At earlier stages of the theory of government and binding (Chomsky 1981), the binding theory was also believed to govern certain aspects of the restrictions on movement, most notably those on NP-movement. However, since the “barriers” stage (Chomsky 1986a), the move has been toward once again separating the binding and movement modules, the latter falling under chain theory.

Conditions A and B of the binding theory have essentially remained as first stated in Chomsky 1981 (with their conceptual roots in Chomsky 1973, and the idea that c-command is the relevant structural relation going back to Reinhart 1976). But now they govern only anaphora. Given this development, it is appropriate to check how well the binding theory in fact captures the distribution of pronouns and anaphors.

We argue that the many empirical problems with the current binding theory justify a revision of the most basic assumptions concerning what Conditions A and B are about. In some sense, what we propose is a return to a more traditional view of anaphora, by which both Conditions A and B govern the well-formedness and the interpretation of reflexive predicates in natural language.

On the other hand, we argue that the marriage of the binding and movement modules was not just a historical accident. The two do meet, but perhaps in a different way than...
previously assumed: some aspects of local anaphora, which have always been viewed as falling under the binding conditions, are in fact just a subcase of the theory of chains. Distinguishing binding theory effects from chain effects allows the binding conditions also to work correctly in languages other than English.

1 Anaphoric Expressions

The standard division of lexical anaphoric expressions is into pronouns and anaphors. Anaphors fall into two types: those that are standardly referred to as long-distance anaphors (Dutch zich, Norwegian seg, Italian sé, etc.) and those that are viewed as local (English himself, Dutch zichzelf, Norwegian seg selv, etc.). As observed by Faltz (1977) and Pica (1985, 1987), when anaphors are complex expressions, they are universally local, whereas the long-distance type is universally simplex. We will refer to the latter as SE (simplex expression) and to the former as SELF anaphors.4

In terms of internal structure, SE anaphors and pronouns form one group, distinguished from SELF anaphors. In accordance with Postal (1970), Vergnaud (1987), and others, we will assume that pronouns are in determiner position. Yet they project as full NPs, as in (1).

(1) \([\text{NP Pron} [\text{N} \ldots \text{e} \ldots]]\)

SE anaphors are structurally identical to pronouns, as in (2).

(2) \([\text{NP SE} [\text{N} \ldots \text{e} \ldots]]\)

But they differ from pronouns in that they lack a full specification of \(\delta\)-features (number, gender, person; see Chomsky 1981 and Bouchard 1984). Although they may preserve person features in many languages, they always lack number and gender features. Hence, they do not project an argument that can be interpreted independently.5 We take the lack of \(\delta\)-features to be the property responsible for their anaphoric nature. In the case of SELF anaphors, SELF is an N, rather than a determiner, and it combines with a pronoun determiner or a SE determiner, as in (3).

(3) \([\text{NP Pron/SE} [\text{N} \ldots \text{self}]]\)

We assume a definition of anaphors along the lines of those in Chomsky 1986b and Keenan 1987: Anaphors (of both the SE and the SELF type) are referentially defective NPs, which entails, for example, that they cannot be used as demonstratives, referring to some entity in the world (though it does not entail that they must be bound variables). Binding may be viewed as the procedures assigning the content necessary for their referential interpretation.

4 In addition, many languages have possessive anaphors. Discussion of their properties is beyond the scope of the present article.

5 See Bouchard 1984 for discussion of the connection between \(\delta\)-features and interpretability.
However, the two types of anaphors differ substantially in their grammatical functions. SELF anaphors function as reflexivizers. This function is carried by the SELF-N, whose semantics we take here to be a restriction imposing identity on two arguments of a predicate, one of which is the pronoun determiner embedded in the SELF anaphor. (The alternative is to view SELF as an operator turning a transitive predicate into an intransitive one, as in Keenan 1987.)9 SE anaphors lack this function altogether.

Combining the last two properties, we obtain the following typology of anaphoric expressions:

\[
\begin{array}{ccc}
\text{Reflexivizing function} & \text{SELF} & \text{SE} \\
\text{R(eferential independence)} & + & - \\
\end{array}
\]

The property R (referential independence) is essentially the one assumed in the GB framework (e.g., Chomsky 1981) for R-expressions, except that we place pronouns too under this roof, as +R. (We will discuss this property in more detail in section 6.) A major claim of this article will be that each of the properties in (4) is governed, in fact, by a different module of linguistic knowledge, which together capture the full distribution of local anaphora: only the reflexivizing function of anaphoric expressions is relevant for (our modified) binding conditions, whereas all aspects of their distribution that are sensitive to the R property fall, together with NP-movement, under chain theory.

As seen in (4), SELF and SE anaphors form one group with respect to the R property, as referentially deficient (−R) expressions. But SE anaphors also form a group with pronouns. As argued by Everaert (1986, 1991), their similarity to pronouns in internal structure (which we observed in (1) and (2)) correlates with a similarity in grammatical function. Put in our terms: both lack the reflexivizing function, and function just like arguments. However, because SE anaphors lack φ-features, some operation is needed to allow them to serve as arguments. In Reinhart and Reuland 1989 and 1991, we capture this by letting them adjoin to I (Agr), where they inherit the subject's features. It is their trace, then, that serves as the argument, inheriting the φ-features of the SE-I complex. As is well known, these anaphors, unlike the SELF type, are subject-oriented (can be bound only by a subject), which now follows directly from the fact that they are interpreted via an association to I. Following Everaert's insight, then, SE anaphors should be viewed as pronominal anaphors, as he defines them, though we may at times keep referring to them as just SE anaphors, for brevity. It should therefore not be surprising to find out that (in most studied languages) they pattern with pronouns with respect to Condition B.

Both types of anaphors also allow (discourse) uses known as logophoric (which we survey briefly in section 3.2). In Reinhart and Reuland 1989 and 1991, we argue that the

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9 At the moment we cannot take this line, since, as we will argue, Condition A is defined over syntactic predicates, so the arguments identified by SELF need not be semantic arguments of a predicate. In certain cases, then, a syntactically reflexive predicate does not correspond to a semantically intransitive predicate.
failure to distinguish between the grammatical and logophoric functions in the syntactic research on anaphora has led to many misconceptions concerning the syntactic distribution of anaphors. Specifically, the terms *local anaphor* and *long-distance anaphor* are highly misleading. Both kinds of anaphor can occur at all kinds of distances when they are used logophorically. If we focus on the grammatical function of anaphors, the domains of anaphor occurrence can be reduced (possibly universally) to just two. The first (corresponding to the "local" domain) is the domain of reflexivity, where a SELF anaphor obligatorily reflexivizes a predicate, and where both pronouns and the SE-pronominal anaphors are excluded. This is the domain regulated by Conditions A and B, as we restate them. The second is the domain allowing SE anaphors to be bound (though not excluding pronouns). Despite the apparently massive differences reported among languages, we argue there that this too is reducible to a unique domain. In traditional terms, this binding obeys the Tensed-S Constraint; that is, it is impossible across tense. We show that this follows from the fact that SE anaphors must move to I to acquire φ-features. The full distribution of SE anaphors, then, falls under movement theory, rather than just under the binding theory. With respect to the binding theory, they pattern with pronouns, obeying Condition B. In this article we focus on the domain of reflexivity, that is, on the binding theory.

We will not discuss reciprocal anaphors here. Their syntactic distribution appears identical to the distribution we define for SELF anaphors. However, we leave open the relations between reflexive and reciprocity marking, and further aspects of their interpretation.  

2 Condition B

2.1 Problems with the Standard Condition B

The standard formulation of the binding conditions (in (5)) entails strict complementarity between pronouns and anaphors, since the conditions are the precise mirror image of each other.

(5) **Condition A**

An anaphor is bound in its governing category.

**Condition B**

A pronoun is free in its governing category.

---

7 In previous work (Reinhart and Reuland 1989, 1991) we assumed that reciprocals do not allow a logophoric usage: hence, they have a different distribution than reflexive anaphors, and they should be governed by a different mechanism. However, Pollard and Sag (1992) argue convincingly that this is not true. Further examples are the following (from John Frampton and Daniel Fox (personal communication)), where the antecedent does not c-command the anaphor, which is a characteristic property of logophoric anaphora:

(i) John and Mary's houses appealed to each other's taste.

(ii) The arguments that John and Mary presented were the basis for each other's articles.

In any case, it seems that reciprocals are subject to additional constraints, required for their interpretation, and we assume on that the analysis proposed by Heim, Lassnik, and May (1991).
Although this is indeed true in many contexts, such as those of (6), and a pronoun is disallowed in an environment allowing an anaphor, it is well known that there are contexts where complementarity breaks down, most notably with adjuncts and NP anaphora: in (7) and (8) both a pronoun and an anaphor can occur, in apparent violation of (at least one of) the conditions in (5).

(6) a. Max criticized himself/*him.
   b. Max speaks with himself/*him.
   c. Lucie’s joke about herself/*her.

(7) a. Max saw a gun near himself/him.
   b. Lucie counted five tourists in the room apart from herself/her.

(8) a. Lucie saw a picture of herself/her.
   b. Max likes jokes about himself/him.

(Although Chomsky (1986b) proposes an account for the NP contexts of (8), it does not explain the contexts in (7).) The sentences in (6)–(8) differ in their argument structure. Whereas in (6) the anaphor and its antecedent are coarguments, in (7) and (8) they are not: in (8) the anaphor is embedded in an argument, and in (7) it is in an adjunct PP, or in any case, it cannot be itself viewed as an argument required by the verb’s grid (a point we expand on directly). Leaving exceptional Case-marking (ECM) subjects aside, for the moment, the generalization is that pronouns are disallowed only when the pronoun and its antecedent are coarguments. That this might be the correct generalization was observed by Partee and Bach (1981) and independently defended by Farmer (1984) and Farmer and Harnish (1987).  

The environments where a pronoun must be free are thus much more restricted than the environments where an anaphor can be bound. Furthermore, they do not appear to vary with languages. In languages allowing anaphors to be long-distance bound, pronouns are still excluded only in the same local coargument contexts as in English. For example, in the (long-distance) context of (9) in Dutch a pronoun is not excluded, but in the coargument case of (10) it is. (See Reuland and Koster 1991 for an overview of this fact across languages.)

(9) Jan zag [jou achter zich/hem staan],
    Jan saw [you behind SE/him stand]
    ‘Jan saw you stand behind SE/him.’

(10) Jan haat zichzelf/*hem.
    Jan hates himself/*him

The empirical coverage of the binding theory will therefore be significantly improved if
we start by restating Condition B. However, a somewhat more radical shift is needed concerning what this condition is about. Whereas both Bach and Partee (1980) and the standard GB binding theory view it as a condition on the distribution of pronouns, we argue that it is in fact a condition on reflexive predicates.

2.2 Reflexive Predicates

We define a predicate as reflexive iff (at least) two of its arguments are coindexed (see (11a)). Note, first, that if the pronouns in (6) were permitted to be bound, the resulting predicates would be reflexive, just like their counterparts with an anaphor, since two arguments of each predicate end up identical. A universal property of natural language seems to be that reflexivity must be licensed. A predicate (formed of N, V, etc.) can be reflexive only if it is linguistically marked as reflexive. The two available ways of reflexive marking across languages are marking the predicate’s head (for example, a verb) or marking one of the arguments. In the languages we are examining here, this corresponds to intrinsic and extrinsic reflexivization. In intrinsically reflexive predicates, the heads (verbs) are marked as such in the lexicon, with or without an overt morphological marking of the verb. Reflexivization is viewed, in these cases, as an operation on the verb’s θ-grid, absorbing one of its θ-roles (see, for example, Keenan 1987 and Chierchia 1989). Such verbs can be used only reflexively, and languages vary on whether the absorbed role is nevertheless realized in the overt syntax (as is obligatory in Dutch) or not (as seems permitted in English). A transitive predicate that is not intrinsically reflexive may turn into a reflexive predicate if reflexivity is marked on one of its arguments, with a SELF anaphor. We argue, then, that Condition B is simply the requirement that a predicate can be reflexive only if it is reflexive-marked.

Before proceeding to formulate this condition, we should note that natural language predicates may have more than just two arguments. In the very common case of a three-place predicate (with a dative argument), any two of the arguments, or all three, may be coindexed. Each of these coindexation options forms a reflexive predicate, the way we use the term. It is, then, an empirical question whether reflexivization is a pair relation, with each coindexed pair requiring its own marking, or whether one reflexive marker can license the coindexation of more than two arguments. The evidence we have so far suggests the second view, at least when reflexivization is marked on the argument, with a SELF anaphor (illustrated in (21)). (When the predicate is intrinsically reflexive, which arguments are identified is predetermined on its thematic grid.) Our definitions below are therefore formulated so as to allow this option.

(11) Definitions

a. A predicate is \( i \)-reflexive iff (at least) two of its arguments are \( i \)-coindexed (that is, are indexed \( i \)).

b. A predicate (formed of P) is \( i \)-reflexive-marked iff either P is lexically reflexive with respect to an \( i \)-indexed argument, or one of P’s \( i \)-indexed arguments is a SELF anaphor.
(12) **Condition B**

An i-reflexive predicate is i-reflexive-marked.

As is standard, Condition B should be read as a conditional, equivalent to: If a predicate is i-reflexive, it is i-reflexive-marked. Given these definitions, Condition B entails that coarguments of a predicate that is not intrinsically reflexive can be coindependent only if one of the coindependent arguments is a SELF anaphor. The condition is relativized to an index to guarantee that a given SELF anaphor, indexed \( j \), would not count as licensing the coindependent of two arguments with a different index, \( i \). (This could be the case, for example, in "Max showed myself to him," as pointed out by Arild Hestvik (personal communication) and Fox (1993).) For ease of presentation, we will use an abbreviated terminology throughout (unless there is a potential unclarity regarding which indices are involved). The abbreviated version of (11)–(12) is given below. Though for the examples we discuss in this article this simplified statement is sufficient, it should be kept in mind that the intuition intended by it is stated formally only as above.

(11') **Definitions**

a. A predicate is reflexive iff two of its arguments are coindexed.

b. A predicate (formed of P) is reflexive-marked iff either P is lexically reflexive or one of P's arguments is a SELF anaphor.

(12') **Condition B**

A reflexive predicate is reflexive-marked.

Let us now look at how this condition works in the examples we have been discussing.

In the case of (6a) (repeated in (13)), (12) is equivalent to the standard Condition B: in both (13a) and (13b) binding yields a reflexive predicate, so Condition B requires reflexive marking. Whereas (13b) is appropriately marked, the unmarked (13a) is filtered out. We may note that Condition B also captures cases left for Condition C in the standard binding theory. For (12), there is no difference between (13a) and (13c), and binding is ruled out in both, for the same reason.

(13) a. *Max criticized him._

b. Max criticized himself._

c. *Max/he criticized Max._

But in the NP cases, like (8b), repeated in (14), the pronoun is an argument of the predicate *jokes*, whereas its antecedent is an argument of the matrix verb. In this case, then, binding (illustrated in (14b)) does not yield a reflexive predicate, and therefore Condition B of (12) does not rule out anaphora here.

(14) a. Max likes jokes about him._

b. Max (\( \lambda x \text{ (like } x, \text{ jokes about } x) \) )
dition B is met. But let us look in more detail at the difference between the two types of PPs (which were illustrated already in (6b) and (7a), repeated here as (15a) and (16a)).

(15) a. *Max₁ speaks with him₁.
   b. *Max₁ relies on him₁.
(16) a. Max₁ saw a gun near him₁.
   b. Max₁ put the gun near/under/on him₁.
   c. Max₁ sat Lucie next to him₁.

As noted, when the pronoun and the antecedent are thematic arguments, as in (15), Condition B applies to rule out the unmarked reflexive predicate; but with locative and directional PPs, as in (16), the P complement shows no Condition B effects. Whereas in the case of (16a) it is common to characterize the PP as an adjunct, in (16b–c) this is less obvious, since these PPs are selected by the verb. However, Marantz (1984) has shown that locative PPs, including the selected ones, must be distinguished from the PPs in (15), as well as from instrumental PPs. In (16b–c) the verb selects only a location, which means that the whole PP, rather than the NP in it, carries the thematic role of the verb. One indication that a direct (semantic) relation is lacking between the P complement and the verb in such cases is, as Marantz points out (1984:31), that verbs selecting the locative role allow all locative prepositions, as illustrated in (16b), whereas in (15) the verb can select its argument only via one specific preposition. In (15), then, there is no P predicate, and the P complement is just an argument of the verb. In locative PPs, like those in (16), P forms its own predicate. We may add that in the case of locatives there appears to be a PP-internal thematic structure. For example, whereas in selects an argument with the semantic relation of a container, around selects something that is contained. Another way to state Marantz’s generalization is that in (15) the preposition and the verb necessarily form a complex thematic unit selecting the NP, which is not true for the verbs of (16), though they may still allow this as an optional lexical operation. (See also Baker 1988 and Hestvik 1991 for evidence supporting the noncoargument status of the NPs in locative PPs.)

Under this analysis, then, it does not crucially matter whether the PP itself is considered an adjunct. Whenever the preposition forms its own predicate, as in (16), the NP in the PP is not, itself, an argument of the verb. Coindexing a pronoun in this position with an argument of the verb therefore does not yield a reflexive predicate, given the definition in (11a) (since these two are not coarguments). Hence, Condition B is not violated. In section 5.3 we will return to further aspects of the way Condition B works in PPs. Discussion of ECM subjects will be deferred to sections 6 and 7.

Viewing Condition B as a condition on the linguistic marking of reflexivization entails yet another departure from the standard assumptions on binding: our Condition

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10 We thank Jane Grimshaw and Tom Roeger for helping us to understand the following cases.
11 Whereas in the case of argument PPs, as in (15), it is also true that the P selects its complement NP: in Marantz’s system, that NP is still defined as carrying the semantic role of the verb, and the P can be viewed as the mediator. This view is further developed by Pesetsky (1992).
arguments, as in (15), but with locative and B effects. Whereas is (16b-c) this Marantz (1984) has distinguished from the directs only a location, the thematic role of the king between the P (1984:31), that verbs in (16b), whereas do. In (15), then, the verb. In locative the case of locals, whereas in selects something that is the preposition the NP, which is not lexical. 1

The PP itself is concate, as in (16), the noun in this position predicate, given the Condition B is not Condition B works 7.

