On the Nature of the Reflexivization Cycle

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0. Introduction

The aim of this article is to show that the facts usually accounted for under Binding Theory are not homogeneous. I develop an analysis which incorporates in the core of the grammar the treatment of long distance reflexives across Tense-less sentences (see Pica (1985.a)). This analysis (which provides evidence in favor of the existence of an LF level) suggests, along the lines of an idea originaly suggested for the treatment of reflexives by Lebeaux (1983), that all anaphors move at the LF level of representation. I propose a treatment of the facts (elaborating on an idea suggested, in a somewhat different context, by Chomsky (1986.a)) according to which BT applies only to traces of anaphors while the theory of antecedent government applies to both anaphors and their traces.

The article is organized as follows : in section 1, I develop the hypothesis that there exists two distinct kinds of reflexives and I state their respective properties. In section 2, I show that both types of reflexives share some common properties which I claim can be expressed in terms of the concept of saturation. I claim further that this property motivates a movement rule of anaphors at LF.

Section 3 shows that the subject orientation of certain reflexives follows in a straightforward way from general constraints on movement. Section 4 accounts for long distance binding phenomena. I suggest that the SSC can in certain contexts be circumvented by successive cyclic movement of the anaphor at LF. I propose in section 5 that the anaphor movement rule at LF is also motivated by the theory of antecedent government and, that the fact that long distance binding cannot occur across a tensed boundary derive both from the theory of antecedent government and the SSC.

. Two types of reflexives

It is a very well known fact that in some languages, in fact in most languages, some reflexive pronouns can be long distance bound leading to apparent violations of the Specified Subject Condition and Tensed-S conditions. This is true whether these conditions are formulated as primitives as in Chomsky (1975) or whether they derive from the effects of more abstracts principles, as in Chomsky (1982), where the relevant effects of the SSC and the TSC derive from Axiom A of BT - when this formulated in terms of SUBJECT, a notion which subsumes both the grammatical subject in the usual sense and the agreement marker of the INFLECTION node .

The phenomena we have in mind can be illustrated by sentences (1) and (2) in Danish, where the reflexive pronoun *sig* is "long distance bound" across the subject of a small clause in (1) and across the empty subject of an infinitive in (2), and by sentence (3) in Icelandic, where the reflexive pronoun is "long distance bound" across the subject of a subjunctive clause:

(1) Han$_i$ betragter patienten som farlig for sig$_i$
(he considers the patient as dangerous for himself)

(2) Han$_i$ hører Gertrude snakke om sig$_i$
(he hears Gertrude speak about himself)

(3) Jón$_i$ upplýsti að María elski (SUBJ) sig$_i$
(Jon says that Mary love himself)

These kinds of sentences have been intensively studied in the literature where two main attitudes can be distinguished
a) it is implicitly supposed that because different morphological forms like *themselves* and *sig* are considered to be reflexives in traditional grammar, this (indirectly) implies that the two forms should behave alike with respect to the Binding theory - any discrepency being treated in terms of markedness, as, for example, in Yang (1983) and Manzini and Wexler (1987)
b) it is supposed that forms like *themselves* on the one hand, and *sig* on the other, have very few things in common, that is, *themselves* is interpreted as a reflexive pronoun but *sig* is not, as in, among others, Maling (1984), (1986), where *sig* is treated like a logophoric pronoun similar to those observed in various African languages (see on that topic Koopman, and Sportiche (forthcoming)).<1>

I have for my part claimed in various articles (see for example Pica (1985.a)) that both approaches are incorrect and that
(i) the contrast between *themselves* and *sig* is a reflection of the fact that there exist two kinds of reflexives whose respective properties can be expressed in terms of X'Theory and θ-Theory
(ii) that these two types of elements are respectively subject to the Specified-Subject condition (with respect to which tenses of a subjunctive mood are not pertinent) and to the Tensed-S Condition.

This led me to propose the reformulation of the Binding Theory subsumed in (I) from Pica (1985.a) :

(I)
An anaphor β must be bound in its binding category α,
where α is a binding category for β iff :

a) α is the minimal category containing β and an accessible subject to β and β lacks a thematic role or is in a non-argument position
b) α is the minimal category containing β and the element [+ TENSE] when β has a thematic role and β is in an argument position

The formulation of (I) led me to propose that a large number of reflexives are in fact generated in a non argument positions and hence are subject to the SSC. I have for example claimed that it is the element *self* of *himself* and *each* of *each other*, and not the whole NPs, which are anaphors in English and that these anaphors are subject to the SSC in accordance with (I) because they are base generated in non argument positions.

