20 Deconstructing Binding

ERIC REULAND
AND MARTIN EVERAERT

0 Introduction

Among the major results of the principles and parameters (P&P) framework developed in Chomsky (1981) is the conception of Binding Theory. In this framework, Binding Theory is one of the six subsystems of core grammar. Binding Theory is concerned with the relations of nominal expressions with possible antecedents.[1] An element *bound* by an antecedent depends on the latter for its interpretation. An element that is not bound is *free*. With respect to binding, it is assumed that nominal expressions fall into the following categories: (i) anaphors, (ii) pronominals, and (iii) R-expressions. Anaphors are expressions that have no capacity for inherent reference. Pronominals are characterized by the fact that their grammatical features are drawn solely from the set of phi-features (gender, number, and person). When overt, they have also Case. R-expressions have some other grammatical features as well.[2] Chomsky develops a theory of their anaphoric relations taken as syntactic dependencies, which has since set the standard. A preliminary formulation is given in (1):

(1) a. An anaphor is bound in a local domain.
    b. A pronominal is free in a local domain.
    c. An R-expression is free.

These conditions are referred to as "binding conditions A, B and C." In section 1 the Binding Theory will be presented in more technical detail and briefly reviewed. Subsequently, section 2 discusses the empirical problems that have arisen within the standard Binding Theory, and some of the ways to deal with them. For a proper understanding of some of the core issues of debate, it is necessary to discuss the difference between "coreference" and "bound variable interpretation," as is done in section 3. In section 4 the issue of long distance anaphora and logophoricity is discussed. In section 5 we address more

fully the typology of anaphoric expressions. Finally in section 6 the Reflexivity framework is discussed, which introduces some basic new features to the standard conception of Binding Theory.

1 Outline of the Standard Binding Theory

1.1 Indexing and c-command

Within the conception of Binding Theory under review the reference of an element is determined by its index. This index can be regarded as, perhaps, the sole aspect of a lexical item that is visible for whatever mental faculty assigns reference. Whereas the reference of R-expressions is inherent through an independently assigned index, a coindexed antecedent determines the reference of anaphors. Pronominals can be interpreted either by a coindexed antecedent, or by an independently assigned index. Binding Theory can then be implemented in the form of conditions on indexing; coindexed elements must match in features. This condition can be formulated as in (2):

(2) In order to be coindexed, *a* and *b* must be non-distinct in features for person, number, and gender.

For pronominal binding this is illustrated in (3):

(3) Bill_i said he_i/*she_i thought Mary liked him_i/*her_i

Note that the ungrammaticality indicated by the star is relative to the indexing: if *she* and *Bill* are not coindexed, (3) is grammatical.

An illustration for anaphor binding is given in (4):

(4) Bill_i hated himself_i/*herself_i

Here, the ungrammaticality is not just relative to the indexing: if *herself* is not coindexed with *Bill*, the sentence is still out, since *herself* requires an antecedent. In English the reflexive anaphor is specified for gender, number, and person, but many languages have a 3rd person anaphor lacking a specification for gender and number. Icelandic *(sjalfan) sig* or Dutch *zich(zelf)* (cf. (5)) illustrate this option, which shows that non-distinctness rather than identity in feature composition is required for coindexing:

(5) Wim_i/Marie_i/de katten_i houdt/houden van zichzelf_i
"Wim/Marie/the cats loves/love himself/herself/themselves"

In addition to matching features, binding is subject to the structural condition of *c-command*. The basic configuration is given in (6): in order for some

element *b* to be able to depend for its interpretation on some element *a*, *b* must be a sister to some constituent containing *b*:

(6) *a* [. . . *b* . . .]

More formally, c-command is defined as in (7a), and binding is, then, defined as in (7b):[3]

(7) a. *a* c-commands *b* iff *a* does not contain *b* and the first branching node dominating *a* also dominates *b*.
b. *a* binds *b* iff *a* and *b* are coindexed and *a* c-commands *b*.

Given that anaphors must be bound, the effect is illustrated in (8):

(8) a. *John$_i$'s plans failed himself$_i$
b. [Mary's father]$_i$ hated himself$_i$ vs. *Mary$_i$'s father hated herself$_i$

In (8a) the sentence does contain a feature compatible antecedent for *himself*, namely *John*. Yet the structure is ill formed. Since *John* does not bind *himself*, c-command failing, the latter is thus not properly interpreted. The pair in (8b) illustrates the same point in a different manner: *Mary's father* correctly binds *himself*, but *Mary* cannot bind *herself*.[4]

Note, that the intuition that binding relations reflect an inherent asymmetry between an element that depends and an element that is depended on is not captured by a coindexing notation. An alternative that immediately captures this asymmetry is the *linking* notation introduced by Higginbotham (1983). In this notation the antecedency relation is directly expressed by headed arrows, as in (3'):

(3) Bill said he thought Mary liked him

For reasons of space we will refrain from presenting a more extensive discussion here, but refer to Higginbotham's original article.