2.3 Condition B with SE-Pronominal Anaphors

So far we exemplified the operation of our modified Condition B with the distribution of pronouns, which is believed to be the core issue of the standard Condition B. However, as we proceed, it will turn out (in section 6) that the task of ruling out inappropriate pronominal anaphora is divided between two linguistic modules. Though there are many contexts of pronominal anaphora that are governed only by Condition B (and to which we return), in the specific examples discussed in this section, anaphora happens to be ruled out also independently of Condition B, by a general condition on coindexing chains (to be discussed in detail in section 6). To check the precise scope of Condition B, we should turn to the SE-pronominal anaphors, which provide the most direct support for our claim that Condition B governs reflexive predicates, rather than the distribution of pronouns.

As noted earlier, though referentially deficient (−R), these anaphors are not reflexivizers—occurring on an argument position of a predicate, they do not reflexive-mark it. With respect to Condition B, they therefore function in many languages exactly like pronouns. In the Dutch (17a–b) and the Norwegian (18a–b) Condition B rules out such anaphors exactly as before, since the reflexive predicates are not licensed. However, in the locative cases (17c) and (18c), where no reflexive predicate is formed, SE anaphors are allowed.12

   Max hates SE
b. *Max praat met zich.
   Max speaks with SE
c. Max legt het boek achter zich.
   Max puts the book behind SE

12 Jan Koster (personal communication) points out to us that in adjunct constructions such as (i) a reflexive is required (see also Koster 1985).

(i) Jan sprak namens zichzelf.
   Jan spoke on behalf of himself

Regardless of whether namens is analyzed as a P or an N (the latter being more in accordance with its historical origin), such cases are captured by our analysis of P and N predicates in section 5. According to that analysis, namens forms a semantic predicate (though not a syntactic one). One of its arguments is zichzelf, the other is controlled by Jan. Hence, the adjunct in (i) is a reflexive predicate by itself and therefore must be reflexive-marked.
(18) a. *Jon foraktet seg. (Hellan 1988:chap. 3, (13b))
         Jon despised SE
b. *Jon snakket med seg.
         Jon talked with SE
         Jon puts the book behind SE

Everaert (1986, 1991) has noted a contrast that constitutes a real challenge to the
tandard binding theory. Unlike (17a), where *zieh is excluded, the apparently identical
structures in (19a–b) allow or even require it. Hellan (1988) found the same to be true
for the Norwegian equivalents in (19c–d).

(19) a. Max wast zich.
         Max washes SE
b. Max schaamt zich.
         Max shames SE
         ‘Max is ashamed.’
c.  Jon wasset seg. (Hellan 1988:chap. 3, (22a))
         Jon washed SE
         Jon shames SE

Everaert shows that this correlates with differences in the inherent properties of the
verbs. A verb like schamen ‘shame’ is intrinsically reflexive, as witnessed by the fact
that it cannot take any object distinct in reference from the subject. Verbs like wassen
‘wash’, which do allow a distinct object, are listed twice in the lexicon, both as reflexive
and as nonreflexive; their reflexive entry allows the SE anaphor, and their transitive
entry occurs with a SELF anaphor. The verbs of (17a) and (18a) do not have an intrinsic
reflexive entry at all.13 The same distinction among these verbs is found in many lan-
guages, though, as observed by Zubizarreta (1987), languages differ in whether they
allow, require, or forbid the patient role of their intrinsically reflexive verbs to be realized
syntactically, as in (19).

The contrast between (17a–b)–(18a–b) and (19), then, follows directly from the way

13 Independent support for this claim comes from the interpretation of nominalizations. When subject and
object arguments are omitted, wassen ‘wash’ readily admits a reflexive interpretation, whereas hate ‘hate’
does not. This is illustrated by the contrast between (i) and (ii).

(i) a. Wassen is gezond.
         washing (oneself) is healthy
     b. Haan
         hatting (only someone else) is unhealthy

14 In English the equivalent of *zieh schamen has been replaced by an intransitive form (*the ashamed),
whereas *wash is still ambiguous between the transitive entry and the intrinsic reflexive one (as in *she washes).
In Hebrew intrinsic reflexives are coded morphologically with a special verb form (*hitpael’). Shame occurs
only in that form; wash has both that form and a transitive form: hate and despise of (17) and (18) do not allow
that form at all.
we have stated Condition B. By definition (11b), the predicates in the latter, unlike the former, are reflexive-marked, since the verb—P—is lexically reflexive. Condition B is therefore met: the predicates in (19) are semantically reflexive, but they are, as required, reflexive-marked. It would appear that pronouns too should be allowed in such contexts, but this is not true for Dutch and Norwegian: their appearance is blocked independently of Condition B (by the Chain Condition, in a way we discuss in section 6).

An intrinsic/nonintrinsic reflexive contrast also shows up on the dative argument of three-place predicates. This is illustrated by the following contrast in German (from Truckenbrodt 1992). (The same contrast is found in the Dutch counterparts of these examples.) In the standard dative case a SE anaphor is excluded, as in (20b), and a SELF anaphor is required, as in (20c). However, in (20a) the verb is intrinsically reflexive with respect to its dative argument. So Condition B is correctly met in this case.

(20) a. Peter; stellte sich die Statue vor. (G)  
  Peter; stelde zich het standbeeld voor. (D)  
  Peter; imagined himself, the statue PRT  
  NOM (+ intr. refl.) DAT ACC  
  ‘Peter imagined the statue.’

b. *Peter; vertraute sich seine Tochter an.  
  *Peter; vertrouwde zich zijn dochter toe.  
  Peter; entrusted to-hiself, his daughter PRT  
  NOM (+ intr. refl.) DAT ACC  
  c. Peter; vertraute seine Tochter nur sich selbst an.  
  Peter; vertrouwde zijn dochter slechts zichzelf toe.  
  Peter; entrusted his daughter only to-himself PRT  
  NOM (+ intr. refl.) ACC DAT

The same contrast between intrinsic and nonintrinsic reflexives in Icelandic is observed by Sigurjónsdóttir (1992) and Sigurjónsdóttir and Hyams (to appear), who discuss it from an acquisitional perspective.¹⁶

¹⁵ A different question is why intrinsically reflexive verbs favor a SE anaphor over a SELF one. This does not follow directly from anything we say, but we believe that it follows from principles of economy: the same property should not be marked twice. Vacuous application of a morphological process is generally prohibited (for instance, one does not find a combination of two passivization processes on one lexical item). Indeed, SELF anaphors are not completely excluded here, but require discourse justification.

¹⁶ Although dative anaphors in German behave as predicted by the theory, accusative anaphors in German do not exhibit the expected contrast: the accusative simplex anaphor sich can occur in reflexive predicates independently of the intrinsic reflexive contexts we discussed. The same appears to be true of sich in Chinese. At the moment we do not have an account for such cases, nor do we know how widely this pattern occurs. Note, however, that proper assessment of the facts often depends on more detailed investigation of the languages involved. For instance, Maling (1982) notes that the contrast between sig and sjalit sig in Icelandic is "not grammaticalized" (suggesting that sig may occur more freely than one would expect), whereas according to Hellan (1988), it follows the same pattern as in Norwegian (which is in full accordance with our Condition B). This agrees with the findings of Sigurjónsdóttir (1992) and Sigurjónsdóttir and Hyams (to appear). Furthermore, it is quite possible that the simplex-complex dichotomy must be understood in a somewhat different way. For instance, unlike Dutch zich, German sich may bear stress. In this, sich behaves like the head of a
Now let us examine standard three-place predicates. In (21a) two of the arguments are coindexed, and since there is no reflexive marking, the sentence is ruled out by Condition B, in the same way that (17b) and (20b) were. However, in (21b) observed by Martin Everaert (personal communication), another coindexed argument of the predicate is a SELF anaphor, which therefore reflexive-marks the predicate. The predicate is 1-reflexive (with three arguments indexed 1), but as required by Condition B, it is also 1-reflexive-marked. (See the definitions in (11)-(12).) Hence, one reflexive marker is sufficient to license the reflexivization of more than two arguments. In fact, choosing one marker is preferred here over the option of marking two arguments, as in (21c), for the reasons mentioned in footnote 15. As predicted, it does not matter which of the internal arguments is SELF-marked—(21b,d) illustrate the same point with a different placement of the SE argument. (As in the case of (19), a pronoun cannot replace zich in any of these examples for independent reasons.)

(21) a. *Henk₁ wees mij aan zich₁ toe.
    Henk assigned me to SE
b. Henk₁ wees zichzelf, aan zich₁ toe.
    Henk assigned himself to SE
c. *Henk₁ wees zich₁ aan mij toe.
    Henk assigned SE to me
d. Henk₁ wees zich₁ aan zichzelf₁ toe.
    Henk assigned SE to himself
e. ?Henk₁ wees zichzelf, aan zichzelf₁ toe.
    Henk assigned himself to himself

Given the facts in (17)-(21), it would be extremely difficult to view Condition B as a condition on specific lexical items (pronouns, or SE anaphors), since it is sensitive to both anaphor types and predicate types. The universal generalization shared by all the cases discussed above is the one we argued for: that reflexivization must be licensed either in the syntax or in the lexicon. Condition B, as we stated it, checks the reflexive marking of predicates, and not just the properties of their arguments.

Note, finally, that if Condition B applies to predicates, it cannot rule out any co-indexation of NPs that are not coarguments. Thus, another area where this view of Condition B differs empirically from the standard one is in ECM and small clause structures. As we will show in section 7 in discussing the contrast between cases such as Henk₁ hoorde [zich₁ zingen] ‘Henk heard [SE sing]’ and *Henk₁ overreedde zich₁ [PRO₁
The argument of the reflexive marker in (21b) (observed in (21e), for matter which of the construction as in (21e) for Dutch cannot replace zich in Dutch constructions).

te zingen] 'Henk persuaded SE [PRO to sing]' (example (109)), it is indeed true that a SE anaphor can be bound by the matrix subject when it is in the subject position of the complement but not when it is a θ-argument of the matrix predicate.

This sheds new light on the ongoing controversy regarding the syntax of ECM versus object control structures. Though in the syntactic framework we are assuming the two differ structurally, there has never been any direct empirical evidence for that distinction, since as far as pronouns and SELF anaphors are concerned, they behave the same way. But focusing on SE anaphors, we find a sharp contrast between the ECM case and the object control case. Our reformulation of Condition B also provides the tools to explain this contrast: in the control case, unlike the ECM case, condensation yields a reflexive predicate. We return to this distinction in section 7.2, and, again, we postpone the question of why pronouns are not allowed as well in the ECM case until section 6.

3 Condition A

3.1 The Condition

Although replacing Condition B eliminates the complementarity problem of the current binding theory, Condition A still carries its own (less widely acknowledged) problems. The most serious question is whether it is indeed true that an anaphor cannot occur free, as entailed by Condition A. Already in the early seventies, it was noted by Ross (1970), followed by Cantrall (1974) and Kuno (see, for a summary, Kuno 1987, and for a more recent discussion, Zribi-Hertz 1989) that first and second person SELF anaphors can occur in English without a sentential antecedent, in blatant violation of (what is now known as) Condition A, as in the (a) sentences of (22a–d). Dutch SELF anaphors are allowed in essentially the same environments, as illustrated with the translations of (22a–b) in (22c–d).

(22a) There were five tourists in the room apart from myself.
   b. *Five tourists talked to myself in the room.
   c. Er waren vijf toeristen in de kamer behalve mezelf.
   d. *Vijf toeristen praatten met mezelf in de kamer.

(23a) Physicists like yourself are a godsend. (Ross 1970)
   b. *A famous physicist has just looked for yourself.

(24a) "She gave both Brenda and myself a dirty look." (actual discourse, quoted in Zribi-Hertz 1989)
   b. *She gave myself a dirty look.

These facts cannot simply be dismissed as reflecting some peculiar discourse properties, or as indicating that first person anaphors can be used deictically. Normally, first person reflexives behave strictly like anaphors. For example, in the (b) cases of (22a–24a) they are ruled out, correctly, by Condition A. Why, then, does Condition A fail precisely in the (a) cases? Furthermore, the problem is not restricted to first person
reflexives. As was noted by the same scholars in the seventies, third person reflexives can be long-distance bound in English, in violation of Condition A. This use (known as logophoric), which is assumed to interact with point of view, is most common in narrative texts. and Zribi-Hertz (1989) provides about 130 examples from actual texts, two of which are quoted in (25a) and (25c).

(25) a. "It angered him that she . . . tried to attract a man like himself."
   b. "It angered him that she tried to attract himself.
   c. "Clara found time to check that apart from herself there was a man from
   the BBC."

(26) a. Max boasted that the queen invited Lucie and himself for a drink.
   b. "Max boasted that the queen invited himself for a drink.

The syntactic contexts allowing this use are the same as before. Here again, Condition A equally blocks anaphora in both the (a) and the (b) cases (and in (25c)). Since this is correct for the (b) cases (though wrong for the others), we cannot simply conclude, as often done in the earlier studies mentioned above, that point-of-view contexts allow (somehow) for violations of Condition A.

The question is, therefore, What is the property distinguishing the (a) and the (b) cases in all the examples (22)–(26)? In fact, we already have the answer at our disposal. Let us look again at the definition of reflexive marking in (11a), the abbreviated version of which is repeated here.

(11′) Definitions

   a. A predicate is reflexive iff two of its arguments are coindexed.
   b. A predicate (formed of P) is reflexive-marked iff either P is lexically
      reflexive or one of P’s arguments is a SELF anaphor.

(12′) Condition B

A reflexive predicate is reflexive-marked.

In the (b) cases, the free SELF anaphor is an argument of its predicate. This means that one of the arguments is SELF-marked, and hence, the predicate is defined as reflexive-marked. The (a) cases, by contrast, involve no reflexive-marked predicates. For example, in (26b) one argument of invite is SELF-marked; hence, its predicate, the queen invited himself, is reflexive-marked. In (26a) the anaphor is embedded in an argument. The argument of invite is Lucie and himself, which is not, itself, a SELF anaphor. Hence, the queen invited Lucie and himself is not reflexive-marked. The same holds for (23a), (24a), and (25a). In (22a) and (25c) the anaphor occurs in an adjunct position, so no argument of the verb is a SELF anaphor and no reflexive-marked predicate is formed.

Suppose, now, that Condition A, just like Condition B, is in fact about reflexivization, rather than about anaphors: it requires that reflexive marking be interpreted reflexively, but it does not say anything about anaphors not functioning as reflexive markers. Let us state this as our first approximation of Condition A. (12″), which will be slightly modified directly.
third person reflexives. This use (known as reflexive markedness, a term common in narrative linguistics) is an actual text, two of which we will consider.

for example, "he was a man from a foreign country."

self for a drink.

ink.

here again, Condition A (25c). Since this is not simply conclude, as we may have seen, that the (25c) is a property of contexts allow

the (a) and the (b) versions of Condition A. An abbreviated version

the coindexed.

either P is lexically a reflexive marker.

mark.

can be interpreted. This means that the reflexive markedness is defined as reflexive markedness for predicates. For example, the predicate "the queen cost me a dollar" is a reflexive marker. Hence, we have a reflexive marker. However, in a reflexive position, so no reflexive marker is required.

In fact about reflexivization contexts, the reflexive marking be interpreted as reflexive markedness, which will

(12") Condition A
A reflexive-marked predicate is reflexive.

(Just like Condition B, Condition A should be read as a conditional, equivalent to: If a predicate is reflexive-marked, it is reflexive.)

In the basic case of, for example, (13b)—Max, criticized himself,—the anaphor is an argument of criticize; hence, by (11b), this predicate is reflexive-marked. Condition A of (12") therefore requires that this predicate be reflexive. This is indeed the case, since the anaphor is coinexed with a coargument, so Condition A is met. Stated this way, Condition A successfully blocks all and only the (b) cases of (22)–(26). We showed that in these cases the predicate is reflexive-marked since one of its arguments is a SELF anaphor. Condition A therefore requires that it be reflexive, under definition (11a). Since no coarguments of this predicate are coinexed, this requirement is not met, and the derivations are filtered out. In the (a) cases, however, where the anaphor is not an argument, there can be no reflexive-marked predicate; hence, Condition A is satisfied.

Since the condition requires only reflexive-marked predicates to be reflexive, it is always met when a predicate is reflexive-marked. Another way to state this is that in these cases the condition does not apply.

As we showed in section 2, reflexivization contexts are also the only contexts in which SELF anaphors are in complementary distribution with pronouns. This means that the Condition A of the standard binding theory was descriptively mistaken in where it drew the border between acceptable and unacceptable anaphors. As argued also by Pollard and Sag (1992), some of the cases ruled in by the standard Condition A, like the adjunct anaphors in (7) and the picture-NP anaphors in (8), are just specific instances of logophoric anaphora, which are not different from the (a) examples of (22)–(26) and therefore do not justify a special treatment. Rather, the availability of SELF anaphors in these contexts should follow from Condition A, as stated here. With respect to adjunct anaphors, this is indeed the case, since only arguments reflexive-mark their predicates. But it cannot be obvious yet why our Condition A does not block anaphors in picture-NPs, and we address this issue in section 5.

This view of Condition A developed out of an emerging contention, particularly in the research on long-distance anaphora, that a distinction is needed between the grammatical function of anaphors and their discourse-oriented, or logophoric, use (Maling 1982, 1986, Hellan 1988, 1991, Thráinsson 1991). This distinction is discussed in detail, and extended to SELF anaphors, in Reinhart and Reuland 1989, 1991, and our approach, at that stage, is summarized in Reuland 1990. A view similar to what we assumed there has been independently proposed by Pollard and Sag (1992), who argue that Condition A applies only to anaphors in an argument position, identifying them with an argument higher in the relational hierarchy, whereas other occurrences of anaphors are exempt from this condition.

In fact, in the case of SELF anaphors, the distinction between anaphoric and logophoric uses is superfluous. Syntactically, there is just one type of SELF anaphor, whose
occurrence is governed solely by Condition A, as stated in (12'). This condition rules out argument SELF anaphors that occur in nonreflexive predicates (i.e., are not coindexed with a coargument) and equally allows all other occurrences of such anaphors. In the contexts where the syntax allows both a pronoun and a SELF anaphor to be coindexed with a given antecedent, the choice between them is motivated by discourse considerations, as is often the case when there is more than one syntactic option to express the same proposition. For this reason, the use of an anaphor in such contexts may appear more marked than in the reflexivity environments, where the anaphor is the only grammatical option. There is no reason to assume that this type of discourse consideration is encoded in the syntax. Since the terms anaphors and logophors are by now widely assumed, we will continue to refer to the grammatical occurrences of SELF anaphors in nonreflexive contexts as logophoric; but we use this term in a wider sense than it had originally, a point we return to directly.