(I) can, from this point of view, account for the observation that compound reflexives (*them+selves*) are usually clause bound while non-compound reflexives can frequently be long distance bound. This observation is reminiscent of the work of Faltz (1977) and Kiparsky (forthcoming). This relation between the domain of the anaphoric binding and the morphological make up of anaphors can be argued to follow, in these terms, from the fact that most compound reflexives can be analyzed as non argumental anaphors while non compound reflexives generally cannot.

Although this type of approach accounts in a fairly natural way for a large range of data, it remains quite descriptive. More importantly, it does not provide principled answers to the following questions
a) how can we express the common property of the two kinds of reflexives (the fact that both types of reflexives are anaphors and can consequently not refer to an antecedent generated in different sentences in the same text)
b) why should some anaphors (anaphors which appear to be in theta and argument positions) be subject to the tensed-S Condition while other anaphors (anaphors which appear to be in non argument or non theta positions) be subject to the Specified Subject Condition . That is, why should the binding theory be sensitive to the distinction between argument and non argument positions. This seems, at first glance, reminiscent of the difference between argument and adjunct positions, which we know plays a role in antecedent-government theory (as first pointed out in Huang (1982)). Why should the binding theory make reference to two kinds of domains respectively defined in terms of subject and Tense ?
c) why do anaphors which can be long distance bound have the property (provided some apparent counter-examples to which we return in our forthcoming work) of being unable to refer to objects - as illustrated by (4) in Danish :

(4) * Jeg fortæller Hans$_i$ om sig$_i$
(I told John about himself)

d) why should English lack an anaphor in argument position. That is why does English not have an anaphor corresponding to the Danish *sig* while Danish possesses both kinds of anaphors. This last point is illustrated by the contrast between (3) and (5) on the one hand and (4) and (6) on the other hand which shows that, in Danish, *hinanden* (each other) is subject to the SSC and can refer to an object :

(5) * De$_i$ hører Gertrude snakke om hinanden$_i$
(they hear Gertrude speak about each other)

(6) Jeg fortæller dem$_i$ om hinanden$_i$
(I tell them about each other)

2. Anaphors as unsaturated expressions

Higginbotham (1984), uses the terms "saturated" and "unsaturated", taken from Frege, to mark a distinction between phrases that denote and those that have one or more open places. He proposes in particular that the head Noun of an NP (such as *a dog* for example) is associated with an open position (which expresses in this case the fact that the head noun *dog* can denote each of the various dogs of the world). He suggests that this position must be supressed by an obligatory operation of closure according to which the specifier of NP binds the open position in NP.

I will turn now to the discussion of the phenomenon of inalienable possession which is instructive for the theory of binding proposed here.

It is well known that NPs expressing inalienable possession do not have complete reference as illustrated in (7) in French, where the head noun cannot be modified by an attributive adjective :

(7) Il lève la (*belle) main
(he raises the (beautiful) hand)

Note that such NPs behave like anaphors as noted by Kayne (1975) and Guéron (1985), among others. This point can be illustrated by the following paradigm in French, from Guéron, where (8.a) is excluded by the SSC and (8.b) excluded by the requirement that the body-part NP must be c-commanded by its antecedent :

(8) a. * Jean lui$_i$ semble avoir lavé les cheveux$_i$
(John seems to him to have washed the hair)

b. * J'ai lavé les cheveux$_i$ pour Jean$_i$
(I have washed the hair for John)

The fact that such NPs behave as anaphors is not entirely suprising since it is intuitively plausible that they do not have a complete (independant) reference but doubtful that this property (which seems to be related to some semantic property of the verb (cf. among others Kayne (op. cit.)) should be stated in the lexicon for each NP. We can account for the fact that the body-part NP does not have complete reference in (7) by assuming that the binding relation mentioned above is necessary for an NP to be fully referential but that this operation is blocked by the semantic nature of the body-part head noun when it expresses inalienable possession (see however Pica (forthcoming) for the details of the analysis). <2>
Let us assume contrary to Higginbotham's original formulation and somewhat along the lines of Higginbotham (forthcoming) that the operation of closure which is necessary for an NP to get full reference is not obligatory and that SPEC is not invariably a binder.