1.2 The binding conditions

The effect of binding is sensitive to locality requirements. The rough generalization is that anaphors must be bound by an antecedent that not only c-commands, but is also sufficiently "local." Pronominals can be bound, but only if the antecedent is sufficiently "non-local." Most of the work on binding has been devoted to obtaining both a precise characterization of and, ultimately, an explanation of these requirements. (9) exemplifies some basic patterns:

(9) a. *John$_i$ hates him$_i$
b. John$_i$ thinks that Mary hates him$_i$
c. John$_i$ hates himself$_i$
d. *John$_i$ thinks that Mary hates himself$_i$

In (9a) the antecedent of the pronominal *him* is too local, but in (9b) it is far enough away. The reverse holds for the anaphor *himself* in (9c, d). In the standard Binding Theory "distance" is measured in terms of the notion of *governing category*:

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

The notion SUBJECT in (10) is defined in (11):

(11) The SUBJECT of a category is its most prominent nominal element (including the agreement features on the verb in finite clauses).

This leads to the following statement of the binding conditions (Chomsky 1981: 188):

(12) a. An anaphor is bound in its governing category.
b. A pronominal is free in its governing category.
c. An R-expression is free.

First we will review a couple of cases without reference to the part of the condition (10) that is in parentheses. We will then complete our overview of the standard Binding Theory with an example involving that condition.

Consider first the contrast in (13):

(13) a. *John$_i$ expected [$_\alpha$ Mary to hate himself$_i$]
b. [$_\beta$ John$_i$ expected [$_\alpha$ himself$_i$ to be able to hate Mary]]

In (13a) *himself* is bound by *John*, but it is easily seen that *John* is outside *himself*'s governing category α, α = IP. α is the minimal category containing the governor of *himself* (*hate*), and a SUBJECT (*Mary*). The governing category does not contain a suitable antecedent, hence condition A is violated. In (13b) *himself* receives Case from the exceptional case marker *expect*. Hence, its governing category is not α but the matrix clause β since it is the minimal category containing the governor of *himself*, *expect*, and a SUBJECT, *John*.

Comparing (13) and (14) illustrates an important feature of the standard Binding Theory: the complementarity between anaphor binding and pronominal binding:

(14) a. John$_i$ expected [$_\alpha$ Mary to hate him$_i$]
b. *[$_\beta$ John$_i$ expected [$_\alpha$ him$_i$ to be able to hate Mary]]

In (14a) *him* can be bound by *John* without violating any binding condition: *him* is free in its governing category α, α = IP. In (14b) *John* is too nearby since β, and not α, is the governing category of *him*. β is the minimal category because it contains the governor of *him*, the verb *expect*; hence its governing category is the matrix clause, and the binding relation violates condition B.

(15) illustrates the opacity of finite clauses. The embedded subjects, *himself* in (15a) and *he* in (15b), are governed by INFL, the locus of the agreement features of the verb. This means that the minimal category containing *himself/he*, their governor INFL, and a subject is α, α = IP. But α does not contain a c-commanding antecedent, hence both are free in their governing categories, which is OK for *him*, but not for *himself*:

(15) a. *John$_i$ expected that [$_\alpha$ himself$_i$ would be able to hate Mary]
b. John$_i$ expected that [$_\alpha$ he$_i$ would be able to hate Mary]

(16)–(18) illustrate the way in which the binding conditions work in NPs:

(16) a. John$_i$ hated [$_\alpha$ pictures of himself$_i$]
b. (*) John$_i$ hated [$_\alpha$ Mary's pictures of himself$_i$]

Crucially, in NPs a subject is not obligatory. The definition of governing category leads us to expect that a NP does or does not qualify as a governing category for a pronominal or anaphor it contains depending on whether it has a subject. In (16a) α, α = NP, contains the governor of *himself*, *of*, but lacks a subject and will thus not count as a governing category. The matrix clause has a SUBJECT (*John*), thus qualifying to be the governing category for the anaphor embedded in the NP. In (16b) the NP has a subject (*Mary*), hence the NP counts as a governing category for *himself*. Therefore, condition A is violated under the intended coindexation.

(16b) is one of the type of datum that will in the end motivate a different view of binding. Although there is little discussion of this in the earlier literature, sentences of this type may be considerably better than the theory might lead us to expect, depending on the specific environment in which they are used. For that reason we have put the ungrammaticality marking in parentheses. Such cases will be discussed more in section 5. In any case, as soon as the antecedent is contained in the NP, as in (17), the judgment is again precisely as the theory leads us to expect:

(17) John hated [$_\alpha$ Mary$_i$'s pictures of herself$_i$]

Replacing the anaphor in (17) by a pronominal, as in (18), gives the pattern to be expected by now: in (18a) *John* is outside the governing category α, α = NP, of *him*, hence it may bind the latter. In (18b), *Mary* is inside the governing category of *her*, hence *her* may not be bound by *Mary*:

(18) a. John$_i$ hated [$_\alpha$ Mary's pictures of him$_i$]
b. *John hated [$_\alpha$ Mary$_i$'s pictures of her$_i$]

The examples in (19) illustrate the role of the part of the condition (10) that is in parentheses:

(19) a. *[The boys]$_i$ were afraid that themselves$_i$ would be sold as slaves
b. [The boys]$_i$ were afraid that pictures of themselves$_i$ would be on sale