Though we have focused here only on the distribution and use of reflexive anaphors, Pollard and Sag (1992) argue that, in fact, reciprocal anaphors can occur in the same environments as the reflexive ones, which means that they also allow for what we have called here a logophoric use (see footnote 7).

3.2 Focus Anaphors

Condition A allows a SELF anaphor to be used logophorically just in case it does not occupy an argument position of a predicate, since in this case it does not reflexive-mark the predicate (though what counts as a predicate will be further specified). We may note that the study of discourse anaphors has observed two distinct uses. The use that was originally labeled logophoric (starting with Clements 1975) is the point-of-view use exemplified above. The other is the use of discourse anaphors as focus, which has been labeled emphatic (see Kuno 1987, Zribi-Hertz 1989). As focus, a free SELF anaphor can occur even in an argument position at S-Structure. Though such examples are harder to find and are more marked, some are given in (27).

(27) a. This letter was addressed only to myself.
   b. Why should the state always take precedence over myself?
   c. “Bismarck’s impulsiveness has, as so often, rebounded against himself.” (quoted in Zribi-Hertz 1989)
   d. himself, [Bismarck’s impulsiveness has, as so often, rebounded against e]

That focus anaphors should appear exempt from our Condition A follows directly, if we assume, as is standard, that (Condition A applies at LF and) the focus expression undergoes movement at LF. In this case, the anaphors in (27) are no longer in argument positions. Hence, they do not reflexive-mark the verbs, so Condition A does not require the predicate to be reflexive. For example, the LF structure of (27c) is (27d), where himself is no longer the argument of the predicate rebound (though its trace is). Hence,
This condition rules reflexives (i.e., are not reflexive-marked at the syntactic level relevant for Condition A. (This point will be clearer after we define syntactic predicates, in section 4.) We will keep the term logophors for both uses (thus departing from the way the term was originally used). SELF logophors, then, are all instances of SELF anaphors that do not reflexive-mark a predicate. There is no further need to define this notion, since, as just noted, it has no syntactic status (the binding theory only checks reflexive marking). When needed for discourse analysis, the two uses may be distinguished as perspective logophors and focus logophors. We do not think, however, that these two uses exhaust the options of logophoric occurrences. The crucial distinction needed is that between SELF anaphors that occur in an argument position at S-Structure and those that do not. The first can be used logophorically only as foci, as in (27), since this is the only way they can escape reflexive-marking their predicate. This is why such examples are more marked: they are possible only when the context clearly signals a focus, or contrastive reading, so they are highly context-dependent. Logophors not occurring in an argument position at S-Structure, like the (a) cases of (22)–(26), do not require any special accommodation and are easily judged acceptable with no context. Although in these examples they are used as perspective logophors, other, perhaps more crucial, discourse reasons exist to prefer a logophor over a pronoun, though we will not discuss them here. With respect to the binding theory, in any case, a SELF anaphor can always be used logophorically when it is not in an argument position.

3.3 Variable Binding and the Property — R

As we argued in section 1, the defining property of all anaphors, whether used anaphorically or logophorically, is — R. That is, they are referentially defective, and, unlike pronouns, they cannot be used to directly select an entity in the discourse. Hence, even a logophor can be most easily used with some sort of linguistic antecedent in the sentence. The peculiar property of perspective logophors is that they seem able to refer directly to the center of communication or consciousness. (See Reinhart and Reuland 1989 for more on this issue.) Nevertheless, even this use is easier when this center is mentioned already as an antecedent in the sentence, that is, with third person logophors. A logophor, however, does not have to be bound by its antecedent (though it may be). Their relation may be that of coreference, and not necessarily of variable binding. This point merits further clarification.

We think that the attempt to reduce all actual occurrences of logophors to the same point-of-view mechanism, as in Sells 1987, renders the concept “point of view” rather vacuous. Among the three uses Sells lists is “pivot,” which has nothing to do with any familiar tests for point of view orientation. A more promising approach would follow from Ariel’s (1990) analyses of anaphors. On her view, anaphors are used to signal that the antecedent is the most accessible of the available discourse-entities candidates. Accessibility is defined in terms of sentence topics.

On this issue, we disagree with Sells (1987) and with Chierchia (1989), who argue that at least perspective logophors are necessarily bound variables. This is discussed in more detail in Reinhart and Reuland 1989. Reinhart (forthcoming) argues that even logophors occurring in contexts of de se beliefs are not necessarily bound variables.
It is rather standard to assume that anaphors are necessarily interpreted as bound variables (e.g., Chomsky 1981). Thus, (28a) is interpretable only as (28b). Correspondingly, when an anaphor is placed in a context like (28c), there is no ambiguity, and only the bound variable reading (Lili praised Lili) is believed to obtain. Similarly, (28d) is not easily construed as ambiguous.

(28) a. Lucie, praised herself.
   b. Lucie (λx (x praised x))
   c. Lucie praised herself, and Lili (did) too.
   d. Only Lucie praised herself.

Note that nothing in the theory as stated here requires an anaphor to be a bound variable even if it functions as a reflexivizer, as in (28). All we assumed, as the defining property of anaphors, is their $-R$ property, which does not entail that they must be bound variables.

However, the facts of (28) will still follow, if one also assumes Reinhart’s analysis of variable binding (starting with Reinhart 1983), as summarized, for example, in Grodzinsky and Reinhart 1993. On this view, the only interpretation of syntactic coin dexation is that of variable binding. Reinhart argues that coreference is not directly governed by the binding theory, or by any other sentence-level conditions, but falls, together with many problems of anaphora resolution, under discourse theory. Hence, sentence-level coin dexation is irrelevant for coreference. Technically, coreference can be obtained only when a pronoun or an anaphor is not coin dexed with an antecedent (since when a pronoun or an anaphor is syntactically bound, the only permitted interpretation is that of variable binding, and since unbound coin dexation ends up uninterpretable in that system). For (28a) to allow the coreference interpretation, then, it should have a derivation in which Lucie and herself are not coin dexed. But, given our Condition A, such a derivation would be ruled out, since in this case the predicate remains reflexive-marked and is therefore required to have two coin dexed arguments.

On this view, then, there is nothing about the anaphor itself that forces it to be a bound variable. If an anaphor happens to be exempt from the coin dexation requirement imposed by Condition A, as in the case of logophoric uses, its relation to its antecedent can be either that of variable binding or that of coreference, as illustrated in footnote 18. This is so because the grammar allows it, in this case, to be either coin dexed or free, and if it is free, the coreference interpretation is allowed. This enables us to explain a puzzle noted by Sag (1976). He observed that a certain (small) percentage of his subjects could get the coreference (strict) interpretation in the VP-ellipsis context of (28c). As

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As evidence that a logophor need not be a bound variable, consider (i).

(i) Only Lucie buys pictures of herself.

We will argue in section 5 that the anaphor in (i) is logophoric. Indeed, it is very easy to see an ambiguity here between the bound and the referential interpretation (Lucie is the only person who buys pictures of Lucie, though perhaps buying one’s own pictures is true of everybody).
we have just argued, an anaphor can be exempt from Condition A when it is the focus (exemplified in (27)), even though this is a marked use. If, in (28c), the anaphor is used as focus, it does not reflexive-mark the verb, and Condition A is neutral about whether it is coindexed with its antecedent (yielding the bound variable interpretation) or not. If it is not coindexed, the coreference interpretation is allowed. However, the fact that this focus use of anaphors in an argument position is so marked explains why it is so hard to get this reading.

To sum up, an anaphor is obligatorily a bound variable only when it is required by Condition A to be coindexed with a coargument. In all other cases it can end up either syntactically bound (i.e., coindexed with a c-commanding NP) or not. Hence, it can either be a bound variable, or corefer.

4 Syntactic and Semantic Predicates

So far we have used the term predicate somewhat vaguely. Let us now spell out what kind of linguistic objects the binding conditions apply to, starting with a problem for Condition B:

    b. The queen invited both Max and myself/me for tea.
    c. Max said that the queen invited both Lucie and himself/him for tea.

Condition A rules out (29a), since the predicate is reflexive-marked, but is not reflexive. By contrast, the predicates in (29b–c) are not reflexive-marked, so Condition A does not apply, and the anaphors here are used logophorically (as witnessed also by the fact that they can be replaced by a pronoun).

By the same reasoning, the anaphor in (30a) is logophoric as well. However, the problem is that in this environment the logophor is nevertheless in complementary distribution with a pronoun, as shown by (30b). So how does Condition B block anaphora in (30b)?

(30) a. The queen invited both Max and herself to our party.
    b. *The queen invited both Max and her to our party.

The predicates in (29) are not defined as reflexive at either S-Structure or LF, since the coindexed NPs are not coarguments of invite (the anaphoric expression being embedded). However, the question at issue here is what counts as a predicate. So far we have viewed the predicates of (30) as syntactic objects, but if we look at a more abstract level of semantic interpretation, the conjunction in (30) is interpreted as something equivalent to the representation in (31).

(31) the queen (\(\lambda x (x \text{ invited Max} \& x \text{ invited } x)\))

19 This problem was originally pointed out to us by Hans Kamp (personal communication).
This representation does contain a reflexive predicate \(x \text{ invited } x\) as one of its conjuncts. If Condition B applies at the stage of mapping from LF to semantic representations (like (31)), it finds out that in (30a) one of the arguments of this new semantic predicate that is about to be formed is, appropriately, realized in the syntax (LF) as a SELF anaphor; hence, the translation yielding a reflexive predicate is allowed. But in (30b) no argument is a SELF anaphor in the syntax, so the reflexive translation is disallowed and the derivation is filtered out. In (29c) the conjunction does not yield a reflexive predicate (the conjoined predicates are \(\text{the queen invited Lucie and the queen invited him}\)); hence, the pronoun is allowed.

To capture such cases, then, Condition B must be allowed to operate on semantic predicates (i.e., at the stage of translating syntactic predicates into semantic ones). Before checking whether the same is true for Condition A, let us pursue further the implications of letting Condition B operate on semantic predicates.

An issue the standard binding theory has been preoccupied with is how to rule out anaphora in (32) (Chomsky 1973, 1980, Lasnik 1976, 1981).

(32) a. *We voted for me.
   b. *[Felix and Lucie] praised her.

Presumably, this should be ruled out because, although the two arguments of the verb are, appropriately, not coindexed, they are nevertheless not disjoint in reference (me overlaps with us, etc.). Note that this could not follow from the standard binding theory as stated in Chomsky 1981. The fact that two NPs are not coindexed cannot, in this system, entail that they are disjoint, since then (33) would be ruled out as well.

(33) *[Felix and Lucie] think that she is terrific.

To capture this, one must (with Lasnik 1981) assume contraindexing, which is forced by Condition B in (34).²⁰

(34) *Felix but not Lucie praised her.

Regardless of the technical details, we find it highly unlikely that referential disjointness is the relevant factor here, since in (34), which is just as bad as (32b), the set of Felix but not Lucie most clearly excludes Lucie—hence, this NP and the pronoun are referentially disjoint.

One reason not much progress could be made on this issue is that judgments seem to vary with both speakers and sentences.²¹ A major factor is that, as we will argue in section 6, the standard cases currently falling under Condition B also violate the Chain

²⁰ Even so, it is not clear to us why, by the same reasoning, coreference would not also be incorrectly blocked in (i), where the italicized NPs must be contraindexed by Condition C.

(i) Lucie thinks that *[Felix and she] are terrific.

²¹ In view of this variety of judgments, Fiengo and May (1990) conclude that sentences of this type are not ruled out at all by sentence-level grammar.
Condition, whereas the sentences under consideration here violate only Condition B. As we will show, it is generally the case that pure Condition B violations are weaker and subject to greater variety of judgment than Chain Condition violations. Still, there is another factor intrinsic to the choice of examples. For example, (36a) was observed to be grammatical by Fiengo and May (1990), and (35a–b) are better, for many speakers, than (32) and (34).

(35) a. We elected me.
   b. Felix and Lucie, authorized her, to be their representative.
(36) a. Max, and Lucie talked about him.
   b. *Both Max, and Lucie talked about him.

This second factor determining acceptability seems to be semantic. Whereas (32) and (34) prefer a distributive interpretation of the plural set, (35) forces a collective interpretation only. This can also be verified in (36): both, in (36b), forces the distributive reading (so it entails two separate acts of talking, by Max and by Lucie). In (36a) the preferred interpretation is the collective one, suggesting an act of mutual talking. So this type of anaphora is excluded only under the distributive reading, and anaphora enforces the collective reading (which for some speakers is possible also in (32) and (36b)). This result follows if Condition B operates on semantic predicates. The two interpretations of (36) are approximated in (37).

(37) a. Max and Lucie \( (\lambda x \ (x \text{ talked about him})) \)
   b. Max \( (\lambda x \ (x \text{ talked about x})) \) & Lucie \( (\lambda x \ (x \text{ talked about him})) \)

Under the collective interpretation in (37a), the predicate is not distributed over the two NPs in the subject; rather, they are taken as one set. This way, no reflexive predicate is formed. Under the distributive interpretation in (37b), one of the predicates \( (x \text{ talked about x}) \) is reflexive. None of its arguments has been reflexive-marked, so Condition B blocks the derivation. (34), repeated in (38a), is interpreted as some equivalent of (38b), in which an unlicensed reflexive predicate occurs as well.

(38) a. *Felix but not Lucie praised her.
   b. [Felix \( (\lambda x \ (x \text{ praised x})) \) but not Lucie \( (\lambda x \ (x \text{ praised x})) \)]

The distributive interpretation of (32a) (*We voted for me) will also contain a reflexive predicate \( (x \text{ voted for x}) \) whose argument is one of the members of the we set (i.e., me)—which is ruled out, since me is not SELF-marked.

As far as Condition B is concerned, then, the relevant predicates it applies to must be semantic. The same is not true for Condition A. Suppose that Condition A, too, applies at the stage of mapping into semantic representations: at this stage (29b–c), repeated in (39a–b), are also translated as a conjunction of predicates, illustrated for (39b) in (39c).
(39) a. Max said that the queen invited both Lucie and himself for tea.
b. The queen invited both Max and myself for tea.
c. the queen (λx (x invited Max & x invited myself))

Checking the translation, Condition A finds out that one of the conjoined predicates (e.g., x invited myself in (39c)) is reflexive-marked, having a SELF anaphor as an argument. Since this predicate is not reflexive, Condition A will (incorrectly) filter the derivation out, if it applies at this level (in the same way that it rules out (29a), *The queen invited myself for tea*).

This (as well as other considerations that will soon become apparent) leads us to conclude that Conditions A and B are not precisely symmetric. Whereas Condition B is a condition on semantic reflexivization, Condition A is more syntactic, checking for syntactic marking of reflexivization. Following a line proposed by Ben-Shalom and Weijler (1990), we will capture this difference by letting Condition B apply to semantic predicates, whereas Condition A applies only to syntactic predicates. In the standard cases the two types of predicates are indistinguishable, but, as just illustrated, this is not always so.

Let us, then, define syntactic and semantic predicates, and incorporate them into our binding conditions. (40)–(41) state the final version of the binding theory we assume in this article (where (40c–d) simply repeat the definitions assumed already in (11)).

(40) Definitions

a. The syntactic predicate formed of (a head) P is P, all its syntactic arguments, and an external argument of P (subject).
The syntactic arguments of P are the projections assigned θ-role or Case by P.
b. The semantic predicate formed of P is P and all its arguments at the relevant semantic level.
c. A predicate is reflexive iff two of its arguments are coindeces.
d. A predicate (formed of P) is reflexive-marked iff either P is lexically reflexive or one of P’s arguments is a SELF anaphor.

(41) Conditions

A: A reflexive-marked syntactic predicate is reflexive.
B: A reflexive semantic predicate is reflexive-marked.

(We should note, again, that the intuition (41) intends to capture is statable formally only using the notion of i-reflexivization, as defined in (11). So, Condition A requires that an i-reflexive-marked syntactic predicate be i-reflexive, and Condition B requires that an i-reflexive semantic predicate be i-reflexive-marked. We continue to use the abbreviated version, for ease of presentation.)

The definition of semantic predicates is rather trivial. It is determined solely by
logical syntax, provided that the compositional rules mapping structures into function-
argument configurations are defined. Deciding what counts as a syntactic predicate,
however, is based on grammatical structure. There seems to be no disagreement on
requiring that syntactic predicates should include all the arguments assigned a θ-role by
the head P, but at least as far as binding is concerned, this is not sufficient. The line we
take here follows, in essence, the notion of complete functional complex (CFC) proposed
by Chomsky (1986b).\(^{22}\) We take the syntactic arguments of P to be those realizing a
grammatical function of P, that is, its θ- and Case assignments. Generally, a Case-assigned
NP also bears the θ assigned by P; but if it does not, the Case-assigned NP is nevertheless
a syntactic argument of P. A syntactic predicate should also contain, by definition, the
external subject of P. It is rather standard to assume that the subject θ-role is assigned
not by the head P (e.g., V), but rather by the phrase (VP (Chomsky 1981, Marantz 1984)).
Nevertheless, the subject is defined as belonging to the syntactic predicate of P. This
would be so, even if the subject is not a θ-assigned argument at all. A subject is always
required as an argument of the syntactic predicate. Therefore, a predicative head (P)
does not always form a syntactic predicate, as defined in (40a); if it lacks an external
subject, it may end up forming a semantic predicate, but not a syntactic one.\(^{23}\)

The arguments of a syntactic predicate thus do not necessarily correspond to its
grid positions: that is, they do not need to be θ-arguments. This distinguishes our analysis
from approaches attempting to capture Condition A by means of a thematic hierarchy,
such as those of Kiss (1991) and others (see also the analysis of long-distance anaphors
in Giorgi 1984). Let us look briefly at some of the reasons for and implications of this
choice. (Others will unfold as we continue.)

In expletive or raising structures, like (42), the subject is clearly not a θ-argument of
seem, strike, or bother.

(42) a. Lucie seems to herself [that to be beyond suspicion].
   b. Max strikes himself [that as clever].
   c. *Max thinks that [it would bother himself [that the place is so noisy]].