We are now able to say that the body-part N acts as a blocking element and "anaphorizes" the whole NP. The NP as a whole is an argument since it receives a

θ-role from the verb but this argument is "deficient" since it contains an open position. This NP consequently does not have complete reference and is identified as an anaphor with respect to the Binding Theory. <3>
We can tentatively formulate (II) :

(II)
An anaphor is an argument which contains an open position (in the sense of position mentioned above)

The same analysis can be carried over to the analysis of English reflexives if we assume that (along the line of Helke (1971) and as opposed to what we suggested in our previous articles) that English reflexives are composed of a specifier preceding a head noun *self*. We can say that the open position associated to the head noun *self* is not saturated by the specifier whether this specifier has the genitive case (*my*) or accusative case (*him*). This is so because the coindexation of the open position with the specifier is blocked by the semantic nature of the N *self* which expresses a (metaphoric) inalienable possession (see Pica (1987) for the details of the analysis).

Note that (II) can be extended to "mono-morphemics" anaphors such as *sig* in Danish if one admits that *sig* is a head noun directly dominated by a maximal projection N". This amounts to saying that the open position associated with the head noun *sig* is not closed (bound) since there is no specifier to bind it.<4> <5>
We see that arguments which contain an open position are anaphors in accordance to (II). The presence of a such a position might be the result of quite complex mechanisms involved in the internal coindexation of NPs as illustrated by the body-part NPs entering in inalienable constructions, the Danish reflexive *sig* (whose meaning is close to the one of the noun *self*), or, by the following sentence in Italian, from Giorgi (1984), about which I want to say that the binding of the open position is blocked by the presence of the "blocking" element *proprio*, which anaphorizes the whole NP :

(9) [La moglie di Gianni$_i$]$_j$ ama la propria *$_{i/j}$ madre
(Gianni's wife loves his own mother)

Higginbotham (1984), following Rothstein (1983) claims (somewhat reformulating an idea expressed by Frege (1891)) that all arguments have to be saturated. I shall adopt the view (cf. among others, Saddy (1986), Lumsden & Saddy (1985)) that the projection of a lexical item which is not saturated at one level of representation must achieve saturation at an other level . Reformulating an idea of Chomsky (1986.a), I will claim that the saturation of anaphors is achieved by a movement rule in Logical Form or, more precisely, that the effect of this rule is to supress the argumental status of the anaphor NP at this level of representation. If this can be shown to be correct then (II) can be replaced by (III) : <6>

(III)
An anaphor is an argument which is not saturated at S-structure

3. On subject orientation

Chomsky (1986.a) suggests that anaphors undergo LF-movement to the INFL position. I want to modify this idea in order to account for the observation that anaphors which can be analyzed as heads like *sig* (hence X° anaphors (see however

note <9>)) are always subject oriented, while anaphors which only can be analyzed as NPs like *himself* can refer to an object as well . <7> The phenomenon I have in mind is illustrated by the contrast in Danish between (4) and (6) above respectively restated below as (10) and (11) :

(10) * Jeg fortæller Hans$_i$ om sig$_i$
(I tell John about himself)

(11) Jeg fortæller dem$_i$ om hinanden$_i$
(I tell them about each other)

These sentences strongly suggest that while X" anaphors can be adjoined to X" and be interpreted in their adjunction sites , X° anaphors cannot be adjoined to that type of position and must move to INFL where they will be interpreted. Interestingly, these properties follow directly from a theory of movement in which head to head movement is restricted to head elements and where adjunction is limited to X^{max}, along the lines of Chomsky (1986.b) and in the spirit of Emonds (1976).

Let us assume a theory according to which the relation between an anaphor and its antecedent applies to anaphors at LF (see section 4 below for the details of the analysis). If sig is in INFL in sentences like (10), subject orientation follows from c-command (by the subject) of the reflexive in INFL while failure of object orientation follows from the failure of c-command provided that BT applies at the LF level of representation (or, more precisely, provided that the antecedent of *sig* is checked after movement in LF of *sig* to INFL). If this analysis is correct, the account of subject oriented reflexives does not necessitate any of the construction specific mechanisms often proposed in the literature. <8>

Note in particular that a movement to INFL at LF is compatible with the Barrier's framework of Chomsky (1986.b). The maximal projection of V, for example, is not a barrier for the movement of *sig* to INFL if we assume that *sig* moves first to V and subsequently moves to INFL along with the verb which in turn undergoes the obligatory rule of raising to INFL (along the lines of Chomsky (1986.c)). In other words - somewhat reformulating an idea of Belletti & Rizzi (forthcoming), an X^{max} is no longer a barrier after its head have been moved. <9>

An X^{max} anaphor, such as *hinanden* in Danish, cannot however adjoin to X° elements and must adjoin to an X^{max} such as VP or PP . It will consequently be able to be coindexed with a c-commanding object as in (11).