The point is that there is a contrast between anaphors as subjects and anaphors properly contained in a subject. As the ungrammaticality of (19a) shows, the former always lead to a violation of condition A. This would follow if the governing category were the complement clause. It is easily seen that this is in accordance with (10), without the part in parentheses. Applying this version of (10) to (19b) also yields the complement clause as the governing category. But since *the boys* is in fact a proper antecedent for *themselves* in (19b), a modification is in order. Given the definition of accessibility in (20), the definition in (10), which would include the part of the condition in parentheses, has the required result:

(20) a. α is accessible to β iff β is in the c-command domain of α, and assignment to β of the index of α would not violate (20b).
b. **i-within-i condition**
*[$_\tau$ . . . δ . . .], where τ and δ bear the same index

In the complement clause of (19b) there would be two potential SUBJECTs, namely the phrase *pictures of themselves* and the *Agr* of the finite verb. Obviously, given (20), *pictures of themselves* is not accessible to *themselves*. However, Agr is not either, since, due to subject–verb agreement, it would share its index with the full subject *pictures of themselves*. So, a putative coindexing between *themselves* and Agr gives, by transitivity of coindexing, coindexing between *themselves* and *pictures of themselves*, in violation of (20). The effect of this is that the complement clause fails to contain a subject accessible to *themselves*, hence does not qualify as a governing category for the latter. It is easily seen that the matrix clause does qualify, hence the matrix subject is sufficiently nearby to satisfy condition A.

1.3 LF-movement

In Lebeaux (1983) it is observed that reflexives and reciprocals seem to behave differently in the (nominative) subject position of tensed sentences such as (21):

(21) a. ?[John and Mary]$_i$ didn't think that each other$_i$ would leave early
b. *[John and Mary]$_i$ didn't think that themselves$_i$ would leave early

The fact that (21a) is grammatical is unexpected because, as we have just explained, the embedded sentence is a governing category if we follow the definition in (10). Partially on the basis of these facts, the definition of governing category is changed in Chomsky (1986a) in such a way that the matrix sentence in cases like (21) is the domain in which the anaphors must be bound. This means that both (21a) and (21b) are predicted to be grammatical. The ungrammaticality of (21b) should follow from some other principle of grammar. More specifically, Chomsky follows Lebeaux in assuming that reflexive anaphors have to move at Logical Form (LF).

The relation between a reflexive and its antecedent partly involves agreement, and since agreement often is a strictly local phenomenon, it would mean that the reflexive should move to a position in the immediate domain of the antecedent. This requirement would trigger movement of the reflexive anaphor at LF.[5] Such a movement will leave a trace (22a) which is not properly governed, violating the Empty Category Principle (ECP) (cf. Chomsky 1981); compare (22b):

(22) a. *. . . NP_i INFL-themselves$_i$ . . . [$_{CP}$ . . . e_i INFL . . .]

b. *Who$_i$ do you think that e_i left

In the LF-raising analysis of Chomsky (1986a) the effects of the condition A requirement are thus partially subsumed under the ECP. This LF-head movement analysis has been further developed to account for long distance binding, and the fact that in many languages anaphors are necessarily subject bound (cf. Pica 1987, Battistella 1989, Katada 1991, Huang and Tang 1991, Cole and Sung 1994, Cole and Wang 1996, among others).

1.4 Conclusion

It is crucial to understand that Binding Theory not only deals with the distribution of reflexives, reciprocals, and pronouns. From Chomsky's "Conditions on Transformations" (1973) onwards, the study of reciprocals, reflexives, and pronouns was always tied to the study of other grammatical phenomena such as *wh*-movement, NP-movement, or control. In Chomsky (1973) the Specified Subject Condition is introduced and it is argued that both reciprocal formation and *wh*-movement appear to be subject to the Specified Subject Condition. In Chomsky (1980) the Nominative Island Constraint (NIC) not only excludes examples such as (21b), but also instances of NP-movement, under the assumption that NP-traces are anaphors subject to condition A, and even instances of *wh*-movement, under the assumption that *wh*-traces are (A'-)anaphors (cf. (22b)). Kayne (1984) argues that the Connectedness Condition, his alternative to the

ECP and devised for *wh*-movement dependencies, might also hold for anaphor antecedent dependencies (cf. also Aoun 1986, Koster 1987).

Chomsky (1981) takes the position that Binding Theory generalizes over empty categories and lexical categories. Lexical elements are partitioned by means of two features, <±Anaphor> and <±Pronominal>, resulting in the cross-classification in (23a); (23b) presents lexical and non-lexical instantiations:

(23)	a.		b.	
		<+A,–P>		reflexives, reciprocals, NP-trace
		<+A,+P>		PRO
		<–A,–P>		R-expressions, *wh*-trace
		<–A,+P>		pronouns, pro

Alongside pure pronominals ([+pronominal, –anaphoric]) and pure anaphors ([–pronominal, +anaphoric]), this classification characterizes as a third category the R-expressions [–pronominal, –anaphoric]. The existence of a fourth category *PRO* is predicted [+pronominal, +anaphoric], whose distribution is limited to those positions where no governing category can be assigned. In other words, PRO is limited to ungoverned positions such as the subject position of control infinitives, the so-called *PRO-theorem* (Chomsky 1981, 1982).