If Condition A applies only to θ-arguments of predicates, it would have to rule out (42a–
b), since no θ-coarguments are coindexed. But given our definition, the external subject
(Lucie, Max) and the anaphor (as a θ-argument) are coarguments of the syntactic predi-
cate, nevertheless, and Condition A is met. Similarly, we would like bother to form a
syntactic predicate in (42c), since otherwise an anaphor could occur logophorically
there.\(^{24}\) Given our definition, the presence of an expletive subject is sufficient to form

\(^{22}\) Chomsky defines a CFC as a projection at which all grammatical functions compatible with the head
P and (by definition) an external subject are syntactically realized. This entails that verbs, nouns, and adjectives
may form syntactic predicates, but not prepositions, which do not license an external argument (Giorgi 1991).

\(^{23}\) But see footnote 49 for more on this issue.

\(^{24}\) This was brought to our attention by Luigi Rizzi.
such a predicate here. Consequently, (42c) is correctly ruled out, since a reflexive-marked syntactic predicate is not reflexive, in violation of Condition A. 25

ECM subjects as in (43) are defined as syntactic arguments of the matrix verb, since they are assigned Case by it.

(43) a. Lucie expects [herself to entertain herself].
   b. *Lucie expects [myself to entertain myself].
   c. *Lucie, expects [her, to entertain herself].

An anaphor in this position cannot be used logophorically, as shown in (43b), since it reflexive-marks the matrix verb, without forming a reflexive predicate. Technically, then, Condition A is met in (43a) with no need for further elaboration, since the syntactic predicate of expect has two of its (syntactic) arguments coindexed (though we will return to further details of precisely how Condition A applies to the full range of these structures).

ECM structures provide one of the clearest instances of a discrepancy between syntactic and semantic predicates: the matrix syntactic predicate consists of both the subject and the Case argument of the verb (the embedded subject). However, in the semantic predicate, the whole embedded IP, rather than its subject, is the argument of the matrix verb. (Though alternative representations can be optionally derived, they are not obligatory.) Since our version of Condition B applies to semantic predicates, this means that it cannot, in fact, rule out the pronoun in (43c). A trivial way to avoid this result would be to allow Condition B to apply to all predicates rather than just to semantic ones. In this case, while still ruling out the semantic predicates discussed in, say, (32), it would also rule out the syntactic predicate of expect in (43c), as a reflexive predicate that is not reflexive-marked. However, we showed already in section 2.3 that the present result is precisely the correct one, where SE anaphors are concerned. In section 7, where we discuss ECM structures in detail, we argue that the same is true also for certain instances of pronominal anaphors. In our system, then, it is not Condition B that rules out the pronoun in (43c) (but the Chain Condition). In fact, the ECM discrepancy is one

25 Jacqueline Guéron (personal communication) suggests that in structures like (iia), as well, the anaphor does not occupy a grid position, since, as argued in Guéron 1986, auxiliaries like have have no grid. The same might be true for the be of (iib).

(i) a. You'll always have yourself.
   b. He is not himself today.

Still, Condition A must apply to such structures, as witnessed by the fact that an anaphor cannot be used logophorically in (iii) (focus readings aside).

(ii) *You'll always have myself.

If this condition was sensitive to just 9-arguments, it could not apply here, but given our definition, the anaphor is defined here as a syntactic argument (being the Case argument). The syntactic predicate is, then, required by Condition A to be reflexive (i.e., to have two coindexed arguments), a requirement that is met in (i) but not in (iii). In the semantics, a semantic predicate is formed for (i), which is why Condition B will rule out a pronoun there.
of the major reasons we believe that Conditions A and B do not apply to the same types of predicates.

The binding conditions we assume still do not make any use of hierarchical relations like c-command, or hierarchies of thematic roles or grammatical functions. This distinguishes them from previous approaches in terms of argument structure, such as those of Pollard and Sag (1992) and Reinhart and Reuland (1989). The way the different components of the analysis conspire to yield the needed configurational effects is discussed in section 8.

5 P and N Predicates

So far we have focused our analysis on predicates formed out of verbs, but P and N also form predicates (at least in some cases). As shown in section 2, P and N projections are problematic for the standard binding theory, mainly since they often allow for both a pronoun and an anaphor (though not always). A crucial difference between these two types of predicates is that V predicates always have a subject, whereas P and N predicates do not, or at least do not always. (The different stands on this issue will be mentioned as we proceed.) Given the way we defined syntactic predicates in (40a), this means that verbs always form both syntactic and semantic predicates. But the subjectless P and N can only form semantic predicates. An examination of the anaphora patterns with these predicates will therefore clarify and support the distinction we assume here between syntactic and semantic predicates.

5.1 (Picture-)NP Anaphors

5.1.1 Condition A in NPs As noted earlier, for the standard binding theory the grammaticality of (8a), repeated in (44), is governed by Condition A, with some additional mechanism to explain why a pronoun is not excluded in this context.

(44) Lucie saw a picture of herself.

The distinction between syntactic and semantic predicates is crucial for the correct operation of Condition B in all cases where argument traces are involved:

(i) Max, was fired ø.

In the case of A-movement, as in (i), the syntactic predicate always contains two coindexed arguments (the thematic trace argument and the subject). But the semantic predicate contains only one of these two (with an additional agent argument, probably existentially bound). Thus, the syntactic predicate is reflexive, but the semantic one is not. If Condition B applied to syntactic predicates, it would incorrectly rule out (i).

In the case of A-movement, the problem arises when an anaphor is raised, as in the focus movement in (ii). (This problem was pointed out to us by Daniel Fox.)

(ii) a. Max praised (only) himself.

b. himself [Max praised ø]

The trace is the argument of the syntactic predicate in (ii) (as the projection receiving the ø-role). So, if Condition B applied to syntactic predicates, the derivation would be ruled out as non-reflexive-marked. However, himself is still the semantic argument of praise, so the semantic predicate meets Condition B.

25 The distinction between syntactic and semantic predicates is crucial for the correct operation of Condition B in all cases where argument traces are involved:
However, in addition to the lack of complementarity with pronouns, such structures show all the properties of logophoric anaphora. Ross (1970) has already noted that a first person anaphor can occur there freely, as in his (45a). Similarly, the third person anaphor functions as a perspective logophor (45b–c). Many other counterexamples to the syntactic view of picture-NP anaphora (like (45c) and (46a)) are cited by Jackendoff (1972).

(45) a. A picture of myself would be nice on that wall.
b. Lucie thought that a picture of herself would be nice on that wall.
c. The queen demands that books containing unflattering descriptions of herself will be burned.

A diagnostic property of logophoric anaphora (see, for example, Thráinsson 1991) is that on that use the anaphor does not have to be c-commanded by its antecedent. Such cases can easily be constructed with picture-NPs, as in (46). More generally, an anaphor in NPs always allows the coreference, and not only the bound variable, interpretation. (See footnote 18.) There is therefore no reason to attempt a separate account for (44).

(46) a. The picture of himself that John saw in the post office was ugly.
b. Her pleasant smile gives most pictures of herself an air of confidence.

Under our analysis, a SELF anaphor can be logophoric iff it does not reflexive-mark its syntactic predicate (otherwise Condition A rules it out). This is obtained either when it is not an argument, as in the cases we have examined so far, or when it is an argument of a head that does not form a syntactic predicate (since in this case there is no syntactic predicate that it could reflexive-mark). Let us suppose that complements of the picture-N are assigned a 9-role by it and are therefore syntactic arguments. Even if this is not so, the same anaphora facts are found with Ns that clearly assign a 9-role, such as description in (45c). Given the definition of syntactic predicates in (40), the Ns in all the examples above nevertheless do not form such a predicate, since they lack an external argument. (A PRO-type subject in such cases is always only optional.) Condition A applies to reflexive-marked syntactic predicates. Since no such predicate exists here, the condition is met (i.e., it does not apply).

The Subject Condition, which was incorporated into the definition of governing category in the standard binding theory, is thus captured here within the definition of syntactic predicates. This is how we capture the difference traditionally assumed between (47a) and (47b). When the subject is present, as in (47b), the N forms a syntactic predicate. Since one of its arguments is a SELF anaphor, Condition A now applies to require that it be reflexive. But no two arguments of picture are coindexed, so the derivation is ruled out.

(47) a. Lucie liked [(a) picture of herself].
b. */? Lucie liked [your picture of herself].
The advantage of this formulation of the Subject Condition is that it also governs the distribution of logophoric anaphora. That this generalization is closer to correctness than the governing category formulation is witnessed by the fact that logophors are also less acceptable when the subject is present. Compare (45a) and (46a) to (48).

(48) a. */? Your picture of myself would be nice on that wall.
    b. */? Your picture of himself that John saw in the post office was ugly.

The reason here is the same as before; because a syntactic predicate is formed, and it is reflexive-marked (just like the one in (47)), Condition A applies to rule it out. The contrast between, say, (45a) and (48a) seems to us different from that between (44) and (47b).

This is the place to note that the judgments on NP anaphora are much less clear than the linguistic literature tends to assume. Ben-Shalom and Weijler (1990) report that in their informal empirical testing of judgments, speakers did not agree even on the basic facts, for example, that a contrast exists in (47). This could be explained, in our framework, if one takes the view of Williams (1985) that NPs never contain a subject. Even when their Spec is filled, as in (47b), it is not a subject. If this is the case, all instances of NP anaphora will turn out to be logophoric, since NPs, in this case, never form a syntactic predicate, so Condition A never applies. To the extent that there is still any consistent difference between the sentences in (47) or between (45) and (48), it should be attributed to discourse reasons, of the sort mentioned in footnote 17. Given that logophoric anaphora is always subject to more variations in judgment than reflexivization (requiring some accommodating discourse), these disagreements over NP anaphora will be less surprising. However, we leave this question open here.

5.1.2 Condition A and Reconstruction A further advantage of acknowledging logophoric NP anaphora is that it eliminates the need for reconstruction mechanisms, in the specific case of Condition A. (For a discussion of the problem see for example Chomsky 1977, May 1977, Van Riemsdijk and Williams 1981, Higginbotham 1983, Barss 1986, Lebeaux 1988.) In structures like (49), our Condition A faces no problem, even if no other LF operations apply. The anaphor can choose any of the potential antecedents regardless of c-command and governing category, since its NP does not form a syntactic predicate, so it is not restricted by Condition A.

(49) a. Which picture of himself/herself does Max think that Lucie likes?
    b. Max knows which pictures of himself/herself Lucie likes.

As for the contrast between (49) and (50), Chomsky (class notes), following a proposal of Huang (1993), suggests that this problem can be solved if we assume that a subject is generated in the Spec of its predicate (VP, AP, etc.) and raises to the Spec of IP position, as proposed by Sportiche (1988) and Koopman and Sportiche (1991).
(50) a. How proud of *himself/herself, does Max think that Lucie, is?
    b. Max knows how proud of *himself/herself, Lucie, is.
    c. how [t1 [proud of herself,/*himself,] ]

In this case the internal structure of the moved AP contains the trace of its moved subject (Lucie), as illustrated in (50c). In our terms, then, proud here, unlike the NP cases, does form a syntactic predicate, since it contains a subject. This predicate is reflexive-marked by the SELF anaphor; hence, it is required by Condition A to be reflexive. This requirement is met only if the anaphor is coindexed with the subject trace, so only herself (coindexed with the trace of Lucie) is allowed here. The same would be true for VP-preposing, as illustrated in (51).

(51) [t1 compromise herself/*himself,] though Max said that Lucie did, she is still terrific.

This means, therefore, that reconstruction is not needed to explain the distribution of anaphors in these contexts. Similarly, anaphors in experiencing contexts such as (52a) pose no different problems than anaphors in any other context of logophoricity.27

(52) a. Jokes about herself amuse Lucie.
    b. Jokes about herself/ her amuse every philosopher.

This does not entail, though, that the problem of reconstruction is eliminated altogether.28 The contexts we have examined still pose a problem for the theory of variable binding. Though the logophor in, say, (52a) need not be a bound variable, it can be, as illustrated in (52b) with a quantified antecedent (and as can be further checked in ellipsis contexts). Similarly, in (49) the anaphor could also be a bound variable, as can be shown by substituting a quantified NP for Max or Lucie. In this respect, there is no difference between logophors and pronouns in contexts like (49) and (52)—both can serve as bound variables, as illustrated for the experiencing context in (52b). Generally, variable binding requires that the antecedent c-command the variable at some level, which is not the case at S-Structure for the structures under consideration. In sum, then, our analysis can shed no new light on the general issue of the precise formulation of variable binding (which is captured in standard GB Theory by the Bijection Principle, or in Reinhart's

27 An LJ reviewer wonders why (i) is worse than (52a) or (ii).
   (i) Pictures of herself fell on Lucie.
   (ii) Pictures of herself amused Lucie.

The answer lies in our discussion of logophoricity in section 3. Whenever a logophor is possible, a pronoun is just as possible, and the choice between them is likely to rest on some discourse motivation. As noted in section 3, a very common context facilitating the choice of a logophor is that of point of view, or consciousness report. Experiencing structures, such as (ii), constitute prototypical consciousness reports, whereas structures like (i), in isolation, do not. Even though more could be said here, the precise specification of the discourse conditions governing the actual use of logophors lies, together with many other marvels of language use, well beyond the scope of what we need to know for the syntax of anaphora.

28 We thank Tohru Noguchi for pointing this out to us.
approach by the translation procedure for indices). But reconstruction is not needed at all for the binding conditions themselves, as they are stated here.

5.2 Condition B in NPs

Let us look next at the way Condition B works in NPs. None of the structures mentioned so far pose any problem for Condition B if a pronoun replaces the anaphor, as for example in (53a). Since no arguments of N are coindexed in such cases, no reflexive semantic predicate is involved, and Condition B is met. The contrast to look at, though, is the one in (53)—(55), discussed by Jackendoff (1972), Chomsky (1986b), and Williams (1987).

   (53) a.  Lucie, saw a picture of her.
          b.  *Lucie, took a picture of her.
   (54) a.  Max, heard a story about him.
          b.  *Max, told a story about him.
   (55) *Lucie, performed an operation on her.

What such cases illustrate is that the syntactically unrealized 0-role of N may appear to be present nonetheless, affecting the anaphora options of the realized N arguments. The lexical semantics of the verb entails that in (55) the agent of the verb must be identical to the agent of operation. Similarly, in (53b) and (54b) it is identical to the agent (producer) of picture or the teller of story. These N roles appear to produce a Condition B effect inside the NP. In the case of see and hear, where the agents are not identified, no such effects are found.

Two analyses of the structure of such NPs have been proposed. Chomsky (1986b) argues that a PRO-like element is present in the Spec of NP (or DP) of the starred cases above, as illustrated in (56) for (54b). (Abstracting away from the precise details of his analysis, we may assume that this PRO, which is always optionally present in NPs, is obligatorily required here, for the verb to assign its control feature.) In this case, any version of Condition B will successfully block the coindexation inside the NP.

   (56) *Max, told [PRO, story about him].

However, Williams (1982, 1985, 1987) argues convincingly that a PRO analysis for NPs is not feasible and, furthermore, that the apparent control effects show up also when the Spec position is filled, or when PRO is otherwise impossible. Instead, he proposes that the N agent role, which is not syntactically realized, is satisfied in the lexicon, and thus gets some referential value, either from the context, or by control. In the latter case, the index of, for example, Lucie in (55) is assigned directly to the agent role of operation, rather than to an NP realizing this position syntactically. The same is true also when the Spec of NP is lexically filled, as in (57).

   (57) a.  Max performed Lucie’s operation.
          b.  Yesterday’s operation was successful.
In (57a) the agent of *operation* is controlled by *Max*, and in (57b) its value is supplied by the discourse. This line of analysis is further developed and defended by Grimshaw (1986, 1990).

This view of the argument structure of N predicates provides direct support for our distinction between syntactic and semantic predicates. Recall that Condition B applies to semantic predicates. Hence, for this condition (unlike Condition A), it is irrelevant whether all the arguments are realized syntactically. The value assigned to the agent role is an argument of the semantic predicate formed by the N. In (53b), (54b), and (55) the semantic predicate of N is reflexive regardless of whether the agent role is realized by PRO or is controlled directly, since in both cases this role and the pronoun end up coinindexed (with the same index as the controller of the N role). Given that no SELF anaphor is present, this reflexive predicate is ruled out.\(^{29}\)

### 5.3 Predicative PPs

In our initial discussion of PPs in section 2.2, we noted (following Marantz (1984) and others) that prepositions vary in whether they form their own predicate or not. In a standard three-place V predicate, as in (58), P does not form its own predicate. It functions only as a role selector for the verb, and its NP complement is just an argument of the V predicate. Hence, no coindecoration of any of the three arguments of the V predicate is possible without reflexive marking. But in the case of locative and directional PPs, as in (59), the P forms its own predicate. Hence, the NP complement of P is an argument of P, rather than of the V. As noted in section 2.2, this is so regardless of the selection of the verb. In (59b) the verb selects for a location role; that is, the PP is its selected argument. But the NP complement of P is not.

\[(58)\] a. Lucie explained Max to *her/herself.*
   b. Lucie explained Max to *him/himself.*
   c. Lucie explained *her/herself* to Max.

\[(59)\] a. Max saw a ghost next to him/himself.
   b. Max put the book next to him/himself.
   c. Max pulled the cart towards him/himself.

\[(60)\] a. *Lucie* said that I explained Max to herself.
   b. Lucie said that Max saw a ghost next to herself.

\(^{29}\) Where the two approaches may differ empirically, given our system, is in the case of Condition A. If a syntactic PRO subject is obligatory in the control cases, a logophor would be excluded. For example, (iia), with the structure (iib), should be worse than (i), which allows also the no-PRO structure, since only in (iib) is a syntactic predicate formed. If the agent role is controlled lexically, as in Williams's approach, then (i) and (iii) are indistinguishable syntactically (in both cases no syntactic predicate is formed for the N), so they should be equally allowed by Condition A.

1. Max was glad that Lucie saw [a picture of himself].
2. Max was glad that Lucie took a picture of himself.
3. Max was glad that Lucie took [PRO, picture of himself].