The anaphor movement rule at LF, which is motivated by the unsaturated character of the anaphor, suppresses a deficient argument "incorporated" into the INFL of the verb (*sig*) or "incorporated" into an adjoined position of a maximal projection which is not an argument (if the anaphor itself can only be analyzed as an X^{max}) (see however section 5 below). <10>

The reader should observe that, the site in which the anaphor can be interpreted follows in a straightforward way from the general theory of movement in the case of X^{max} anaphors. The same is not true however of X° anaphors : they cannot for example refer to an object while "adjoined" to V as also pointed out in note <9>.

This state of things strongly suggests that X° anaphors have to move to INFL

for partly independant reasons, a fact reminiscent of the behavior of reflexive clitics in romance.

I shall tentatively assume here that X° elements such as *sig* , which are "defective" from the point of view of the X'Theory (see note <4>), have to be interpreted in INFL. That is, a defective anaphor must be interpreted in a defective category. The defectiveness of INFL is reflected by the fact that IP (S) is not a barrier <11>

Note that, as opposed to some analyses which suggest that subject orientation of reflexives follows from the long distance binding itself (see note <1>), our hypothesis does not associate the two phenomena in such way that only long distance anaphors are predicted to be subject oriented. That our analysis is on the right track is indicated by (10) above, whose ungrammaticality cannot be reduced to a consequence of long distance binding and by the following contrast between (12) and (13) in Italian pointed out to me by L. Rizzi :

(12) Gianni$_i$ ha riconciliato Mario con sé$_i$
(Gianni has reconciliated Mario with himself)

(13) * Gianni$_i$ estato riconciliato e$_i$ con sé$_i$
(Gianni is reconciliated with himself)

The contrast between (12) and (13) shows that the reflexive *sé* , which is subject oriented cannot be coindexed with a derived subject. <12> Sentence (13) shows that this property is not limited to long distance binding (as opposed to what is often suggested in the literature). Note that - as expected under our analysis in which *sé* (which is an X° reflexive) is cliticized into INFL at LF - the ungrammaticality of (13) is reminiscent of the ungrammaticality of (14) in Italian, from Rizzi (1985) :

(14) * Gianni$_i$ si$_i$ è affidato e$_i$
(Gianni himself-is reconciliated)

Tentatively adopting Rizzi's hypothesis in which examples such as (14) are excluded by a principle according to which chain formation cannot extend over an intermediate binder, we can say that the ungrammaticality of (14) and (13) can be reduced to a single phenomenon provided that the chain algorithm applies at the LF level of representation <13>.

Belletti and Rizzi (forthcoming) note that a reflexive clitic cannot be coindexed with the subject of a verb like *preoccupare* (to worry) in Italian. They claim that this subject is not a deep subject. The phenomenon they have in mind is illustrated in (15) :

(15) * Gianni$_i$ si$_i$ preoccupa
(Gianni himself-worries)

The ungrammaticality of (15) parallels with the ungrammaticality of (16) in Icelandic, where, in my terms, *sig* is cliticized into INFL at LF <14>:

(16) * Jón$_i$ hyggrir sig$_i$
(John depresses himself)

Let us assume that the reflexive must c-command its trace in INFL as a result of movement. This explains the fact that an X° reflexive contained in an adverbial clause

cannot refer to the subject of the matrix clause to which it is attached but can however refer to the subject of a higher clause as shown in the Icelandic sentence (17) (adapted from Maling (Op. Cit.)) : <15>

(17) Jón$_i$ sagði þeim [að Gertrude$_k$ væri (SUBJ) glöd [ef María bydi (SUBJ) sér$_{i/*k}$
(John told them that Gertrude would be happy if Maria invited him / * her)

We shall see that the requirement that the reflexive must c-command its trace follows in a straightforward way from the theory of binding developed in the next section.

4.On long distance binding

The fact that X° reflexives in an embedded sentence can refer to the subject of the matrix clause stronly suggests that X° anaphors can move from INFL to INFL as long as they do not cross any tensed sentences.

The latter point is illustrated by the contrast between (18) and (19) in Icelandic where the long distance binding of *sig* is blocked since the embedded clause is indicative :

(18) Jón$_i$ sagði þeim$_j$ [að María elski (SUBJ) sig$_{i/*j}$
(John told them that Mary love himself)

(19) *Jón$_i$ veit [að María elskar (IND) sig$_i$
(John knows that Mary loves himself)

The analysis of (17) and (18) suggests that the reflexive *sig* (which is in both cases embedded in subordinate clause) can refer to the matrix subject because it can move to the matrix inflection node.