The precise relationship between *wh*-movement, NP-movement or control, and the binder–bindee relationship is, of course, more complicated than we are able to discuss here. But the crucial observation is that in the LGB (*Lectures on Government and Binding*)/P&P framework the distribution of bound anaphora is always closely tied to other syntactic phenomena. It is for that reason that binding was considered part of the computational system, to use the terminology of Chomsky (1995b).

2 Some Empirical Problems

The standard Binding Theory provides a simple and appealing picture of binding relations in natural language. It clearly describes recurrent patterns in the various languages of the world. The basic complementarity between pronouns and anaphors yields a neat typology of nominal expressions in terms of the above-mentioned features. In the remainder of this chapter we will see why it has become necessary to investigate alternative conceptions of binding, despite these successes.

The crucial assumption underlying the binding research within the P&P framework is that all interpretive dependencies can be understood in terms of structural conditions on indexing. In this section we will indicate some empirical problems that have arisen with the standard conception of the Binding Theory, some of which were noted very early on.[6] We will only give some relevant facts and references. Some of the issues will be further discussed in the sections to follow.

2.1 Absence of complementarity between pronominals and anaphors in certain PPs

Right from the start it was noted that certain PPs allowed pronouns to be locally bound, just like reflexives (Lees and Klima 1963, Lakoff 1968, Chomsky 1981, Koster 1985, Kuno 1987):

(24) a. John_i saw a snake near him_i/?himself_i
b. John_i glanced behind him_i/himself_i
c. John_i pulled the blanket over him_i/himself_i

This is clearly in violation of the binding conditions that predict that anaphors and pronominals are always in complementary distribution. The consequences for the Binding Theory are extensively discussed in Hestvik (1991), among others.

2.2 Absence of complementarity between anaphors and pronominals in the subject position of NP

Huang (1982) argues that the generalization that anaphors/pronominals in the same position have the same governing category ought to be abandoned and that distinct domains of interpretation ought to be assigned to bound anaphors and free anaphors. This position is further developed in Chomsky (1986a) on the basis of examples such as in (25):

(25) a. They_i saw [each other_i's friends]
b. They_i saw [their_i friends]

To account for this non-complementarity Chomsky reformulates the notions of accessible subject and governing category. It means that the binding domain of an element depends on its status as an anaphor/pronominal and that the i-within-i condition discussed in (20) is abandoned.

2.3 Picture nouns

So-called picture nouns play an important (and sometimes crucial) role in the discussion on the definition of the interpretive domain of anaphora (cf. 26a), whether c-command plays a role in the relation between anaphor and its antecedent (cf. 26b), and the level of representation at which Binding Theory should hold (cf. 26b–d):

(26) a. Bill_i remembered that *The Times* had printed a picture of himself_i in the Sunday edition
b. [Pictures of each other_i]$_x$ annoy them_i (t_x)
c. [Most pictures of herself_i]$_x$ seem to Mary_i t_x to be distorted
d. John_i wondered which [picture of himself_i/herself_j]$_x$ Mary_j saw t_x

The example in (26a) illustrates that picture noun anaphors often allow non-local antecedents (cf. Pollard and Sag 1994 for discussion). In (26b) the anaphor is bound by a non-commanding NP, unless one assumes the predicate is unaccusative, which would mean that at an underlying level the anaphor would be c-commanded (cf. Pesetsky 1995 for discussion of psych predicates and further references). A similar line of argumentation – binding at non-surface level – holds for the binding relation between *Mary* and *herself* in (26d). However, the reverse – binding at surface level – holds for the binding relation between *John* and *himself* in (26d) (cf. Barss 1986 for discussion and references).

Observe that in the approaches to Binding Theory of Reinhart and Reuland (1993) and Pollard and Sag (1994) the distribution of the anaphors in (26) does not fall under Binding Theory proper. For Reinhart and Reuland such anaphors are called "logophors," and Pollard and Sag use the term "exempt anaphors" to reflect the fact that they are exempt from the core binding principles.

2.4 *Non-local binding of anaphors in certain environments*

As noted by Ross (1970), Cantrall (1974), Kuno (1987), Zribi-Hertz (1989), Baker (1995), and many others, a variety of contexts allows anaphors to be free in their governing category in violation of condition A. This is illustrated in (27):

(27) a. There were five tourists in the room apart from myself.
b. Physicists like yourself are a godsend.
c. Max boasted that the queen invited Lucie and himself for a drink.

Such examples have been used to argue for discourse theoretic concepts such as "point of view" to be the relevant notion for anaphoric binding. This has led to proposals where the empirical domain of the binding theory is relegated to the domain of discourse (cf. Kuno 1987, Levinson 1987, 1991, Huang 1994), or alternatively, to the position discussed in the previous paragraph that under specified syntactic or semantic conditions anaphors fall outside the scope of Binding Theory (Reinhart and Reuland 1993, Pollard and Sag 1994).