Though the judgments are subtle, they seem to favor Williams's approach.
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This means that in checking the index of the NP in the PP, our binding conditions apply
differently to the two types. In (58) they check the top V predicate; in (59) they check

only the P predicate. Condition B thus rules out the coindexed pronouns in (58), since

the coindexation renders the V predicate reflexive. But this predicate is irrelevant for

Condition B in (59). Condition A allows a SELF anaphor in both cases, but, again, in
different ways: in (58) the anaphor is a reflexive marker of the verb explain. But in (59)

the situation is analogous to what we have just observed with NPs: since there is no

subject, there is no syntactic predicate, so the condition is automatically met (that is, it
does not apply). This means that in (59), unlike (58), the anaphor should have logophoric

properties. Indeed, although the anaphor of (58a) cannot be long-distance bound, as in

(60a), the locative anaphor can, as in (60b). The use of anaphors in (59) is much more

marked than their use in (58). (Hestvik (1991) surveys the varying judgments on these

structures in the linguistic literature.) Part of the reason is that in (58) the only gram-

matical choice is using the anaphor (since a choice of a pronoun violates Condition B),

whereas in (59), as far as syntax goes, both a pronoun and an anaphor are possible.

The way Condition B works in locative and directional P predicates deserves more

attention. A problem that has not been dealt with much previously is that illustrated

below. Whereas the pronoun argument of P can be freely coindexed with the external

argument of the verb in (59), or in the (a) cases of (61) and (62), it cannot be coindexed

with the internal argument in (61b) and (62b).

(61) a. Max1 rolled the carpet over him1.

b. *Max rolled the carpet1 over it.

(62) a. Max1 directed Lucie towards him1.

b. *Max directed Lucie1 towards her1 (in the mirror).

It may appear tempting to consider a small clause solution to this problem, assuming

that the accusative argument is a subject of a PP small clause. Such an approach is

discussed and rejected by Chomsky (1981) and Koster (1985), but a brief discussion from

the present perspective will nonetheless be helpful. In this case, the sentences of (61)

have the structure in (63), which is analogous to the standard small clauses in (64). Indeed,

Condition B seems to apply in the same way to both structures. In (63b) and (64b) it

encounters a reflexive predicate with no reflexive marking, and rules it out. The parallel

predicates in (63a) and (64a) are not reflexive and hence are well formed. However, this

30 We are not aware of any discussion of this problem in the literature. Hestvik (1991), who discusses

both PP anaphora and its research history in detail, assumes that with structures of types (60)–(61) the object

can freely bind the pronoun. However, all his examples are of the type in (i), where the pronoun is further

embedded in an NP.

(i) John put Bill in front of a picture of him1. (Hestvik (1991:463, (12a))

He further explains that he added the picture-NP "to improve the pragmatics of the examples" (Hestvik 1991:

fn. 2) and that this change could not affect the discussion, since "we know that indefinite NPs do not count

as domains for Condition B anyway" (1991: fn. 2). Although this is true for the standard binding theory Hestvik

is assuming, in our framework examples like (i) have nothing to do with the problem under consideration (the

pronoun being an argument of the semantic predicate of picture, which is not reflexive).
parallelism breaks down when we look at the anaphors in (63c) and (64c). If these sentences have the same structure, then Condition A should, incorrectly, rule out (63c). Since in this case P has a subject, it forms a syntactic predicate, which is subject to Condition A. (The standard Conditions A and B will have precisely the same problem here, but see footnote 31 for a potential way to maintain the small clause analysis.)

(63) a. Max₁ rolled [the carpet₂ over him₁].
   b. *Max rolled [the carpet₂ over it₂].
   c. Max₁ rolled [the carpet₂ over himself₁].

(64) a. Lucie₁ heard [Max₂ praise her₁].
   b. *Lucie heard [Max₂ praise him₂].
   c. *Lucie heard [Max₂ praise herself₁].

We may note further that the generalization that governs Condition B effects in locative PPs cannot be stated in purely structural terms, as may have appeared from the discussion so far. For example, it is not always the case that the pronoun cannot be coindexed with the verb’s internal argument. In (65) it can. In other cases the locative pronoun cannot be coindexed with the external argument of the verb, as in (66) (where there is also no potential subject to form a small clause). In such structures as well, the locative PP induces Condition B effects in some cases (66a–b), but not in others (66c).

(65) Max praised/examined the carpet₂ underneath it₂.
(66) a. *Max₁ stepped on him₁.
   b. God is in zichzelf, */*zich₁. (Spinoza, pointed out by Jan Voskuil)
       God is inside itself, */*it₁.
   c. Max₁ looked around him₁.

The intuitive appeal of a small clause analysis in the specific case of locatives and directional prepositions is that such Ps appear to behave like two-place predicates, that is, as expressing a relation between two arguments. For example, a sentence like (61a) entails the carpet being over Max at some point. But, given that this analysis so far cannot solve the problem in (63), is there an alternative way to capture this intuition? Let us explore the analogy with Condition B effects in N predicates that we observed. We may assume that locative and directional prepositions indeed take two 0-roles. But, along the lines of Williams’s and Grimshaw’s analysis of the control of N roles (see section 5.2), only one of these is realized syntactically, as the P complement, whereas the other is satisfied in the lexicon and assigned a value by control. Teun Hoekstra (personal communication, 1991) suggests that this role can be controlled either by an argument of the verb or by the abstract EVENT argument. Thus, in (61)–(63) the unrealized role of P is controlled by the verb’s internal argument, yielding over, in (63a) as a relation holding between the carpet and Max. But in (65) the relation underneath holds between the carpet and the event of Max’s praising or examining the carpet, which means that the unrealized role is controlled by the EVENT role. Similarly, in the
transitive case of (66a–b) the P-role is controlled by the subject, whereas in (66c) it is the event of looking that is the semantic argument of around. As was the case with NPs, control is largely determined by the semantics of the verb. (Possibly, the relations here are more systematic than in the case of N arguments.)

On this view, then, our Condition B works in predicative PPs just like it did in NPs. The value assigned to the syntactically unrealized role is a semantic argument of the predicate. Since Condition B applies to semantic predicates, this argument is visible to it. If the assigned value has the same index as the second (syntactic) argument of P, then P forms a reflexive predicate, which is licensed only if it is reflexive-marked. For example, in (66a) (*Max$_1$, stepped on him$_1$), the semantic predicate formed is on (Max$_1$, him$_1$). This reflexive predicate is non-reflexive-marked and hence ruled out. (62b), (63b), and (66b) are filtered out in the same way. In all other sentences, no reflexive predicate is formed in the semantics, so Condition B is met.

5.4 Conclusions: Syntactic and Semantic Predicates

In conclusion, let us look again at the full paradigm of the PP anaphora of (63), repeated in (67). Here the preposition forms a semantic two-place predicate, whose first (syntactically unrealized) argument is assigned the index of the carpet. But, by definition, it does not form a syntactic predicate (since P does not have a subject). This entails, in our system, that only Condition B can apply to this predicate. In two of the cases—(67b) and (67d)—the semantic predicate is reflexive. Condition B allows the reflexive-marked (67d) and rules out the unmarked (67b). Since the anaphors in both (67c) and (67d) are not arguments of a syntactic predicate, Condition A has nothing to say about either. As far as syntax is concerned, then, both are equally allowed. (67c) may still seem more marked than (67d), since this coindexation also permits the use of a pronoun, as in (67a), so some discourse motivation for choosing the anaphor is required.

(67) a. Max$_1$ rolled the carpet$_2$ [over him$_1$].
   b. *Max rolled the carpet$_2$ [over it$_2$].
   c. Max$_1$ rolled the carpet$_2$ [over himself$_1$].
   d. Max rolled the carpet$_2$ [over itself$_2$].

(68) a. Max$_2$ gave Lucie$_1$ [a lecture on her$_1$].
   b. */?Max$_2$ gave Lucie$_1$ [a lecture on him$_2$].
   c. Max$_2$ gave Lucie$_1$ [a lecture on herself$_2$].
   d. Max$_2$ gave Lucie$_1$ [a lecture on himself$_2$].

We may now note the analogy of P predicates and N predicates. The anaphora pattern in (68) parallels that of (67). The subjectless lecture only forms a semantic predicate, but its implicit agent role is controlled by Max (the lecturer). In (68b) and (68d), then, this predicate ends up reflexive, and the unmarked (68b) is ruled out by Condition B. (68c–d) are analogous to (67c–d): Condition A has no say on anaphors occurring in nonsyntactic predicates.
What P and N have in common, then, is that the predicates they form are not syntactic, given our definition. Hence, we find a different pattern of anaphora here than in the case of V predicates. On this analysis, all predicative heads form semantic predicates, but only a subset also forms syntactic predicates. Hence, we find Condition B effects in predicates with all these heads (P, N, V), but Condition A effects only with the syntactic V predicates. A question that may be reopened is, What is the defining property of syntactic predicates? Conceptually, this is reminiscent of the older question. What is the domain for anaphor binding? Starting with Chomsky 1973, two parameters have been considered: subject and tense. Here, we chose the subject parameter, in order to capture the traditional judgments on anaphora in NPs with a subject, which we mentioned in (47) (and which we doubt, as we said). Alternatively, one might take eventhood (or having an event role) as the defining parameter, since this (descendent of the tense parameter) also distinguishes V from P and N predicates.\footnote{If the definition of syntactic predicates is changed to require an event role, the small clause analysis of the PPs we examined becomes feasible. As shown in the discussion of (63)-(64), the problem was that an anaphor in the standard small clause of (ii) is excluded, but it is allowed in the PP small clause in (iii). (68) is an alternative small clause analysis proposed by T. Hoekstra (1990), which fares better in capturing correctly the various options of control we discussed.)

6 R-Properties and the Chain Condition

6.1 R-Deficiency: Pronouns and SE-Pronominal Anaphors

So far we have shown that Condition B uniformly rules out all reflexive predicates that are not reflexive-marked. The two types of pronominals we have discussed, pronouns and SE anaphors, are indistinguishable with respect to this condition. In Dutch, for example, both are ruled out in (69); but in the predicative PP of (70), both are allowed.

\[(69)\] Willem₁ bewondert zichzelf₁/*zich₁/*hem₁. 
Willem₁ admires himself₁/*SE₁/*him₁

\[(70)\] Klaas₁ duwde de kar voor zich₁/hem₁/*zichzelf₁ uit.
Klaas₁ pushed the cart before SE₁/him₁/*himself₁ out

Still, we find differences in their distribution that cannot follow from what we have said so far. Historically, Condition B was developed to account for languages like English with just one pronoun type. SE anaphors are therefore extremely useful in checking the precise scope of Condition B, and the way it interacts with other linguistic modules.
Pronouns and SE-pronominal anaphors differ, first, in contexts of intrinsic reflexivization. We noted in section 2 that when the predicate is lexically reflexive, as in (71), SE is allowed, unlike in (69), since in this case the reflexive predicate is appropriately marked and Condition B is therefore met. In this context, the theory seems to face a problem: unlike in (70), the SE anaphor cannot be replaced with a bound pronominal.

(71) Willems, schaamt zich_tens_hem_tens.
Willems, shames SE_tens_him_tens.

Similarly, although intrinsically reflexive verbs that realize their internal argument are rarer in English, behave and pride in (72) are such verbs (as witnessed by the fact that they cannot take any noncoindexed object). Condition B would be met if a pronoun occurs in these cases, but its appearance is nonetheless ungrammatical. The same is true for the Dutch translations of these sentences, as in (72), except that a SE anaphor, not available in English, is allowed here.

(72) a. Lucie behaved herself/"her (well).
  Lucie gedroeg zich/"haar (goed).

b. Lucie prides herself/"her on her notorious modesty.
  Lucie beroemt zich/"haar op haar welbekende bescheidenheid.

A similar problem may also arise when the verb is not lexically reflexive, in the case of a three-place predicate, which we discussed in (21), partially repeated in (74).

(73) a. *Hei accidentally assigned him_tens to himself_tens.

b. Hei accidentally assigned himself_tens to himself_tens.

(74) Henk_tens wees zich_tens_hem_tens aan zichzelf_tens toe.
Henk assigned SE_tens to himself_tens

The predicate in (73a) is defined as reflexive-marked, since the definition requires only one argument to be a SELF anaphor. Condition B is therefore satisfied in this sentence. Indeed, in the Dutch translation in (74), zich can occur. But if Condition B is all there is, then the pronoun should be just as possible, which is not the case in either English or Dutch.

Additional differences between pronouns and SE anaphors occur in ECM subject position:

(75) a. *Jan_t tens hoorde zich_tens_hem_tens.
Jan heard SE/im_tens

b. Jan hoorde [zich zingen].
Jan heard [SE sing]

c. *Jan hoorde [hem_tens zingen].
Jan heard [him_tens sing]

Condition B correctly blocks the SE pronominal (as well as the pronoun) in (75a), where it is a syntactic and a semantic coargument of its binder. But, as stated, Condition B
cannot block binding of an embedded ECM subject, since it applies to semantic predicates, and this subject is not necessarily a semantic coargument of its matrix binder. (We will explore this point in more detail in section 7.) This turns out to be the correct prediction for SE pronominals, which can indeed be bound here, as in (75b). But a pronoun in the same context cannot be bound either in the Dutch (75c) or in its English equivalent.

In all these cases, then, the SE-pronominal anaphors behave precisely as predicted by our Condition B, but the pronouns appear mysterious. Since the standard Condition B of GB Theory was developed for languages like English, it was designed to capture correctly the distribution of the pronouns in all the examples above, but it leaves unexplained the distribution of the SE pronominals. Here, we have taken the alternative line: it is in fact the SE pronominals that reflect the precise scope of Condition B, and it is the pronouns that require some additional account, in the above contexts.

To see what that additional account could be, let us look again at the feature analysis of the various anaphoric expressions we examined in section 1. The summary given in (4) is repeated here.

(4)

<table>
<thead>
<tr>
<th>Reflexivizing function</th>
<th>SELF</th>
<th>SE</th>
<th>Pronoun</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Referential independence)</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
</tbody>
</table>

In fact, we have so far made use of only one of the distinguishing properties in (4). As we stated them, all the binding conditions care about is the reflexivizing function, which only SELF anaphors carry. In this regard, pronouns and SE-pronominal anaphors are identical: for Condition B, they equally fail to reflexive-mark a predicate. However, the other property, referential independence, cuts the pie in a different way: here SELF and SE expressions form one group, which is the one traditionally referred to as anaphors. From this perspective, pronouns are the exceptional case, and they pattern with the standard, fully specified, +R arguments. If it turns out that there exists a module of linguistic knowledge that is, independently, sensitive to this R property, it would not be surprising that with respect to this module, pronouns behave differently from the SE-pronominal anaphors.

6.2 Movement and Binding: The Chain Condition

One of the central ideas in Chomsky 1973 was that NP-movement and anaphora are closely related. In the GB framework of Chomsky 1981, this was implemented by defining NP-traces as anaphors, which are consequently governed by the binding theory. This parallelism between A-binding and A-movement seems to have been given up in the "barriers" model of Chomsky 1986a (see also Lasnik 1985 for discussion). In the discussion of the licensing of NP-trace (Chomsky 1986a:74–79) Condition A in its original form plays no independent role, and NP-movement is restricted by chain theory. Even if Condition A still holds of the coindexation of an NP and its trace, no such coindexation
can violate Condition A, without also failing to form a well-formed A-chain and hence violating the ECP. Nevertheless, we believe that this correlation is not accidental, and that the reason why it was discovered in the first place is that certain anaphora issues that have been assumed to fall under the binding theory in fact belong to chain theory (and not conversely, as was initially assumed). Specifically, these are all issues of binding sensitive to the R properties of NPs.

To show this, let us check, first, what might have been the underlying intuitive basis for viewing movement and anaphora as governed partially by the same restrictions. Regardless of any specific implementation, the empirical generalization remains the same as observed in Chomsky 1973: in the syntactic domain in which a moved NP can bind its trace, an NP can bind an anaphor (−R), but it cannot bind a pronoun or any non-anaphor (−R). This is illustrated in (76)–(78).

(76) a. Felix₁ was fired₁.
   b. Felix₁ behaved himself₁.
   c. *Felix₁ behaved him₁.
   d. *Who₁ [did he₁ behave₁]?

(77) a. He₁ is believed [t₁ to be smart].
   b. He₁ believes [himself₁ to be smart].
   c. *He₁ believes [him₁ to be smart].
   d. *Who₁ [does he₁ believe [t₁ to be smart]]?

(78) a. Felix₁ was expected [t₁ to consider [himself₁ smart]].
   b. Felix₁ expects [himself₁ to be considered [t₁ smart]].

Given current syntax, the domain illustrated in (76)–(78) may be called the A-chain domain of a given NP. An A-chain, under its broadest definition, is any sequence of coindexation that is headed by an A-position and satisfies antecedent government; that is, each coindexed link, except for the head, is c-commanded (i.e., m-commanded) by another link, and there is no barrier between any two of the links. By definition, then, the A-chain domain of a given NP is a subset of its c-command domain (down to the first relevant barrier), or, in the terms of current syntax, it is a subset of the binding domain of this NP. The question of what counts as a barrier, and, consequently, the precise definition of the A-chain domain is a topic of much current research and debate. For our purposes the approaches in Chomsky 1986a and Rizzi 1990 appear to be essentially equivalent. In any case, we do not find it necessary to dwell on the differences in view of the rudimentary stage of chain theory.\(^\text{32}\) In the current implementations of chain

\(^\text{32}\) A more precise definition of chains is given in (i), following Chomsky (1986a,b).

(i) \textit{Generalized chain definition}

\[ C = (\alpha_1, \ldots, \alpha_n) \] is a chain iff \( C \) is the maximal sequence such that

a. there is an index \( i \) such that for all \( j, 1 \leq j \leq n, \alpha_j \) carries that index, and

b. for all \( j, l \leq j < n, \alpha_j \) governs \( \alpha_{j+1} \).

(ii) a. Felix₁ seems [t₁ to be sick].
   b. Felix₁ seems [t₁ [t₁ to be sick]].
theory, only trace-tailed coindexations end up as actual A-chains (see footnote 33). But here we will defend the broader definition, under which the coindexation in all the sentences of (76)–(78) forms an A-chain, though only in the (a) and (b) cases is the result grammatical.

Bound coindexation is extremely widespread in syntax. Why should the subdomain of A-chains be singled out as having a special status? The answer, underlying the research in current syntax, is that coindexation within the A-chain domain has the unique property of allowing the coindexed positions to form a single argument (and, in some cases, like those of the NP-movement above, forcing this as the only option). This is clearly not the standard interpretation of coindexation. Except for the cases of well-formed A-chains, coindexed argument positions always correspond to distinct arguments. It is not very surprising, therefore, that the environments allowing such argument reduction are severely restricted, or obey a specific syntactic condition.