We have not yet provided an explanation for the fact that the matrix object *þeim* of (18) cannot bind an X° anaphor which remains in the inflection node of the subordinate clause. This state of affairs suggests that the X° reflexive in INFL is subject to the SSC or its reformulation in the Binding Theory. This observation recalls the behavior of the reflexive clitic *se* in romance.

The existence of long distance reflexives (which is in our terms limited to X° reflexives) suggests that the SSC can be circunvented for this type of reflexive (such as *sig* in Danish) but not for an X^{max} reflexive (such as *himself* or *each other* in English or the reciprocal *hinanden* in Danish).

I propose that that the SSC can be overcome through a cyclic head movement from INFL to INFL through the head position C of CP (COMP). This position serves as an escape hatch for X° anaphors when C is empty at LF (but not for X^{max} reflexives for which such movement is impossible).

This analysis implies that C is empty (or that its content can delete at LF) when it dominates a sentence whose verb has a subjunctive or infinitive inflection (probably because C is in this last case void of semantic content). These hypothesis are suggested by the fact that embedded infinitive or subjunctive clauses do not need to have an overt complementizer (as opposed to embedded indicative sentences) in a language like Italian (see also Ritter & Szabolcsi (1985) for empirical data which

support this hypothesis).

This analysis which is reminiscent of Chomsky's (1977) analysis of Wh-movement amounts to saying that the tensed-S Condition effects of Pica (1985.a) (see (I) above) derives surprisingly from the Specified Subject Condition on the LF relation between the reflexive and its antecedent in conjunction with the fact that the SSC can be circunvented by head movement of an X° anaphor from INFL to C (a movement which is analoguous of the rule of V to COMP advocated in the grammars of many Germanic languages). <16>

This way of looking at things is supported by the fact that long distance binding of X° reflexives across a subjunctive clause is not possible in a language like Russian (which admits long distance of X° reflexives across infinitive), where subjunctive inflection is identical with than indicative past tense, as illustrated by sentence (2O) from Rappaport (1986) :

(20) Vanja$_i$ xočet [čtoby$_k$ vse ljubili sebja $*_{i/k}$
(Vanja wants that everybody love himself)

I claim, in the terms of the present article, that (2O) is excluded by the SSC because the X° reflexive *sebja* cannot move to the C position. This position does not delete at the LF level since the embedded verb has an indicative inflection - or because deletion is blocked by the presence of the modal particle *by* - (see however note <16>). The fact that an X° reflexive in C cannot refer to a c-commanding object as illustrated by (18) above suggests that this type of reflexive can only be interpreted in INFL or, in other words, that this type of reflexive must be cliticized on the verb (hence in INFL) at the level of LF.

This analysis again raises the question of why the romance clitic *se* cannot be long distance bound, or, in the terms of the present article, why *se* cannot move to C. I believe that this fact can be understood if one assumes that movement from I to C is restricted to X° elements which bear a pronominal feature and that *se* is not a pronominal element.

That this hypothesis is on the right track is suggested by the fact that long distance *sig* exhibits certain pronominal properties. This is illustrated by (21) which is ambiguous with respect to the sloppy / non sloppy identity readings (a well known property of pronominal element) :

(21) Jón$_i$ segir að Maria ljósmyndi (SUBJ) sig$_i$ og svo gerir Pétur einnig
(John says that Maria photograph himself an Peter does so also)

The fact that long distance reflexives have some pronominal properties seems also supported by the fact that it is true across languages that an X° reflexive, which can undergo long distance binding, such as *soi* in French or *sig* in Danish, never expresses reciprocity. This property, as suggested to me by J. Higginbotham, is shared by pronouns which in a very general way can express distributivity but not reciprocity, as opposed to *se* in French which can. <17>

5. On antecedent-government

One should observe that movement from I to C is licit in the Barrier framework of Chomsky (1986.b) since the projection of INFL, IP (S) is defective and is not an inherent barrier. In addition, movement of X° elements from C to V is also licit in sentences like (18) above since CP (COMP) is L-marked and consequently is not a

barrier.

The adverbial clause of sentences like (17) however is not L-marked and the fact that X° movement out of CP is, in the terms of our analysis, licit in this case suggests that a maximal projection is not a barrier for an element extracted through its head, an idea which is related but not identical to an idea originally due to Rizzi and Belletti (forthcoming) (see section (2) above)).