2.5 *Crosslinguistic variation in admissibility of antecedents for anaphors*

Quite early on it was noted that, crosslinguistically, there were many anaphors with antecedents essentially beyond the governing category as computed by (10), or even entirely absent (Thráinsson 1976, Reis 1976, Inoue 1976, Yang 1984, Harbert 1983). The examples in (28), Norwegian, Japanese, and Icelandic respectively, illustrate this:

(28) a. Jon_i bad oss hjelpe seg_i
"John asked us to help him"
b. Bill-wa_i John-ga $zibun_i$-o seme-ta to omot-ta
Bill John himself blamed that thought
"Bill thought that John blamed him"
c. $Jón_i$ segir að María elski sig_i
"John says that Maria loves-Subj him"

Often such cases are discussed under the heading of long distance binding. In general such cases were accounted for as relaxations of the notion of governing category (for example, Manzini and Wexler 1987) or the anaphors involved were classified as exceptions, so-called long distance anaphors (cf. Anderson 1986, Koster 1987).

2.6 *Disjoint reference effects*

In a number of papers the consequences for condition B of the Binding Theory of examples such as those in (29) are discussed (Chomsky 1973, 1980, Lasnik 1989, Seely 1993, Fiengo and May 1994, Berman and Hestvik 1997):

(29) a. *We voted for me
b. We elected me
c. *$Bill_i$ told $Mary_j$ about $them_{\{i,j\}}$
d. $Bill_j$ was relieved that $Mary_i$ agreed to defend $them_{\{i,j\}}$

The ill-formedness of sentences such as (29a) and (29c) indicates that in order to capture condition B-type effects more is needed than just a notion of coindexing. One option is to state Binding Theory in terms of sets of indices and impose a disjointness condition. However, the well-formedness of (29b) and (29d) indicates that this is not yet sufficient. Contrasts such as in (29a, b) indicate that condition B applies at a level of representation where the full set of relations between the relevant individuals is represented. One might then suggest that (29b) is grammatical since *elect* is interpreted collectively, contrary to *vote for* in (29a). The examples in (29c, d) indicate that condition B is also sensitive to contexts where the pronoun is "half" bound, a notion whose theoretical status is still in need of further investigation.

2.7 *Thematic restrictions*

Binding Theory as formulated in section 1 is stated in strictly configurational terms. It has been frequently questioned whether nonconfigurational notions should play a role. On the basis of such examples as (30a) it has been argued that the c-command requirement on the anaphor–antecedent relationship should be replaced by a thematic prominence requirement (cf. Jackendoff 1972, 1990b, Wilkins 1988, Dalrymple 1993, Everaert and Anagnostopoulou 1997, among

others, and references there). The ungrammaticality of the (30b, c) examples could be explained since in these cases the antecedent is less prominent on the thematic hierarchy than the anaphor itself (Reinhart and Reuland 1993 argue that the *about*-phrase is not part of the predicate):

(30) a. I talked to Mary_i about herself_i
b. *I talked about Mary_i to herself_i
c. (*)John_i was killed by himself_i

Alternatively the (un)grammaticality of such examples might be argued to follow from an obliqueness constraint, i.e., a relative order of grammatical functions (see Pollard and Sag 1994 for discussion).[7] Such examples, furthermore, raised the issue of whether argument structure is the appropriate level of formulating the binding conditions (cf. Grimshaw 1990, Clark 1992b, Jackendoff 1992).

These and other empirical problems have led to several proposals to modify the Binding Theory. Some have stayed unanswered. It would clearly be beyond the scope of this contribution to give even a representative overview of problems that have been noted and solutions that have been proposed. Instead we will focus on a selection of issues that show that the Binding Theory must be modified in a more radical manner, teasing the binding conditions apart, and explaining them as effects of principles of a far lower level of granularity.

3 "Coreference" versus "Bound Variable Anaphora"

In section 1 we discussed the distribution of sentence internal anaphora as it is captured by the binding theory. In this section we will discuss a little bit more how these phenomena relate to sentence external anaphora. In essence, the discussion is about the relation between indexing and interpretation.

The simplest case of anaphora obtains when in a text distinct NPs refer to the same object, as is illustrated by the various possibilities in (31):

(31) The **chairman** came in late. The **speaker** was visibly nervous. *Everyone* had been worrying *himself* stiff. When he_1 had welcomed him_2, for a moment he_3 leaned back with a slight feeling of relief/panic.

Going over the various options reveals that among the NPs in bold print, the choice of interpretation is free. Admittedly, there may be tendencies favoring certain interpretations over others, depending on one's expectations about, let us say, the capacities and feelings of chairmen or speakers. Some interpretations may turn out a bit more probable than others, but what happens can be manipulated by the choice of lexical elements, and the expectations these

invoke. If *he*-1 is interpreted as the chairman, and *him*-2 as the speaker – the most plausible interpretation – *he*-3 is interpreted as the speaker if the noun *relief* is chosen. But if the noun *panic* is chosen, the most likely interpretation of he-3 is the chairman. The choices are not enforced by any property of the grammar.

If two or more NPs (e.g. *chairman* and *speaker*, *chairman* and *he*) refer to the same individual they are *coreferential*. Coreference is not always possible. For instance, *he* in (32) cannot get the value of a quantificational expression such as *everyone*. This is a robust fact. There is a fundamental difference between cases with quantification like (32a) and (32b) (see the extensive literature, e.g. Heim 1982, 1998, Reinhart 1983, to appear):

(32) a. *Everyone* had been worrying *himself* stiff. **He** was relieved.
b. *Everyone* who had been worrying *himself* stiff said that **he** was relieved.

