositional and not construed with agreement, the long distance anaphor can appear:

- (17) a *Sigga telur að mér líki sig.
 'Sigga thinks that to me likes+SUB SELF+ACC SELF+ACC SELF+ACC NOM'
 b Sigga telur að mér líki vel við sig.
 'Sigga thinks that to me likes+SUB with SELF'

Why are (15a)-(17a) ill-formed? An ECP based approach to (15a) would not generalize to (17a), and would not seem to be able to distinguish (15a) and (16). Anderson and Maling both suggest that these structures may be

simply excluded by assuming that the morphological paradigm of the long distance reflexive lacks a nominative form. But why should exactly the same gap exist in Italian (as well as in many other languages, no doubt)? Moreover, Italian provides clear evidence against the gap in the paradigm hypothesis: the same facts discussed before arise when first or second person reflexives are involved:

- (18) a A voi importa solo di voi stessi
'To you+PLUR matters only of yourselves'
b *A voi interessate solo voi stessi
'To you+PLUR interest only yourselves'

But first and second person stressed reflexives are formed by simply combining pronouns with the intensifier *stessi*.

As nominative pronouns exist, there is no doubt that nominative reflexives of second and third person are morphologically possible, and the gap in the paradigm approach cannot be appealed to for these cases. The anaphor agreement effect thus seems to involve a deeper syntactic incompatibility than just the lack of a form in the case paradigm.⁵

3. *Disjoint reference in subjunctive clauses.*

A well-known property of subjunctive clauses in Romance is the fact that an overt or null pronominal subject cannot be coreferential to the immediately superordinate subjects:

- (19) *Gianni vuole che (lui) scriva un libro
'Gianni wants that he write a book'

We will now sketch out an approach to this fact and show its relevance for the anaphor agreement effect. A natural analysis is the one proposed by Picallo (1985) and further elaborated by many other linguists:⁶ if the governing category of the subject of a subjunctive clause extends to the main clause, the disjoint reference effect simply is a case of application of principle B of the Binding Theory. This approach is made plausible by the observation that the effect is limited to adjacent clauses: if the antecedent is not subjacent to the pronominal subject, coreference is possible:

- (20) Gianni spera che Maria voglia che (lui) scriva un libro
'Gianni hopes that Maria want that he write a book'

This is exactly what is expected if the extension of the governing category of the subject solely involves the immediately superordinate clause. So, in (20) the GC of *lui* would be the intermediate clause *Maria voglia...*, in which

⁵ The same conclusion is reached, on the basis of different considerations, in Everaert (1988). This paper proposes a different approach to the whole problem, based on an extension of Kayne's Connectedness Condition, an approach that we will not attempt to assess here.

⁶ There is now an extensive literature on the topic. For different approaches cf. Jakubowicz (1985), Johnson (1985), Kempchinsky (1985), Raposo (1985), Ruwet (1984), Suñer & Padilla-Rivera (1984).

the pronoun would be free, as demanded by principle B. Nothing would exclude coreference with the main subject.

The technical question now arises of how this extension of governing category is to be achieved. Many current approaches try to relate the disjoint reference effect to the dependent, anaphoric nature of subjunctive. It is a fact that subjunctive subordinates manifest stricter «sequence of tense» restrictions than indicative subordinates. For instance, in standard Italian the sequence past - present is allowed with indicative, but not with subjunctive:

- (21) a Gianni sapeva/diceva che io lavoravo/lavoro con voi
'Gianni knew/said that I worked/work with you'
b Gianni voleva/credeva che io lavorassi/*lavori con voi
'Gianni wanted/believed that I worked/work with you'

The idea that subjunctive is an anaphoric tense is elaborated by Picallo (*op. cit.*), Raposo (1985) and others. I will assume that this approach is basically correct. But why should the anaphoric nature of the tense determine an extension of the governing category of the subject? The approach to Binding of Chomsky (1986) offers a simple solution. Suppose that we revise the definition of Governing Category given in (8) by adding the underscored part:

- (22) Governing Category: Z is the governing category for X iff Z is the minimal category with a subject containing X, a governor G for X, and where the binding requirements of X and G are satisfiable

i.e., we are now demanding that not only the binding requirements of the element to which a GC is to be assigned, but also the binding requirements of its governor be satisfiable in principle in the domain under consideration. If this condition is not met, the domain in question does not qualify as a governing category. This modification is inconsequential in most cases: ordinary governors are lexical heads or referential tenses, entities which are assimilated to referential expressions as far as the theory of binding is concerned. As the binding requirement of a referential expression is that it must be free, this requirement is trivially satisfiable in any domain, hence the added requirement never affects the assignment of GC in such cases. Things change radically if the governor is anaphoric. To illustrate, consider the assignment of GC to the pronominal subject of an indicative and a subjunctive embedded clause:

- (23) a Gianni dice che (lui) T+REF scriverà un libro
'Gianni says that he will write a book'
b Gianni vuole che (lui) T+ANAPH scriva un libro
'Gianni wants that he write a book'

Recall that coreference is possible in (a) and excluded in (b). In (a) the GC of the pronominal subject is the embedded clause, the minimal category with a subject which contains the pronoun, its governor, the (Infl containing the) referential tense and where the binding requirements of the pronoun and of the referential tense are satisfiable (both must be free, and this requirement is obviously satisfiable in the embedded clause). On the contrary, the embed-