The way chain theory is currently implemented, only a subset of A-chains—those formed by NP-movement—are actually assumed to fall under it. The current Chain Condition (e.g., Chomsky 1986a) has the effect of defining a coindexation as an A-chain only if it has exactly one Case, in its head position, and exactly one θ-role. Technical

For government (of clause (ib)) to hold, there should be no barriers between the governor and the governed. In the framework of Chomsky 1986a, VP in for example (ia) is a barrier that can be canceled by movement of V to 1, but V, or its LF trace, forms a minimality barrier, even when it moves to 1 at LF. Hence, the coindexation in (ia) cannot count as an A-chain without further assumptions. To solve this, Chomsky argues that in A-chains across the VP, coindexation works via a link of V and 1, as in (ib): the subject Felix is coindexed with 1 independently (for issues of agreement). Roughly, then, when V moves to 1, it gets the same index, so in effect, the subject governs its trace via the coindexed V.

For Rizzi (1990), antecedent government can be blocked in two ways: (i) by an intervening barrier (XP) if it is not directly selected by an X′ not distinct from [±V]; (ii) by an intervening governor of the same type. In (ii) VP is not a barrier, being directly selected by [±V] (which is not distinct from [±V]). Furthermore, antecedent government is blocked, since there is no intervening-governing potential A-binder. Hence, the coindexation in (ia) can count as an A-chain without further intermediate coindexation.

In many cases the two approaches yield identical empirical results, but the precise range of Rizzi’s approach is not equally clear in all domains of application. A case of potential difference is chains into PPs, which we mention in footnote 45.

The major original reason why anaphora chains and NP-movement chains are currently not viewed as both falling under chain theory is that the standard Chain Condition is viewed as blocking the ECP. To take the simplest example, we would not like to allow (ia) as a legitimate derivation.

(i) a. *Felix fired 1,
   b. Felix fired himself.

To capture this, the Chain Condition in (ii) (from Chomsky 1986a,b; assumed also in Rizzi 1990) is viewed as a definitional condition, determining what counts as an A-chain.

(ii) A maximal A-chain (α1, . . . , αn) has exactly one Case-marked position—αi—and exactly one θ-marked position—αj.

A coindexation string not meeting this condition is not a chain. Hence, if one of its links is an empty category, it is not antecedent governed, and the string is ruled out by the ECP. Thus, (ii) defines both sequences of (i) as nonchains, since they each have more than one θ-marked position. This has no effect on (ib), but in the case of (ia) the empty node violates the ECP. (iii) must be viewed as a definitional condition, rather than a well-formedness condition; otherwise, it would also rule out the anaphor in (ib).

In Reuland and Reinhart 1992 we argue that (ia), as well as other cases originally motivating the θ-requirement in (ii), is also ruled out without it. The argument for (i) is summarized in footnote 42. Under our reformulation of (ii) it will be a well-formedness condition.
But indexing in all the cases is the result
of the subdomain in the research underlying the unique property in some cases, like (77). This is clearly not true of well-formed A-chains arguments. It is not a matter of reducing the number of A-chains—those arguments. The current Chain Condition as an A-chain in the θ-role. Technical

details aside, the conceptual basis for this formulation is the assumption that an A-chain necessarily forms one semantic argument. This cannot be maintained, in any obvious way, for anaphor chains such as the one in (77b). The generalization observed in (76)-(78) then happens to have no theoretical status under this implementation, and the ill-formed coinlexing in (76c-d) and (77c-d) must be ruled out independently by the (standard) binding conditions.24 However, we argue that, in fact, all the (well-formed) chains above can be viewed as forming one syntactic argument, which does not necessarily mean that they must form one semantic argument. The generalization observed in (76)-(78) will follow, then, from (a slightly modified formulation of) the Chain Condition.

6.2.1 The Syntactic (Case) Requirement on A-Chains. Let us check, first, what the well-formed A-chains in (76)-(78) happen to have in common, in terms of our initial R property. Recall that we assume this property to hold for the R-expressions of the GB framework (that is, full NPs), as well as for pronouns, including PRO and pro. As in GB, wh-traces are defined as + R, and we turn directly to the question of what R could mean in this case. Looking at the R properties of the well-formed chains (a) and (b) of (76)-(78), we see that they contain exactly one + R link, which is their head. Both the tail and any intermediate links of a well-formed chain are – R: either an anaphor or an NP-trace (whose similar status was previously captured, to begin with, by defining NP-traces as anaphors). In the ungrammatical chains of (c) and (d), by contrast, the tail is + R: a pronoun or a wh-trace. The head of a well-formed chain must be a + R link. Although – R NPs like anaphors or NP-traces can serve as an intermediate link in a chain, as in (78), repeated here, they cannot head a chain, as for example, in the embedded CP of (79).35

(78) a. *Felix, was expected [t₁ to consider [himself, smart]].
   b. *Felix, expects [himself, to be considered [t₁, smart]].

(79) a. *Maria, expected [CP that [IP herself, would be praised t₁]].
   b. *Maria, seems that [CP it appears [IP t₁ to be attacked t₁]].

The descriptive generalization is then that an A-chain is headed by its unique + R NP. Let us incorporate this into the (Case clause) of the standard Chain Condition, in (80). (This differs from the standard formulation of that clause only in also mentioning the property R and omitting reference to θ; see footnote 33 for the original formulation.)

24 As shown in section 6.1, these specific examples cannot be ruled out by our Condition B. In (76) this is so because the predicate is intrinsically reflexive, and in (77) because the two links of the chain are not coarguegments.

35 The coinlexing across the embedded CP here does not form an A-chain, but the embedded CP contains an A-chain headed by an R-deficient NP. (79b) is ruled out independently by the ECP, but in our framework, unlike in the standard binding theory, the binding conditions do not block (79b), since Condition A is technically met. (The syntactic coargueguments of praise are coinlexed, and Condition A is insensitive to hierarchical considerations.)
Other advantages of using this version of the Chain Condition are discussed in Reuland and Reinhart 1992. forthcoming.  

(80) General condition on A-chains

A maximal A-chain \((\alpha_1, \ldots, \alpha_n)\) contains exactly one link—\(\alpha_1\)—that is both 
\(-R\) and Case-marked.

Under this formulation of the Chain Condition, it is equally respected by both NP-movement chains and anaphor chains. Assuming that in a chain like (76b) *Felix behaved himself*, the anaphor is Case-marked (which is not obvious, as is hinted at directly), it is still a \(-R\) link. Thus, the chain appropriately contains only one link—*Felix*—which is both \(-R\) and Case-marked. By contrast, in (76c), *Felix behaved him*, both links are \(-R\) and Case-marked. We take (80) to be a standard well-formedness condition. Thus, it rules out as ungrammatical the coindexations in (76c–d) and (77c–d), as well as the cases in (79).  

Recall that the A-chain domain of a given NP is a subdomain of its c-command domain. Given (80), the referentially independent element of the chain must therefore c-command the referentially dependent element. For example, the chain in *Himself, praised Felix*, violates (80), since it is headed by a \(-R\) link. (Its unique \(+R\) and Case-marked link—*Felix*—is at the tail rather than at the head of the chain.) In section 8 we will argue that the apparent configurational effects of the binding conditions can all be reduced to this Chain Condition.

The properties \(R\) (referential independence) and Case may seem strange bedfellows when it comes to such a clear instance of a purely syntactic sentence-level principle as the Chain Condition. To see what may be their relation, we should focus on what \(R\) could really mean. In the case of pronouns, it makes intuitive sense to argue that they are referentially independent, since they can be used to select a value directly in the discourse. But in the case of \(wh\)-traces, which are interpreted as variables, this is not so. So whereas the distinction between pronouns and anaphors can perhaps be stated in terms borrowed from the theory of reference, the same terms are not particularly

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36 If \(+R\) means being fully specified for structural Case (where structural Case may eventually turn out to be among the \(\delta\)-features), we predict that some languages may contain \(-R\)-expressions that are \(-R\) for lack of structural Case. Frisian turns out to be such a language. Frisian lacks SE anaphors that are \(\delta\)-feature-deficient (in this, it is reminiscent of older stages of English). Instead, it has a pronoun paradigm that is in some respects distinguishes between structural and oblique Case (J. Hoekstra 1991). In all positions where Dutch allows or requires \(ich\), Frisian has a pronoun form, but it cannot be the one marked for structural Case. Thus, (i) is parallel to (71) and (ii) is parallel to (72) (note that both forms are pronounal).

(i) Marie, skammet�r *se*,  
Marie, shames her,

(ii) Marie, hørte [har, *se, spørgemet],  
Marie, heard [her, sing]

Space reasons prevent us from discussing this fully here. For a more extensive presentation of the facts and the theoretical issues involved, see Reuland and Reinhart, forthcoming.

37 The shift from a definitional condition to a well-formedness condition entails that some cases ruled out before by the ECP will now be ruled out as illicit chains. However, in terms of expressive power, we do not see a difference between assuming a specific definitional condition that enables such structures to be ruled out by the ECP or a well-formedness condition ruling them out directly.
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(a)

(b)

(81) An NP is +R iff it carries a full specification for α-features and structural

(Note that we are talking about the internal specification of an NP for Case, rather than

about the Case actually realized in a specific syntactic environment.) Under this view,

the Chain Condition licenses a chain iff (a) the head link, which defines its argument

status, and only the head link, is fully specified for Case and (b) its Case is realized (or

Note that it is crucial in our framework to define α-traces as +R. Recall that we are working in a

framework with no Condition C. Hence, strong crossover, as in (76d) and (77d), is not ruled out independently

by any other binding condition (except for the same translation procedure that also rules out weak crossover; see

Grodzinsky and Reinhart 1993). Given the Chain Condition in (80), it may be possible to show that all

instances of strong crossover are ruled out just as chain violations, since one of the intermediate traces of the

moved α constituent will always form a chain with the binding pronoun.

Kissock (1993) observes that anaphors in Telugu have a full Case paradigm, including nominative Case.

On the basis of what we have said so far, a nominative element may be —R if it is underspecified for α-features

in another dimension. (In addition, in order for there to be a well-formed chain, the projection in which it

receives Case should not be a barrier.) Whereas on the one hand the Telugu anaphors do show a certain α-

feature deficiency, on the other hand the nominative anaphor can be discourse-bound and does not obviously

tail a chain. The full range of facts requires further investigation.

Note furthermore that possessive anaphors, which we do not discuss in this article, generally do allow

all Case forms. However, such anaphors are internally underspecified (for Case and other α-features), since they

depend for these on the noun they modify.

For more discussion of the relation between Case and the R property, see Reuland and Reinhart, forthcoming.)
checked. Assuming that only Case-marked, fully specified NPs project a syntactic argument, the Chain Condition has the effect of requiring that an A-chain project a single syntactic argument.

6.2.2 The Semantic (θ-) Requirement on A-Chains We described the A-chain domain as the domain in which two coindexed positions project one syntactic argument and may also be interpreted as one semantic (θ-) argument. But, as we mentioned, in the current implementation of chain theory a stronger stand is often assumed, namely, that in an A-chain this must (not only may) be the case. This is captured by the full version of the Chain Condition in (82), which is based on the formulation in Chomsky 1986a (assumed also in Rizzi 1990), except that it incorporates the change we introduced in (60).

(82) A maximal A-chain \((a_1, \ldots, a_n)\) has
   a. exactly one link—\(a_1\), which is both +R and marked for structural Case—and
   b. exactly one θ-marked link.

Conceptually, (82b) is based on the view that if A-chains are just a single argument, they should be indistinguishable from other arguments (viewed as a single-membered chain) in also only allowing one θ-role. This indeed appears to always be the case with (well-formed) NP-movement chains. For example, a (simplified) plausible logical representation for Felix was fired is \(∃x (x \text{ fired Felix})\). Similarly, Felix was expected [\(t \text{ to be considered}\ [t \text{ smart}]\) corresponds to \(∃x ∃y (x \text{ expects } y \text{ to consider } Felix \text{ smart})\). (See, for example, Chierchia 1989 for a formal analysis of the derivation of such representations.) The two coindexed positions in the first case, and the three in the second, thus correspond to just the one argument—Felix—in the semantic representation of the sentence.44 On this view, the anaphora coindexation structures we have been considering do not, in fact, constitute A-chains, since they do not meet the requirement (82b). (82) is on that view a definition, rather than a well-formedness condition. See footnote 33 for the technical details.)

However, Fox (1993) observes that it is possible, in principle, to maintain the θ-requirement for anaphoric A-chains as well. In one case—that of intrinsically reflexive predicates (such as Felix behaved himself)—it is anyway assumed that the predicate contains only one θ-role, since intrinsic reflexivization is an operation on the verb's grid, which reduces, or absorbs, one of its roles. In this case it is therefore clear that the anaphor occupies a syntactic position that does not correspond to a thematic position.

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40 Empty nodes are specified for Case if they are A-bound (wh-traces), but not otherwise. Given this view of the R property, it could be the case that the Chain Condition requires only that a chain have a unique +R head link, which is the minimum requirement for projecting an argument. However, there is still some technical work to be done, in order to show that this would capture everything that the current condition does. We therefore leave this option open here.

41 In the case of raising, as in Felix seems t to be tired, Chierchia argues that seem is interpreted as a function on the proposition interpretation of Felix to be tired. Here too, the chain corresponds to one semantic argument.
project a syntactic chain project a single argument, then the A-chain domain is in turn a single argument, and may be expanded, in the current analysis, namely, that in an expanded chain, in the full version of the reflexive structure, a reflexive operator is introduced in (80).

A note for structural Case—

When the subject is a single argument, they are called e-membered chains (e-membered chain) to distinguish them from the case with (well-formed) A-chain, which, as we have already seen, is expected (I to be wise, Felix smart). (See, for instance, the discussion of such representations in (83).) In the second, thus second representation of such of the sentences we have been considering until now, (82a), (82b) hold.

Hence, see footnote 33 as a reminder of the condition that maintains the θ-

requirement. In this case, the reflexive operator must be inserted on the verb's grid, and it must clear that the reflexive function is in thematic position, otherwise. Given this view that A-chains have a unique +R function, there is still some technical condition that must be met. We refer to Chierchia (1984), where it is interpreted as a 3-functional operation that corresponds to one semantic function.

so the chain contains only one θ-position, in accordance with (82b). Since it also contains only one +R Case-marked link in its head position, it is a well-formed A-chain. It is possible to extend the same analysis to predicates reflexive-marked by a SELF anaphor. In fact, as mentioned in section 1, in Keenan's (e.g., 1987) analysis of reflexivization, SELF is an operator that turns a transitive predicate into an intransitive one; that is, it reduces the predicate's grid in just the same way that the intrinsic reflexive operator does. (Roughly, Lucie praised herself is analyzed as (R(praise))(Lucie), which is equivalent, by definition, to Lucie (λx(x praised x)).) On this view, reflexive marking means that a role-reducing operator is active in the predicate. With this assumption, as long as a predicate is reflexive-marked, coindexing its syntactic arguments yields a chain that satisfies (82b), and if it also satisfies the R requirement in (82a), the result is a well-formed chain.

Problems arise, though, in the case of ECM subjects. First, it is not clear that role reduction can be assumed to have taken place in (83). In any case, it cannot be assumed for (84a), where no SELF structure is present. As we showed in the discussion of (75), repeated in (84), in these structures reflexive marking is not required by Condition B (since the coindexed links are not coreferential). Still, only SE, or a pronoun, can occur in that position. (84b) must therefore be ruled out by the Chain Condition. Indeed, (84b) violates the R requirement (82a), whereas (84a) obeys it. But if these anaphoric chains must also obey the θ-requirement (82b), then both derivations should be ruled out.

(83) Jan heard [himself, sing].

(84) a. Jan heard [zech, zingen].

   Jan heard [SE sing] zingen.

b. *Jan heard [hem, zingen].

   Jan heard [him, sing]

To solve this problem, Fox (1993) proposes that the θ-requirement (82b) be relativized to a θ-assigner, as in (85).

(85) A maximal A-chain (α1, . . . , αn) has exactly one θ-marked link per θ-assigner.

On this formulation the chains in (83)–(84) all observe the θ-requirement (since in these chains there are two θ-assigners, and, accordingly, two θ-marked links). But (84b) is ruled out, since it violates the R requirement (82a).

Though it is technically possible to maintain the θ-requirement on A-chains, it should be noted that whether it is correct in the first place has been a subject of much debate. In the basic cases of A-chains of the type we considered here, this requirement does not play any independent empirical role. In all these cases, the chain has exactly one θ-position, since there is exactly one θ-role to be assigned: in the case of raising, the matrix verb (like seem) does not have a role to assign. In the case of passive, an existential operator reduces, or absorbs, the agent role (see, again, Chierchia 1989 for the technical details). In the case of intrinsic reflexivization, the reflexive operator detransitivizes the
verb. For these basic cases, then, incorporating the \( \theta \)-requirement into the Chain Condition is motivated only by conceptual rather than empirical reasons. In Reuland and Reinhart 1992, forthcoming, we argue in detail that the syntactic considerations that originally motivated this \( \theta \)-Condition all fall out from independent components of the theory.\(^{22}\)

The empirical controversy regarding the \( \theta \)-requirement revolves around chains that combine two moved NPs or an NP-trace and an anaphor, as in (86)–(87).

\[
\begin{align*}
\text{(86)} & \quad \text{Gian}i \text{, si, t}_{1} \text{ sembra [e, non fare il suo dovere].} \\
\text{Gian}i \text{ (to) himself seems not to do his duty}
\end{align*}
\]

\[
\begin{align*}
\text{(87) a.} & \quad \text{Luci, strikes herself [t, as clever].} \\
\text{b.} & \quad \text{Luci seems to herself [t to be beyond suspicion].}
\end{align*}
\]

Rizzi (1986) argues that the Italian (86) illustrates the correctness of (what was at the time his equivalent formulation of the present) \( \theta \)-requirement (82b). Since the trace of the moved clitic and the trace of the raised NP are both \( \theta \)-marked, (82b) rules this derivation out. However, Chomsky (1986b) compares this sentence to the English cases of (87). Assuming (correctly, we believe) that the anaphor \( e \)-commands the trace in both cases, an A-chain is formed in both cases of (87), which violates (82b) in just the same way as (86). Nevertheless, the derivations are well formed. In Reuland and Reinhart, forthcoming, we provide further reasons to assume that (82b) yields the wrong results for chains of this sort.\(^{43}\)

\(^{22}\) For illustration, consider how (i) is ruled out independently of (82b). Three types of empty elements are relevant here: PRO, pro, and Case-marked NP-trace. Since PRO and pro are Case-marked NPs and \(+R\), a chain containing PRO or pro in any but its head position violates (82a).

\[
\begin{align*}
\text{(i) } & \quad \text{*Felix fired \( e \),} \\
& \quad +\text{Case} \quad +\text{Case} \\
& \quad +0 \quad +\theta
\end{align*}
\]

This leaves us with the option that the structure arose by movement of Felix, leaving a Case-marked NP-trace, in which case (82a) is not violated (the trace being \(-R\)). Note, first, that under the current developments of syntactic theory (Chomsky 1991, 1992), A-movement from a Case-marked position will violate economy; hence, ruling out this case is no longer a task of chain theory. However, even in the earlier framework, independent considerations will rule it out. Consider an NP-trace position \( a_k \) in some chain. Movement from \( a_k \) to an A-position \( a_l \) requires the latter to be empty at D-Structure. Consequently, \( a_l \) must be a non-\( \theta \)-position. A D-Structure A-position is only a non-\( \theta \)-position if its \( \theta \)-role has been absorbed in accordance with Burzio’s Generalization. That is, the predicate projecting \( a_l \) is unable to assign objective Case to some argument it governs. If the Caseless argument is in fact \( a_k \), this is Q.E.D.: if \( a_l \) is the moved argument, but the Caseless position is another one, say \( a_k \), the latter must be an argument-EC (PRO or PRO). It is either unlicensed (unidentified, or inappropriately governed) and hence ruled out, or coincided with \( a_k \), violating (82a).