In (32b) the interpretation of *he* can be dependent on the interpretation of an antecedent (*everyone*, *no one*), showing a relation of variable binding as in (33):

(33) *Every x* . . . said that *x* was relieved

Such an interpretation is impossible in (32a).

There is a crucial difference between variable binding and coreferentiality. Like the cases of binding discussed in section 1, variable binding is subject to c-command. If α and β belong to different sentences, this condition can never be met. Note that definite descriptions and proper names can also serve as variable binders (Reinhart 1983). However, since they are also referential and hence can be coreferential with some pronominal, the examples showing that one type of relation, namely variable binding, can break down are somewhat more complicated. Argumentation typically involves the interaction with VP-anaphora ("VP-deletion"). Consider (34):

(34) [Bill liked his cat] and [Charley did too].

In such cases the second conjunct is dependent for its interpretation on the first conjunct. In the first conjunct, *his* can refer to Bill, Charley, or some other person. Depending on the choice in the first conjunct, we get for the second conjunct the interpretation that Charles liked Bill's cat, that Charles liked his (= Charley's) own cat, or that he liked that same other person's cat. What is impossible is the interpretation that Bill liked Charley's cat, and that Charley liked Bill's cat. An interpretation that is possible, however, is one in which Bill liked Bill's cat, and Charley liked Charley's cat. This state of affairs can only be captured by the hypothesis that *his* is either interpreted referentially or as a variable. If *his* is interpreted referentially, it is treated as a constant, and this constant is copied into the second conjunct, enforcing an identical interpretation

(a "strict reading"); if it is a bound variable that property is copied, and the locally available binder provides its value (a "sloppy reading").[8] This is represented in (35):

(35) a. Bill λx (x liked *a*'s cat) & Charles λx (x liked *a*'s cat) (strict reading)
b. Bill λx (x liked x's cat) & Charles λx (x liked x's cat) (sloppy reading)

Since the sloppy reading crucially involves variable binding, it requires that the antecedent c-command the pronoun. This is illustrated in (36):

(36) [Most of *her* friends adore *Lucie*] and [Zelda too]
a. Lucie's friends adore Zelda
b. NOT: Zelda's friends adore Zelda (Zelda (λx (x's friends adore x)))

It may be concluded that there are at least two types of anaphora. In the case of bound variable anaphora the anaphoric relation involves a dependency that is reflected in the interpretive process; this means that it is linguistically encoded. In the case of coreferentiality, a dependency, in so far as it can be observed at all, is not linguistically encoded. This raises an important question with respect to the relation between binding and indexing: is coindexing between two expressions necessary in order for them to be assigned the same value in the domain of discourse? It is widely accepted that this cannot be the case. A sentence such as *the morning star is the evening star* is not a tautology, even when it is known that both expressions denote Venus. Consider also a discourse such as (37) (Evans 1980):

(37) What does John feel about the murderer of his wife? Oh, I'm sure he hates him.

(37) is perfectly acceptable in the reading where *he* and *him* refer to the same individual, i.e., in a case John has actually murdered his wife but suffers from amnesia. It is certainly not a binding theory violation, which it would be if *John*, *the murderer of his wife*, *he*, and *him* were to carry the same index. Now, in cases like these one still might attempt a story, for instance invoking a difference between intended and non-intended reference. In cases such as (38) from Reinhart (1983) even this will not work:

(38) I know what Bill and Mary have in common. Mary adores Bill and *Bill* adores *him* too.

Here, clearly *Bill* and *him* are intended to corefer, yet there is no violation of condition B. There are two conclusions to be drawn from these facts. (i) If indices are to be relevant for Binding Theory, coreference cannot imply coindexing even if the implication does hold in the other direction. Rather, whatever coindexing precisely is, it must reflect only relations that are encoded by processes internal to the grammar, and not by processes relating linguistic expressions

with elements in the knowledge base. (ii) If, in interpreting pronominals, directly accessing the knowledge base can "circumvent" the binding conditions, some other principle must guarantee that under most conditions condition B effects are visible nevertheless.[9] This issue is extensively discussed in Reinhart (1983), and Grodzinsky and Reinhart (1993). They argue that the choice of how a pronominal is to be interpreted is governed by the following condition:[10]

(39) **Rule I: Intrasentential Coreference**
NP A cannot corefer with NP B if replacing A with C, C a variable A-bound by B, yields an indistinguishable interpretation.

In the case under consideration, using coreference is allowed, since the property Mary and Bill have in common is *Bill*-adoration. This property is distinct from that of SELF-adoration, which would have been ascribed to Bill if *himself* had been used in the second conjunct. No such contrast is involved in the various cases where we have seen standard condition B effects. Rule I is like a traffic rule governing which procedure will be used if two NPs are to be assigned the same value.

4 Long Distance Anaphora and Logophoricity

There is considerable variation in the domains in which anaphors must be bound, both across languages and, for anaphors of different types, within the same language. Certain anaphors may allow their first antecedent in a position considerably beyond the governing category as computed by (10). In standard Binding Theory there is no other way of describing the fact that languages differ with respect to binding phenomena than by either assuming that the anaphors themselves have different properties, or formulating parameters such as those in (40) from Manzini and Wexler (1987):

(40) a. a is a governing category for b iff a is the minimal category which contains b and PARAMETER.
b. PARAMETER-values: has (i) a subject, (ii) an INFL, (iii) a Tense, (iv) an indicative Tense, (v) a root Tense.