The grammaticality of sentence (22) in Icelandic indicates that X° reflexives can move to the matrix INFL without having to move to the C position, which in this case cannot be deleted at LF (since the embedded clause is indicative) when no specified subject intervenes between the reflexive and its antecedent :

(22) ? Jón$_i$ segir þeim$_k$ [að myndir af sér$_i$ / *$_k$ eru (IND) til sölu
(John tells them that pictures of himself are on sale)

I claim in the spirit of note <9> that *sér* adjoins first to the prepositional phrase (γ-marking the original trace) and then moves to the matrix INFL. <18> Note the following sentence in Icelandic which is reminiscent of (24) in English :

(23) ?? Jón$_i$ veit að það er (IND) öruggt [að myndir af sér$_i$ eru (IND) til sölu
(John knows that it is certain that pictures of himself are on sale)

(24) They$_i$ know that it is certain that pictures of each other$_i$ are on sale

The grammatical status of (23) is unclear. If (23) is ungrammatical it might indicate that X° reflexive movement from INFL to INFL has to operate throught C of the impersonnal clause (which cannot delete in (23)). This analysis amounts to saying that C and INFL really share some pronominal features as suggested by the analysis developed above.

Note however that cyclic movement of *sér* to the matrix INFL is not imposed by an accessible subject in (23) (see for example, Manzini (1983)) as shown by the contrast between (23) in Icelandic and (24) in English or its equivalent in Icelandic which is perfectly grammatical:

(25) þeir vita að það er (IND) öruggt að myndir af hvorum öðrum eru (IND) til sölu
(they know that it is certain that pictures of each other are on sale)

I claim, developing an idea suggested in Chomsky (1986.a) that the X° reflexive has to move to the matrix INFL in order to be antecedent governed by its antecedent (while *each other* , an X" reflexive, can be antecedent governed by its antecedent without moving to INFL along the lines of note <9>).

The hypothesis following which antecedent government applies to reflexives (and which is partly reminiscent of the work of Kayne (1984), Everaert (1986) Pica (1985.a) and Chomsky (1986.a)) suggests that anaphor movement in LF is also motivated by antecedent government theory and that the theory of Binding itself is restricted to empty categories. Recall that (26) in French is excluded by the fact that *se* cannot move to C :

(26) *Paul$_i$ souhaite que Jean se$_i$ photographie
(Paul wishes that John photograph himself)

We can say that *se* cannot consequently be antecedent governed by its antecedent

and that (26) is also excluded by the theory of Antecedent Government (and not by the SSC only, as opposed to what was suggested in the previous section in connection with (19) to which this analysis can be extended). This strongly suggests that the Tensed-S effect of Pica (1985.a) partly derives from the theory of antecedent-government and that the Binding theory itself does not apply to the reflexive or the reciprocal themselves but to their trace and that BT can be reduced to (IV) :

(IV)
A trace β, which is not a variable, has to be bound in its binding category α, where α is a binding category for β iff α contains β and a subject accessible to β

Note that the identification of a lexical anaphor, and as a consequence the identification of its trace, makes reference to (III) of section (I) above which refers to mechanisms involved in NP internal coindexation. <19>

The theory I have outlined thus far, amounts to claiming that a variety of facts usually accounted for in terms of BT follows in a quite complex way from the general theory of movement (which itself makes reference to the status of the anaphor in terms of the X' theory and to the presence or absence in the sentence of an appropriate landing site for the anaphor) in a general theory in which lexical anaphors and their traces are treated alike with respect to the theory of antecedent government but where the binding theory itself is restricted to traces which are not variables.

The theory sketched above leaves several problems open, to which we shall come back in detail in our forthcoming work. I believe however that it shows that the two kinds of reflexives met across languages share some common properties and that parametric variation across languages is far more limited than what is generally assumed in the literature. I have in particular shown that the apparent diversity of binding properties can be accounted for by the binding theory as formulated in (IV) in its interaction with the theory of antecedent-government.

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1. A third view represented by Giorgi (1984) and Chomsky (1986.a) seems to suggest that subject orientation of reflexives is not a primitive property but rather follows from long distance binding itself. A strict interpretation of this hypothesis, which is at first glance, supported by data from italian and English (see however Pica (forthcoming)) is not compatible with the spirit of this article. See however note <15> below.