\(^{43}\) The issue concerning the status of (82b) in our system vis-\( \text{à}-\)vis Rizzi’s approach to chains was brought up by an LJ reviewer. The reviewer suggested that we might have a problem with argument shift, for which Rizzi’s system might be better equipped. The assumption being that one can never A-move a direct object across an indirect object and have it antecede a reflexive indirect object. Dutch double object constructions provide counterevidence to this claim of a similar kind as (87). Dutch allows passivization of the accusative object over the dative one, as in (18b), (18d) shows that crossing an intermediate anaphor is permitted, although the resulting chain will contain two \( \theta \)-roles, contra (82b).

\[
\begin{align*}
\text{(i) a.} & \quad \text{Lucie toonde de toeschouwers een man.} \\
& \quad \text{Lucie showed the spectators-DAT a \_ man-ACC}
\end{align*}
\]
The least we could conclude is that no sufficient reasons have been provided to believe that (82b) is the correct generalization. The empirical evidence we have so far argues against it, both in the cases like those above and in the cases of anaphora that we will come to. Therefore, we take the alternative line here, assuming that this requirement is not part of chain theory. Rather, we assume the Chain Condition as stated in (80) (repeated in clause (ii) of (82)). This decision is substantiated with greater detail in Reuland and Reinhart forthcoming.

The view of A-chains we assume, then, is the one we started our discussion with. Under our analysis, an A-chain is one argument in a syntactic rather than a semantic sense: it contains exactly one link that can project an independent syntactic argument (a Case-marked + R NP). It is this property that enables an A-chain in many cases to be interpreted also as one semantic argument, since a necessary (though not a sufficient) condition for this to be possible is that the two positions could count as one syntactic argument. However, whether a given A-chain corresponds in effect to one or more semantic arguments depends not on the Chain Condition, but on independent consider-

b. Een man1 werd de toeschouwers1 getoond.
   a. man-nom was the spectators-dat1 shown
   c. *De toeschouwers1 werden1 een man1 getoond.
      the spectators-nom were1 a man-acc1 shown
   d. De man1 werd zichzelf1 getoond.
      the man-nom was himself-dat1 shown
   e. Der Mann1 wurde1 sich selbst1 gezeigt. (or, perhaps: Der Mann1 wurde1 sich selbst1 gezeigt.)
      the man was himself shown

German has a prima facie similar pattern: see the German equivalent in (ie) (thanks to Ellen Brandner for discussion). Although the literature contains some arguments to the effect that perhaps the German equivalent of (id) — (ie)—does not involve crossing, Den Dikken (1992) shows that such arguments do not carry over to Dutch. Further investigation of such phenomena is, for example, Hindi will be left for the future. (Note that if in some language argument shift is A-movement, which leaves a variable, the ungrammaticality of crossing will directly follow from the Chain Condition.)

Furthermore, to us it seems that (86) and (87) are not equivalent, and that the problem in (86) is due not to the Chain Condition but to the improper use of the elicit: as an element affecting the argument structure of the verb it attaches to either absorbing an argument or marking the verb lexically reflexive, it is incompatible with the argument structure of semibreve. It cannot absorb an argument (either the external argument, since there is none to begin with, nor the internal argument, since the latter is realized as the embedded IP by assumption), nor can the predicate of semibreve be lexically reflexive (with respect to subject and object), since this presupposes the presence of an argument in its lexical structure where by definition it cannot have one. For this case, therefore, (82b) is not needed. Rizzi also discusses crossing in double object constructions. However, as he himself notes, in this case the judgments are variable, and generally much less strong than in the passive and raising cases. It seems doubtful to us that they could provide substantial support for (82b).

In section 6.3 we argue that pure Condition B effects are much weaker than violations of the more syntactic Chain Condition. If we assume (82b), the overlap between our Condition B and the Chain Condition will be much greater than it is now. Under our current analysis, (ib) is ruled out both by Condition B and by the (R-clause of the) Chain Condition, but (ia) violates only Condition B. If (82b) is assumed, it would turn out that (ia) is also ruled out by the Chain Condition, since given that no role-reducing operator is present, the chain has two 9-roles.

(i) a. *Max1 crítizeerde zich1.
   b. **Max2 crítizeerde hem1.

However, it can be observed that the violation in (ia) is much weaker than the one in (ib), and it patterns with the judgments on cases that are ruled out only by Condition B.
erations of the thematic structure of its predicate(s). The Chain Condition (80) is our present implementation of the (presently irreducible) requirement that coindexedation within the A-chain domain is permitted only if the result is a syntactic argument.

Another change we must assume in the standard chain theory is prohibiting (80) from applying to single-member chains. This change is needed in order to allow for the logophoric use of anaphors. Otherwise, each occurrence of a logophor, as for example in Max praised Lucie and himself or Max saw a picture of himself, would end up violating (80). (The anaphor here does not form a chain with its antecedent. If it counts as a chain alone, then the chain is inappropriately headed by a –R expression.) This is only a matter of definition, so there are two options: either we define (80) as a condition on chains with more than one link, or we define an A-chain as consisting of at least two coindexed links. Given that we no longer assume that a chain cannot have more than one 0-role, either option is no longer a significant move.

6.3 The Interaction of Condition B and the Chain Condition

Under our analysis, it follows that SE anaphors are governed only by Condition B, since, being –R, when they occur at the tail of a chain, they never violate the Chain Condition (80). But pronouns, being +R, are also subject to the Chain Condition. This means that the task of ruling out pronominal anaphora is divided between Condition B and the Chain Condition. In the simplest contexts of pronominal anaphora, the effects of the two conditions may be indistinguishable. For example, in (88a) coindexedation ends up being ruled out twice: by Condition B and by the Chain Condition (as involving a chain tailed by a –R expression). In the PP contexts discussed in sections 2.2 and 5.3, such as (88b), both conditions equally allow the pronoun.15

   b. Felix, found a gun next to him.

Nevertheless, the two conditions are far from being redundant, since there are many other contexts where anaphora is ruled out by the one and not by the other. Furthermore, once the two are isolated, it will become apparent that constructions that violate the Chain Condition are worse than those that violate only Condition B. Let us start with cases ruled out only by the Chain Condition.

The problems we started with in section 6.1 all involve coindexedation that is allowed by Condition B, as witnessed by the fact that a SE anaphor is allowed. But a pronoun

15 We have already shown in detail why Condition B does not apply. More attention is needed to why the Chain Condition does not rule out the pronoun here: the preposition next has its strict lexical meaning; no thematic complex is formed between the verb and the preposition. Even if incorporation into the verb is allowed, it is not obligatory. Given the framework of Chomsky 1986a, an independent P is a Minimality barrier; hence, the pronoun does not form a chain with the antecedent. So, at least one LF representation corresponds to a well-formed S-Structure representation. It is less clear why there is no chain here under Rizzi's (1990) analysis (although his discussion (appendix 2) may well provide the means to draw the necessary distinctions). So this is the only case we know of where the two approaches may make different predictions. (See footnote 32 on the definition of barriers.)
Condition (80) is not that coindexation syntactic argument.
ity is prohibiting (80) order to allow for the
or, as for example (97), end up violating 
if it counts as a chain
sion.) This is only a (80) as a condition on
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This means that
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ent P is a Minimality barrier;
representation corresponds
here under Rizzi’s (1990)
ecessary distinctions).
nt predictions. (See footnote

in the same position is excluded by the Chain Condition:

(89) a. Willem, schaamt zich.
    Willem shames SE
    Willem shames him
c. Lucie behaved herself/*her (well).
d. Lucie gedroeg zich/*haar (goed).

The verbs in (89), which repeats (71) and (72a), are intrinsically reflexive; hence, Condition B is met. As we have argued, the coindexation in all these cases forms an A-chain and is subject to the well-formedness condition (80). (89a) contains only one + R expression, Willem, in its head position, the tail being a −R anaphor. Hence, it is well formed. (89b), however, contains a second + R expression, namely, the pronominal hem. Therefore, it violates (80). The same is true for the English (89c). If a pronoun is used rather than an anaphor, an illicit chain is formed. The difference between (89c) and (89d) is that English, unlike Dutch, has no SE anaphors. As a consequence, the only element to satisfy the Chain Condition is the SELF anaphor, which is −R.

In the cases of (73) and (74), repeated in (90), the predicate is defined as reflexive, although the verb is not intrinsically reflexive, because one of its arguments is a SELF anaphor. Consequently, Condition B allows all derivations.

(90) a. *He, assigned him, to himself.
    b. *Henk, wees hem, aan zichzelf, toe.
    Henk assigned him to himself
    c. Henk, wees zich, aan zichzelf; toe.
    Henk assigned SE to himself

However, here too a chain is formed, so the Chain Condition rules out (90a) and (90b), where the pronoun is an illicit + R link in a nonhead position of a chain. That anaphora here is ruled out by the Chain Condition and not by Condition B is witnessed again by the fact that in the Dutch (90c), SE can occur.

Differences between Chain Condition effects and Condition B effects do not only show up in cases where the predicate is independently marked reflexive, as above. Another source for their difference is the fact that Condition B applies to semantic predicates, whereas the Chain Condition applies to syntactic representations (including LF). Hence, whenever the links of an A-chain are not coarguments semantically, only the Chain Condition can rule out anaphora. One such context is the ECM structures of (73b–c), repeated in (91).

(91) Jan, hoorde [zich/*hem, zingen].
    Jan, heard [SE/*him, sing]

This is a prototypical chain environment, which was also viewed as a Condition B environment by the standard binding theory. On that view, it is a complete mystery why
a SE pronoun can occur here (see the full pattern in (75)). For our analysis, this follows, since the pronoun and its antecedent are not semantic coarguments, and Condition B is satisfied. The Chain Condition, however, is indifferent to Condition B, and it rules out the case of the pronoun, as an illicit +R tail.

Raising predicates are another case where a syntactic chain does not correspond to a semantic predicate:

\[(92)\]
\[
\begin{align*}
\text{a. } & \text{Lucie} \text{ strikes herself, } \text{her}, \text{ [t₁ as clever].} \\
\text{b. } & \text{Lucie seems to herself, } \text{her}, \text{ [t₁ to be beyond suspicion].} \\
\text{c. } & \text{We strike me, [t₂ as less happy than we used to be].} \\
\text{d. } & \text{*We promised me [PRO to be more happy than we used to be].}
\end{align*}
\]

Assuming that herself is an argument of the raising verb. Lucie and herself are still not coarguments of the same semantic predicate. Hence, Condition B cannot apply. However, as noted in the discussion of these cases in (87), the coindexation in (92a–b) forms an A-chain, with the anaphor or the pronoun as an intermediate link. Hence, the pronoun chain is ruled out by the Chain Condition. That it must be the Chain Condition that is at work here, rather than Condition B, is witnessed by (92c). We and me are not co-indexed here; that is, they do not form a chain. Such instances of anaphora can only be ruled out by Condition B, at the stage of translating into distributive predicates. But at the point of translation, no reflexive predicate is formed. This contrasts, for example, with (92d), where we and me are semantic coarguments, and which is ruled out by Condition B.

So far we have examined cases of pronominal anaphora that are ruled out by the Chain Condition alone. Next we turn to the cases ruled out only by Condition B. As already noted, this is always the case with SE-pronominal anaphors, which cannot, by definition, violate the Chain Condition. The fact that such –R expressions do not exist in English made it easier to overlook the distinction between Condition B effects and Chain Condition effects. in the history of the binding theory. However, once the distinction is made, it is easy to observe that in the case of +R pronouns as well, there are anaphoric contexts ruled out by Condition B alone. In these contexts, the distinction is also visible in English.

The areas to look at are again those in which semantic predicates do not correspond precisely to syntactic ones. As we demonstrated in detail in section 5, this is the case with P and N predicates. Two of the examples given there are repeated here:

\[(93)\]
\[
\begin{align*}
\text{a. } & \text{Lucie saw a picture of her.} \\
\text{b. } & \text{*Lucie took a [picture of her].} \\
\text{c. } & \text{Max rolled the carpet [over him].} \\
\text{d. } & \text{*Max rolled the carpet [over it].}
\end{align*}
\]

\[46\] Thanks to Jacqueline Güéron (personal communication) for pointing this interesting case out to us.
Assuming that there is no PRO in NPs of the type in (93a–b) (see the discussion of (53)), there can be no chain in (93b), hence no violation of the Chain Condition. However, the agent role of picture, which is not realized syntactically, is still controlled by Lucie. Hence, in the semantic translation, a reflexive predicate is formed, which is ruled out by Condition B. Similarly, we argued that Condition B blocks the pronoun in the PP in (93d), since the implicit argument of the semantic predicate over is controlled by its antecedent. Recall that we argued that a small clause analysis does not work for such cases, so their syntax is as represented in (93c–d). In this case as well, an A-chain cannot be assumed (see footnote 45), so anaphora is ruled out only by Condition B.

Even clearer cases where pronominal anaphora can only be ruled out by Condition B are those of conjoined distributive anaphora:

(94) a. *Max1 criticized Lucie and him1.
b. *We voted for me.

As discussed in section 4, these cases are ruled out by Condition B, since under the distributive reading an unmarked reflexive predicate is formed in the semantics. The Chain Condition cannot be relevant here: the constituent Lucie and him1 in (94a) does not as a whole carry the index 1. Hence, a chain link is not formed here, nor can him alone enter a chain relation with the subject. This is even clearer in (94b), where there is no syntactic conjoining between we and me, and hence no chain. Therefore, anaphora in both cases is ruled out only by Condition B.

Conjoined anaphora of this type can therefore be used as a diagnostic test for the precise scope of Condition B. For example, we claimed that for Condition B to be met, it is sufficient that one of the arguments of the predicate is a SELF anaphor. Additional arguments can then be conjoined with no SELF marking, as long as this is allowed by the Chain Condition. This was checked above with a SE anaphor, in (90), but the same can now be observed for conjoined anaphora in English, although the judgments may be subtle: 47

47 However, as pointed out by an LI reviewer, the judgments on the relevant sentences are not always as clear-cut as our analysis predicts. For example, our analysis entails that under a distributive reading (ii) is better than (i) or (i), for the same reason that applies to (95)-(96), and that (i) is fine.

(i) Looking at the family album,
   a. *Max1 pointed Lili out to Lucie and him1.
   b. *Max1 pointed himself, out to Lucie and him1.
   c. *Max1 pointed himself, out to him.
(ii) Why should I devote myself, to just you or me, when there is the whole world to think about?

Although quite a few speakers have difficulty getting clear judgments on sentences of the type in (i), we found that whenever a distributive (rather than a collective) reading was obtained, a contrast along the lines of (i) was present. This is further illustrated by the following contrast in Dutch:

(iii) Bij het maken van de tuin-arrangementen,
   while making the table arrangements,
   a. *wees ik per ongeluk (aan) Max1 Luce en hem1 toe,
      assigned I accidentally (to) Max1 Lucie and him1
      'I accidentally assigned (to) Max Lucie and him.'
(95) a. *I can’t imagine you denouncing you or me.
   b. I can’t imagine myself denouncing you or me.
   c. *I can’t imagine myself denouncing me.

(96) a. *D’you remember how I caught you tickling Lucie and you when you got drunk?
   b. D’you remember how you caught yourself tickling Lucie and you when you got drunk?
   c. *D’y you remember how you caught yourself tickling you when you got drunk?

Focusing on the embedded predicates, the (a) and (b) cases differ in that in the latter the predicate is defined as reflexive-marked by its subject anaphor. As far as Condition B is concerned, then, anaphora is permitted in the (b) cases, but blocked in the (a) cases. In neither the (a) nor the (b) cases does the pronoun form a chain with its antecedent; hence, only Condition B is relevant here. In the (c) cases, by contrast, the Chain Condition prohibits coin dexation, although Condition B is still observed.

We may note, now, that the starred sentences in (93)–(96) are all substantially less bad than the starred pronounal cases in the previous set. Again, this is not just the case with pronouns. Generally, Condition B violations are weaker than violations of the Chain Condition, and precisely the same is found with SE anaphors:

(97) Willem₁ bewondert zichzelf,/*zich₁,/**hem₁.
    Willem₁ admires himself,/*SE₁,/**him₁.

The verb in (97) is not inherently reflexive; hence, the object argument must be SELF-marked. If the object is zich, the Chain Condition is respected, but Condition B still rules the sentence out. If the object is hem, not only Condition B is violated, but the Chain Condition as well. Indeed, the sentence *Willem₁ bewondert hem₁ is substantially worse than *Willem₁ bewondert zich₁, on which Dutch speakers tend to be much less decisive, in a way reminiscent of the varying judgments of English speakers on, say (96). A sentence violating only the Chain Condition, like *Willem₁ schaamt hem₁ or *Willem₁

b. *wees Max₁ per ongeluk (aan) zichzelf, Lucie en hem, toe.
   assigned Max₁ accidentally (to) himself, Lucie and him,
   'Max accidentally assigned (to) himself Lucie and him.'
   c. *wees Max₁ per ongeluk (aan) zichzelf, hem, toe.
   assigned Max₁ accidentally (to) himself him,
   'Max accidentally assigned (to) himself him.'