Another line of research focussed on the classification of anaphoric elements. Should we abandon the simple anaphor/pronominal distinction in favor of a more elaborate distinction? This immediately triggered the question of whether we have to distinguish several types of reflexivization.

There is by now an extensive literature on long distance anaphora in a wide range of languages (see Reuland and Koster 1991 for an overview and discussion).[11] However, the importance of long distance anaphora for linguistic theory was first noted when Thráinsson (1976) discussed the Icelandic anaphor *sig*. He argued that Icelandic had a non-clause bounded rule, which is sensitive

to semantic factors that do not seem to play any role in the "normal" clause bounded rule. Since that time Icelandic long distance phenomena have been extensively studied. That is why in this overview we will concentrate on Icelandic. The discussion of the Icelandic data also allows to discuss most relevant issues on this point.

As outlined in Thráinsson (1976), *sig* in Icelandic may take a long distance antecedent when the clause that contains *sig* is infinitive or subjunctive (i.e., the antecedent may be beyond the nearest c-commanding subject). However, if *sig* is contained in an indicative clause, it can only refer to the local antecedent. This is exemplified in (41):[12]

(41) a. Jón$_j$ skipaði Pétri$_i$ [að PRO$_i$ raka sig$_{i,j,*k}$ á hverjum degi]
John ordered Peter to shave-Inf himself every day
"John ordered Peter to shave him every day"
b. Jón$_j$ segir [að Pétur$_i$ raki sig$_{i,j,*k}$ á hverjum degi]
John says that Peter shave-Subj himself every day
"John says that Peter shaves him every day"
c. Jón$_j$ veit [að Pétur$_i$ rakar sig$_{i,*j,*k}$ á hverjum degi]
John knows that Peter shaves-Ind himself every day
"John knows that Peter shaves him every day"

Various proposals have been developed to account for the long distance use of Icelandic *sig* in sentences like (41a) and (41b). These proposals can be divided into two groups according on their approach to the long distance subjunctive case. One group of approaches assumes a unified syntactic analysis of all cases of long distance *sig*, both in subjunctives and in infinitives (for instance, Anderson 1986, Everaert 1986, Harbert 1983, Koster 1987, Wexler and Manzini 1987, Pica 1987).

The other approach to long distance anaphora in Icelandic maintains that discourse factors rather than (or at least in addition to) syntactic principles rule the long distance use of *sig* out of subjunctives. Under this approach long distance *sig* is analyzed as *logophoric*. The term "logophoric" is introduced in Hagège (1974), and further elaborated in Clements (1975). It is used to characterize a class of pronouns that refer to the "*auteur d'un discours*" (the "source of a discourse" in the terms of Clements 1975).

Hagège observes that many languages have a formally distinct series of pronouns for this type of use (for instance, Mundang, Tuburi, and Ewe from the Niger–Congo family). The discourse function of such logophoric pronouns is similar to that of what traditional grammarians called *indirect reflexives*, of which the unbound use of Icelandic *sig* to be discussed below is an example. Since these pronouns bear no formal resemblance to reflexives, Hagège considers the term "indirect reflexive" inappropriate, and coins the term "logophoric." Whereas Hagège explicitly distinguishes free anaphors (indirect reflexives) from logophoric pronouns, Clements extends the notion of logophoricity so as to include free anaphors.

Clements gives the following crosslinguistic characterization of logophoric pronouns (Clements 1975: 171–2):

(i) logophoric pronouns are restricted to reportive contexts transmitting the words or thought of an individual or individuals other than the speaker narrator;
(ii) the antecedent does not occur in the same reportive context as the logophoric pronoun;
(iii) the antecedent designates the individual or individuals whose words or thoughts are transmitted in the reported context in which the logophoric pronoun occurs.

It is this characterization that sets the tone for much of the subsequent discussion of long distance *sig* in Icelandic.

Thráinsson (1976, 1990), Maling (1984), Rögnvaldsson (1986), Sigurðsson (1990), and Sigurjónsdóttir (1992) observe that the antecedent possibilities of long distance *sig* in subjunctives are constrained not by structural conditions such as c-command but rather by discourse factors such as perspective or point of view.[13] Also, as pointed out by Thráinsson (1976, 1990), the presence of a subjunctive complement is not enough to license long distance use of *sig*. Thus, only a certain type of subjunctive allows *sig* to take a long distance antecedent, in particular, subjunctives which imply "a report from the higher subject's 'point of view' " (Thráinsson 1976: 229). Subjunctives that state a fact about the matrix subject and do not convey the higher subject's perspective or point of view, on the other hand, do not allow *sig* to be coindexed with the matrix subject:

(42) *Hann$_i$ einsetti sér ad segja sannleikann pegar dómarinn sagdi sér$_i$ hvada refsing væri
He determined himself to tell the truth when the judge told himself what the penalties were
[He resolved to tell the truth when the judge told him what the penalties would be]

Thus, it seems as if discourse information can only be accessed if there is a subjunctive. If it can, it still has to be of the "right kind."