2. This analysis is partly reminiscent of the rather traditional idea according to which reference is not a property of the head noun but is rather a property of the whole NP. cf. for example Milner (1978) who claims that N has only "virtual reference" and can only get "actual reference" when associated with a specifier, and, for very similar ideas, Guillaume (1965).

3. This analysis does not imply that the principle according to which every argument must be saturated (see Rothstein (1983) and Higginbotham (1984)) has to be relaxed but rather that this principle does not hold at the levels of S-structure and D-structure in contrast to what is sometimes suggested in the literature (see section 3 below).

An alternative, which I want to consider here, amounts to saying that non saturated arguments are licit at D-structure and S-structure as long as their reference can be supplied by an appropriate antecedent at these levels of interpretation. This amounts to saying that the fact that an anaphor needs an antecedent follows partly from the theory of argument saturation and is not directly related to the Binding Theory itself (along the lines of the content of section 5 in the text). We can reinterpret the content of section 5 below by saying that antecedent government of the anaphor is a configurational requirement for saturation to be achieved at the LF level of representation.

4. This approach is compatible with the idea that X' theory can be partly reduced to the theta-discharging requirement of Higginbotham (1984) along the lines of, among others, Saddy (1986).That is, no specifier is obligatory within the maximal projection of an anaphor as long as the open position or the argument status of the NP will be supressed by syntactic means (see section 3 below).

Note however that the existence of complete NP's reflexives like English reflexives, where the specifier does not bind the open position associated with the head noun, is not compatible with the idea that X' theory could entirely be reduced to the discharging requirement as opposed to what is suggested in Saddy (Op. Cit.).

I claim in Pica (1987), developing a hypothesis of Pica (1986), that the presence of the specifier is related to the interaction between binding theory and θ-theory. I return to this very important topic in my forthcoming work.

5. This seems to imply that if a maximal projection exhaustively dominates its lexical head it is able to assume the status of its head, i.e to move by head to head movement. Note that, in the case of *sig* , this analysis is necessary if one assumes that the reflexive has to be moved in INFL as in section 4 below. Note that this type of projection which can be analyzed as head with respect to movement, still behaves as an NP with respect to θ-assignment (see however note <9> below).

6. This amounts to saying that *proprio* is not a true anaphor and that the fact that *"la propria madre"* behaves like an anaphor (is an anaphor) follows from general mechanisms which govern NP internal coindexation.

The same view can obviously be extended to cases like (i) below where "*his mind*" the idiomatic meaning of the head noun blocks the relevant coindexation :

(i) he lost his (*dirty) mind

An extension of the same kind of analysis to reciprocal raises a number of interesting questions which cannot be dealt with within this article for obvious reasons of space (cf. on this matter Pica (forthcoming)).

7. This statement disregards some apparent counter-examples and the problems mentioned in footnote <1>. See Pica (forthcoming).

8. See for example Mohanan (1982) and Kiparsky (forthcoming) (among others) where it is claimed that the subject orientation of reflexives provides evidence for the existence of a new level of interpretation -the level of lexical structure - to which binding principles apply -, Giorgi (1984) which makes use of the notion of prominent binding defined in terms of a thematic hierarchy; Hellan (1986), (forthcoming), which makes use of the notion of predicate complex and the LFG literature in general, where it is claimed that subject orientation of reflexives provides evidence for a clause nucleus .This last concept corresponds to the notion of *nexus* of the traditional scandinavian grammarians (see among others Diderichsen (1952) or Jespersen (1921)). See also for a more structural suggestion, Kayne (1981) and Pica (1984) where it is suggested that subject orientation of reflexives can be treated in terms of the unambiguous path hypothesis applied to binding.

9. The fact that the prepositional phrase headed by *om* is not a barrier for X° reflexive to INFL in (9) (a movement which is also an apparent violation of the head to head constraint of Chomsky (1986.b)) suggests that the mechanisms involved are slightly more complicated that what we assume in the text.

What we have called X° reflexive in fact share the properties of both X° and X^{max} elements. This amounts to saying that the fact that they must be interprteed in INFL follows from their clitic-like properties as is explained in the text.

We shall call this element type "X^{0}" reflexives. We can say that as an X^{max}, *sig* can adjoin to the Prepositional Phrase or to the Verbal Phrase in (9) but *sig* also can as an X° move to INFL where it has to be interpreted. Note that adjunction to the embedded CP in sentences like (23) in the text, is ruled out by the SSC as formulated in note <19> below. Note that movement to C, which is the only way to circumvent the SSC (see section 4 in the text) can only be done by substitution not by adjunction (in accordance with the theory developed in the text) and is thus restricted to X° elements. I return to these points in Pica (forthcoming) where I show that the notion

of X^n reflexive is supported by linguistic variation across languages.