The nature of the variation that we observed among speakers and sentence types indicates that the judgments involve more factors than just binding and chain theory.

A further case to consider in this context is (iv), where at the interpretation stage both predicates are reflexive, but only (ivb) is reflexive-marked.

(iv) a. *Perhaps we could reintroduce me to Max?
   b. Perhaps we could reintroduce me to myself?
standard, that the VP rather than a θ-argument of V, aphor is no longer the V-indexing in (101)), so appropriately coindexed met.

In raising configurations such as (105a), ti is not defined as a syntactic argument of appear, since appear does not assign Case, but the subject herself is a syntactic argument.

(105) a. Lucie, believes [herself, to appear [ti, to be smart]].
    b. Lucie, appears-believes [herself, to ti, [ti, to be smart]]

The appear predicate is therefore reflexive-marked but not reflexive. For it to be allowed by Condition A, V-raising must apply, as in (105b).

Whereas Condition A, which is stated in terms of syntactic predicates, applies successfully in ECM structures, Condition B applies to semantic predicates. It therefore cannot rule out anaphora in (106). If V-raising applies in (106), the ECM subject will become a semantic argument of the matrix predicate, which will now be reflexive with no reflexive marking. Condition B therefore rules out such a derivation. But since this is only optional, a derivation still exists with the structure of (106), in which the ECM subject is not a semantic argument of the matrix verb.

(106) a. *Lucie, considers [her, smart].
    b. *Lucie, expects [her, to leave soon].

If the LF representation in English remains as in (ia), or if the verb of the Dutch (ii) lowers at LF, Condition A is clearly violated, since criticize is reflexive-marked. The problem is what rules out the derivations in (ii) and (ii). The object anaphor in both cases is still a Case argument of the raised verb, criticize. (As is standard, we assume that criticize in the S-Structure representation of (ii) assigns Case to its object via its trace.) Thus, the object reflexive-marks this verb. If Condition A applies here, it rules out anaphora successfully, since there is no coargument of the verb coindexed with the anaphor. However, this verb no longer forms a syntactic predicate, by (40a), so it turns out to be exempt from Condition A, incorrectly. What is at stake here is what counts as the property necessary to enable a head P to form a syntactic predicate. We took the subject text as this property, primarily in order to accommodate the traditional judgments of NP anaphora. However, in view of the unclarity of these judgments, which we mentioned in section 5.1, both Voskuil (1991) and Ben-Shalom and Weijler (1990) propose to take eventhood as the defining property: only Ps that denote an event or contain an e-role form syntactic predicates. If this is so, then the raised verbs in all these examples still form a predicate, though they do not have a subject, but NPs never do. Though in the long run this may be precisely the correct move, we propose here a compromise modification of the definitions of syntactic predicates and arguments that will account for all the facts of this article:

(iii) τ is the syntactic predicate formed of P iff
    a. τ consists of P and all its syntactic arguments, and
    b. either P has an e-role or P has a subject.

The syntactic arguments of P are the projections assigned by or Case by P and its external argument (subject).

Given (iii), the subject, if present, is always a syntactic argument by definition. But in its absence, a verb, unlike a noun, still may form a syntactic predicate. In (ii) and (ii) the raised verbs form the syntactic predicate criticize himself, which is reflexive-marked. However, no coargument exists; hence, Condition A cannot be met. (This also entails that in (104) the only grammatical derivation is the one where the verb does not raise at LF; accordingly, in its Dutch translation, the verb must lower at LF.)
As noted earlier, we believe that this is a correct result, and that anaphora here is blocked only by the Chain Condition (80), rather than by Condition B. (The pronoun forms a chain via the matrix verb, as in the cases discussed in the previous section.) Let us repeat in more detail the major argument for this, which we discussed briefly in connection with (75) and (91) and which was based on the following paradigm:

(107) a. *Henk₁ hoorde hem₁.
   Henk heard him
b. *Henk₁ hoorde zich₁.
   Henk heard SE
c. Henk₁ hoorde zichzelf₁.
   Henk heard himself

(108) a. *Henk₁ hoorde [hem, zingen].
   Henk heard [him sing]
b. Henk₁ hoorde [zich, zingen].
   Henk heard [SE sing]
c. Henk₁ hoorde [zichzelf, zingen].
   Henk heard [himself sing]

(The same pattern is found in Norwegian.)\(^{50}\) Condition B rules out both the pronoun and the SE anaphor in (107). (The pronoun is also ruled out here by the Chain Condition.) But in the ECM subject position of (108) these two split up, and only the pronoun is ruled out. This is precisely what we expect, if Condition B does not apply to this position. The pronoun is ruled out as being a +R expression, violating (80), whereas the SE anaphor does not form an illicit chain. Since a SELF anaphor is independently allowed in this position by Condition A, we derive the fact that SE and SELF anaphors are in complementary distribution in the V-complement position, but not in ECM subject position.\(^{51}\)

\(^{50}\) Parallel data from Norwegian are as follows (see Hellan 1988 for discussion):

(i) a. *Jon hørte ham₁.
   Jon heard him
b. *Jon hørte seg₁.
   Jon heard SE
c. Jon hørte seg selv₁.
   Jon heard himself

(ii) a. *Jon hørte [ham₁ bli omtalt].
   Jon heard [him be mentioned]
b. *Jon hørte [seg₁ bli omtalt].
   Jon heard [SE be mentioned]
c. Jon hørte [seg selv₁ bli omtalt].
   Jon heard [himself be mentioned]

\(^{51}\) ECM constructions with sich and sichzelf as subject may yield distinct interpretations. Contrasts of this kind are discussed by Voskui and Wehmann (1990) and Voskui (1990). The difference is clearest in the interpretation of resultative small clauses, as illustrated by the contrast in (i).

(i) a. Münchhausen trok [sichzelf uit het moeras].
   Münchhausen pulled [himself/SE out of the swamp]
7.2 A Contrast between ECM and Object Control Clauses

As mentioned in section 2.3, under the view of binding proposed here, binding facts may shed some light on an ongoing controversy between different schools in linguistic theory regarding the status of ECM and small clause structures. The alternative view is that they do not exist, and ECM subjects are objects of the matrix verb, just like objects of control verbs. (A most sophisticated and comprehensive development of this view is provided in Chierchia 1984.) Under the standard formulation of the binding theory, the two structures are indeed indistinguishable with respect to binding, but, given our analysis, there are contexts where objects of control verbs and ECM subjects are predicted to display different anaphor properties. One such contrast arises in the case of SE anaphors. As noted in connection with (108b), repeated in (109a), they are allowed as ECM subjects; but in complement position, as in (109b), our version of Condition B rules them out correctly. (Dutch does not have to-infinitival ECM structures.)

(109) a. Henk₁ hoorde [zich₁ zingen].
   Henk heard [SE *sing]

   b. *Henk₁ overreeende zich₁ [PRO₁ te zingen].
   Henk persuaded SE [PRO to sing]

   c. Henk₁ overreeende zichzelf₁ [PRO₁ te zingen].
   Henk persuaded himself [PRO to sing]

Another context is conjunction anaphora. As noted earlier, conjunction anaphora (which was discussed in detail in section 4) is ruled out only by Condition B, since the conjoined pronoun does not form a chain with the V. If Condition B does not apply, we would expect such anaphora to be acceptable with ECM subjects, regardless of the collective-distributive distinction. The contrast in (110) suggests that this is indeed so.

(110) a. *Max₁ convinced both Lucie and him₁ [PRO to leave early].

   b. Max₁ expects [both Lucie and him₁ to leave early].

(111) a. *?We allow me [PRO to run for this job].

   b. We expect [me to run for this job].

Similarly, no chain is involved in either case of (111) (since we and me are not coindexed). If we is interpreted distributively, then in (111a) a reflexive predicate is entailed (\(\lambda x (x \text{ allows } x (x \text{ runs for the job})) \text{ applying to me})\), which is ruled out, as unlicensed, by Condition B. But in (111b) the entailed predicate is not reflexive (\(\lambda x (x \text{ expects } x \text{ runs for the job}) \text{ applying to me})\), so Condition B allows it.

Only (a) can carry the reading intended in the original story whereby Münchhausen got out of the swamp by pulling his own hair (i.e., literally pulling himself out). (b) has the more standard resultative reading, whereby Münchhausen's pulling something led to the situation of his being out of the swamp. Under our analysis, this follows from the fact that to allow for the SELF anaphor in (a), \(uit\) must raise to the matrix verb; hence, in this case the anaphor is an argument of the matrix complex predicate. But in (b) Condition B allows only the derivation in which the anaphor is just the subject of the result clause.
It is far from obvious how such contrasts can be captured in a theory assuming that the pairs in (109)–(111) have identical syntactic and argument structure.

7.3 For-To Infinitives

While on the topic of nonnominative subjects, let us look at another case, which has attracted much attention in the standard binding theory.

(112) a. Max would like very much [CP for [himself to win]].
   b. *John would like very much [CP for [him, to leave]].
   c. ?She has recently requested for her; to be allowed to attend the meeting. (Kayne 1984:43)

In the standard binding theory (112a–b) are believed to fall under Conditions A and B (since the governing category of the embedded subject is the matrix CP). In our framework neither condition can relate the matrix subject to the anaphor or the pronoun in the embedded subject, since these are neither syntactic nor semantic coarguments at any level, nor can they form a chain via the matrix V. It may appear, furthermore, that the embedded anaphor in (112a) should be ruled out by Condition A, since it reflexive-marks the nonreflexive predicate (as its subject). We doubt, however, that any theory should be modified just to accommodate this type of case. The use of an explicit anaphoric subject here is very marginal, anyway, because of the availability of a structure with PRO. We assume that himself in (112a) is used as a focus logophor, designed to distinguish the reading from the standard anaphoric reading obtained with a PRO. As focus it is not in an argument position, hence exempt from our Condition A. The facts regarding Condition B effects here are known to be unclear. For example, Kayne (1984) compares (112b) to the minimally different (112c), which he considers acceptable. We believe that, if such effects exist here, they should be attributed to principles like “Avoid pronoun” rather than to the binding theory.

8 Hierarchical Effects

As we have stated the binding conditions and reflexive marking, no hierarchical relations are built into them: a predicate is equally reflexive-marked if its subject or its object is a SELF anaphor. The binding conditions therefore cannot distinguish (113a) and (113b). In both cases the criticize predicate is defined as reflexive-marked and as reflexive, so Conditions A and B are met in both.

(113) a. Max said that [he, criticized himself].
   b. *Max said that [himself, criticized him].

Though it is conceivably possible to build either c-command or argument hierarchy relations into the definition of reflexive marking, we believe that the binding conditions should not, in fact, distinguish these cases, and that all hierarchical effects follow independently from the Chain Condition.
As shown in section 6.2, the A-chain domain of a given NP is a subdomain of its c-command domain. It follows, therefore, that the Chain Condition (80) imposes hierarchical requirements on the relations of referential dependency within an A-chain. Given (80), the referentially independent (+R) element of the chain must be its head; that is, it must c-command the referentially dependent (−R) element. In (113) a chain is formed in the embedded IP. Although this chain is well formed in (113a), in (113b) the chain formed between himself and him is tailed by a +R element and headed by a deficient, −R, element. Thus, it violates the Chain Condition on both ends. The way the Chain Condition yields the hierarchical effects is further illustrated in (114) and (115).

(114) a. Max heard [himself criticize himself].
    b. *Max heard [himself criticize him].

    b. *Himself criticized himself.
    c. *Zichzelf/Hemzelf critiseerde zich.

In (114a) the chain, headed by Max, appropriately contains only one +R element in its head position. But in (114b) the tail too contains a +R NP, violating the Chain Condition. (113a) is ruled out on both ends, like (114b). In (115b–c) the tail is appropriately a deficient −R element, but the chain is not headed by any +R expression, so it is ruled out.22

But our claim is, in fact, stronger: it is not only unnecessary to incorporate hierarchy into the binding conditions, it is also wrong. In other words, it can be shown that the binding conditions are insensitive to any such hierarchy. This claim is based, first, on an examination of SE anaphors in Dutch. Although we have observed several times that sich is prevented by Condition B from being bound within its predicate, as in (116), Everaert (1991) notes that it can be bound within its predicate in (117).

(116) a. *Jan critiseerde zich.
    Jan criticized SE
    b. *Jij hoorde [Jan zich critisieren].
    you heard [Jan SE criticize]

(117) Jan hoorde [zichzelf zich critisieren].
    Jan heard [himself SE criticize]

22 For the standard cases, there is also no need to assume the nominative constraint on anaphors, since, for example, (115b) is ruled out independently by the Chain Condition. However, this constraint may still be needed in the case of focus logophors, which, as we argued in section 3.2, can occur in argument position. (See also the discussion of (112a).)

(i) a. *Max, only said that himself, criticized Bill.
    b. *Max, only said that [himself, I criticized Bill].

As focus, himself of (i) is no longer a syntactic argument of criticize. Hence, as in (112a), it is exempt from Condition A. However, (i–b) are still ruled out, since himself is not nominative, contrary to what its position requires, and it lacks a nominative form in its paradigm. (See Everaert 1990 for discussion.)
This is precisely what the binding conditions predict. In (116) the criticize predicate is not reflexive-marked; hence, reflexivity is ruled out by Condition B. But in (117) the SELF anaphor reflexive-marks both the matrix predicate and the embedded predicate (which both end up reflexive as well, satisfying Condition A). Since the criticize predicate is reflexive-marked here, Condition B is satisfied. Since zichzelf does not head a chain, but is only a link in a chain, the Chain Condition is observed as well. For clarity, let us look at the full paradigm of this structure in Dutch:

(118) Jan hoorde
  a. *[zich zich crïïsïïen].
  b. [zich zichzelf crïïsïïen].
  c. [zichzelf zich crïïsïïen].
  d. ??[zichzelf zichzelf crïïsïïen].
  e. *[zichzelf hem crïïsïïen].

(118a) is ruled out by Condition B, since the embedded predicate is reflexive, but there is no reflexive-marking SELF anaphor. (118c) (= (117)) and (118b) are indistinguishable, and they are both allowed. (118d) is allowed by the binding conditions, but is highly marked because of the redundant use of SELF marking, in the same way that ??Hij schaamt zichzelf ‘He shames himself’ is disfavored (see footnote 15). Just like its English counterpart in (114b), (118e) is ungrammatical. However, with respect to the binding theory it is indistinguishable from (118c), so we conclude that it is not Condition B that rules out this sentence, but the Chain Condition alone. If we were to build hierarchy requirements into the binding conditions themselves, these would equally rule out both the bad (118e) and the good (118c).

As noted in section 6.3, another way to test the different scopes of the Chain Condition and the binding conditions is with conjoined or plural NP anaphora. In such cases the pronoun does not form a chain with its antecedent; hence, it can only be blocked by Condition B. Relevant cases are the following, where (119) repeats (95):

(119) a. *[I can’t imagine you denouncing you or me.
  b. I can’t imagine myself denouncing you or me.
  c. *[I can’t imagine myself denouncing me.

(120) a. ??Did you ever hear [us praise me] in the past?
  b. Did we ever hear [ourselves praise me] in the past?

As in the Dutch example in (117), here we are examining anaphora in the embedded IP. In neither of these cases is a chain formed (since the pronoun is in an embedded NP, in (119), or not even coindexed with its antecedent, in (120)). However, unlike the (a) cases, in the (b) cases our nonhierarchical Condition B is satisfied, since the SELF reflexive-marks the embedded predicate. Though the judgments may be as subtle as always with this type of anaphora, they clearly favor the (b) cases over the (a) cases.
Reflexivity

If Condition B were formulated to require the reflexive marker (the anaphor) to be the internal argument, the predicate in the (b) cases would end up non-reflexive-marked, and the sentences would be ruled out.53

Finally, let us look at the famous problem in (121), which is often cited as indicating that the binding theory must incorporate a thematic hierarchy (e.g., Kiss 1991) or a functional hierarchy (Pollard and Sag 1992).

(121) a. We talked with Lucia, about herself.
   b. *We talked about Lucia, with herself.

As pointed out to us by Barbara Partee, the contrast in (121) follows, in our system, if we assume that the with PP is a 9-argument of the verb, but the about PP is not (thus functioning as an adjunct). In this case, in (121a) the anaphor is logophoric and does not reflexive-mark the verb, but in (121b) it does. Hence, Condition A requires that the predicate in (121b) be reflexive, which is not the case, since the coindexed Lucia is not a coargument. Indeed, the about PP shows all other adjunct properties relevant to anaphora: a pronoun is not excluded, as shown in (122), and a first person logophor is much easier in (123b) than in the argument position in (123a).

(122) We talked with Lucia, about her.
(123) a. *Can you talk with myself about Lucia?
   b. Can you talk with Lucia about myself?

We conclude that the binding conditions themselves contain no reference to either configurational or thematic hierarchy. What we have tried to show here is that the work of capturing anaphora is divided between two modules. The binding theory is sensitive only to the reflexivizing function, taking care of matching it with predicate reflexivity. All other aspects of local anaphora, which have to do with the R property, fall under chain theory. Traditionally, what was always believed to be sensitive to c-command, or other hierarchical restrictions, is precisely the issue of referential dependency, which we reduced here to R-relations. It is not surprising, therefore, that this issue is the territory of chain theory.

53 Fox (1993) suggests that the Chain Condition must be allowed to apply to singleton chains, since sentences such as (i) must be ruled out and Condition B cannot do this. (Because the verb wash is inherently reflexive, Condition B is not violated.)

(i) *Himself washed.

Although it might appear that himself heads only a singleton chain, it is not obvious that this is in fact so. If the verb is reflexive, it has, lexically, two positions on its grid. Therefore, the null hypothesis is that in John washed, just like in John washed himself, an object argument position is projected, which is then realized as an empty category (pro). Consequently, (i) does in fact contain a two-member chain, as represented in (ii); thus, the sentence is ruled out, without modifying the domain of the Chain Condition.

(ii) *Himself, washed e.
children suffer from severe production limitations, and that these are

Replies

Remarks

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