The hypothesis according to which traces of anaphor movement are subject to the antecedent-government theory makes the (right) prediction that non argument anaphors are subject to stricter requirements than anaphors which are arguments. See Pica (forthcoming) on this point, which is partly reminiscent of (I) in the text but shows that my use of the adjective "argumental" in (I) was making reference to non homogeneous properties having to do with the X' theory on the one hand (the distinction between X^n and X^{max} anaphors) and to θ–theory on the other (the distinction between argument and non argument).

10. This follows the contraint according to which X^{max} can only adjoin to non argument X^{max}, a state of things which might follow from θ-theory as first suggested by K. Johnsson.

11. I show in Pica (forthcoming) that such an analysis can be generalized to clitic pronouns in general, which can cliticize at the S-structure level or at the LF-level (a state of things which is reminiscent of the analysis of Wh-movement suggested by Huang to account for apparent differences between English and Chinese (see Huang (op. cit.).

12. I return to this point in Pica (forthcoming) where I show that most apparent counter-examples to this claim are due to the fact that the reflexive corefers with the derived subject via a coindexation with its trace, provided that a small clause analysis is possible . This is a hypothesis which, I demonstrate , is compatible with the general framework sketched in this article.

13. This algorithm ultimately derives from the θ-criterion (see Rizzi Op. Cit.)

14. Many apparent counter-examples arise again in connection with the treatment of experiencer subjects. See for example the grammaticality of (i) below in Danish which contrasts with (16) in the text but parallels the grammaticality of (ii) in French, from Rizzi (Op. Cit.) :

(i) Han$_i$ bekymrer sig$_i$
(he worries himself)
(ii) Jean$_i$ s$_i$'avère e$_i$ être parti
(John appears to have left)

I return in details on this point and related topics in Pica (forthcoming)

15. We assume an analysis according to which the adverbial clause is attached to S and INFL is a sister of VP.

Chomsky (1987.c) suggests that the subject orientation of *each other* in a sentence like (i) in English is not due to movement to INFL but rather follows from the theory of antecedent government itself since *each* cannot adjoin to *them* because *them is* an argument :

(i) * ? I tell them$_i$ that pictures of each other$_i$ are on sale

This amounts to saying that the ungrammaticality of (1) can be reduced to the ungrammaticality of (ii) below :

(ii) * ? I introduced them$_i$ each other$_i$

and that subject orientation of anaphors is not a homogeneous phenomenon. I return into details on the status of (i) and (ii) and related topics in my forthcoming work.

16. See however section 5 below where I suggest that the Tensed-S condition effect also derives partly from the theory of antecedent government and that (19) is excluded by the theory of antecedent government.

17. An other line of approach will amount to saying that the fact that the clitic *se* cannot move at LF is related to the fact that it has already moved at the S-structure level. This amounts to saying that the scope of reflexives is determined by their positions in syntax. I return to this point which is reminiscent of the observation that *wh* -phrases in COMP at S-structure cannot undergo any further LF-movement (see Van Riemsdijk (1983); Aoun, Hornstein & Sportiche (1981) and Lasnik & Saïto (1984) in my forthcoming work.

18. We assume here (along the lines of Lasnik and Saito (op.cit.)) that, in the case of movement of an argument, all intermediate can delete and are not as such subject to the antecedent-government once the original trace of the argument is antecedent-governed(γ-marked) by the nearest intermediate trace which γ-marks it. Note that this amounts to extending to LF (as suggested in Chomsky (1986.c)) Lasnik and Saito's idea according to which argument chains (as opposed to non-argument chains) do not need to be fully represented at S-structure.

Note that this amounts to saying that, after adjunction to the Prepositional Phrase *sér* can move directly to the matrix INFL in (22) in the text , where movement to C is not forced by the SSC. The same analysis can be extented to (23).

19. (IV) amounts to saying that *himself* cannot be long distance bound in English because there is no way for its trace to escape the SSC. The analysis developed in the text forces us to adopt a formulation of the SSC which amounts to saying that a given element α, sensitive to the SSC, has to be bound in its proposition, where a proposition is a category which includes α, a subject accessible to α and a COMP position. The notion of proposition is partly reminiscent of the Truth Value Condition of Pica (1985.a), formulated in terms of Propositional Content in Pica (1985.b). We return to this point, as well as on the status of principle (B) and (C) of BT in our forthcoming work

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