Long distance *sig* in subjunctives in Icelandic can sometimes take as its antecedent a non-c-commanding NP. *Jón* can serve as the antecedent for *sig* in sentences like (43) from Maling (1984), although it does not c-command the anaphor:[14]

(43) [$_{NP}$ Skoðun Jóns$_i$] er [að sig$_i$ vanti hæfileika]
Opinion John's is that himself-Acc lacks-Subj talent
"John's opinion is that he lacks talent"

If *sig* in embedded subjunctives is ruled by discourse factors, we expect that the derived subject of a passive should not be able to serve as an antecedent

for *sig*. A derived subject does not usually carry the perspective or point of view of the sentence (Maling 1984, Sigurðsson 1990, Reuland and Sigurjónsdóttir 1997), as is illustrated in (44):

(44) a. Jón$_i$ sagði Pétri$_j$ [að ég elskaði sig$_{i,*j}$]
John told Peter that I loved-Subj himself
"John told Peter that I loved SIG"
b. *Pétri$_j$ var sagt (af Jóni$_i$) [að ég elskaðI sig$_{*i,*j}$]
Peter was told (by John) that I loved-Subj himself
"Peter was told (by John) that I loved him"

In (44a) *sig* takes the perspective holding subject *Jón* as its antecedent, but in the passive sentence in (44b), where neither *Jón* nor *Pétur* bears the perspective of the sentence, *sig* cannot refer to the c-commanding subject or to the object of the *by*-phrase.

In this approach, cases of long distance anaphora that do not involve subjunctive are only subject to structural conditions, and the interpretation of *sig* in such cases is neither independently constrained nor licensed by discourse factors. Thus, where the c-command requirement is not met but the sentence contains a perspective holding NP as a potential antecedent, *sig* in infinitives should not be able to refer back to this NP. As we see in (45), this prediction is borne out, i.e., *sig* in infinitives cannot take a non-c-commanding NP as an antecedent, even if it is a possible perspective holder. Thus, for *sig* in infinitival clauses, discourse factors are unable to compensate for the lack of c-command. This contrasts with the situation in subjunctives discussed earlier. If the antecedent of *sig* in infinitives is only constrained by structural conditions, we expect the derived subject of a passive should be a possible antecedent for *sig*, since the subject c-commands *sig*, even if it is not a perspective holder. This is indeed the case, as witnessed by (46):

(45) *[$_{NP}$ Skoðun Jóns$_i$]$_j$ virðist [e$_j$ vera hættuleg fyrir sig$_i$]
Opinion John's seems be-Inf dangerous for himself-Acc
"John's opinion seems to be dangerous for him"

(46) María$_j$ var sögð (af Jóni$_i$) [e$_j$ hafa látið [mig þvo sér$_{j,*i}$]]
Mary was said (by John) have-Inf made me wash-Inf SIG
"Mary was said (by John) to have made me wash her (= Mary)"

To recapitulate, Reuland and Koster (1991) argue that, on a descriptive level, phenomena could be divided into three domains: short distance binding (cf. (47a), Dutch), medium distance binding (cf. (47b), Norwegian), and long distance binding (cf. (47c), Icelandic):

(47) a. Jan$_i$ wast zich$_i$/*hem$_i$
Jan washes himself/him

b. Jon_i bad oss hjelpe seg_i/ham_i
John asked us help-Inf himself/him
(John asked us to help him)
c. $Jón_i$ segir að Pétur elski sig_i/$hann_i$
John says that Peter loves-Subj himself
(John says that Peter loves him)

Both short distance binding and medium distance binding are syntactically governed, for instance requiring c-commanding antecedents, but differ in that anaphors and pronominals are in complementary distribution in short distance binding, but not in medium distance binding. Long distance binding should be distinguished from short and medium distance binding in that it is governed by discourse factors and not syntactically governed. More specifically, an anaphor that is long distance bound need not be c-commanded by its antecedent.

This leads to the question of what the relation between a long distance bound anaphor like *sig* and its antecedent is. Since Reinhart's (1983) work on anaphoric relations it has been established that syntactic binding requires c-command. What, then, about non-c-commanded *sig*? Does it not have to be bound, despite being an anaphor, or could we argue that it is bound despite appearances? The following contrast indicates that the latter option would lack independent support.

As discussed in Thráinsson (1991), the strict/sloppy identity ambiguity typically associated with pronouns also shows up with *sig* in the long distance subjunctive case. This can be illustrated as follows:

(48) $Jón_i$ telur [að prófessorinn muni $fella_{subj}$ sig_i á prófinu] og Ari_j telur það líka
John believes that the professor will . . .
"John believes that the professor will fail SIG on the test and Ari believes so too"
a. = Ari believes that the professor will fail Ari on the test.
b. = Ari believes that the professor will fail John on the test.

However, the sloppy (i.e., bound) reading is not felicitous in cases where subjunctive *sig* is not c-commanded by its long distance antecedent. As Thráinsson puts it, in (49), the bound reading is more difficult if not impossible to get:

(49) Skoðun $Jóns_i$ er [að sig_i vanti hæfileika] og það er skoðun $Péturs_j$ líka
Opinion John's is that SIG lacks-Subj talents and that is opinion Peter's too
"John's opinion is that SIG lacks talents and that is Peter's opinion too"
a. ≠ Peter's opinion is that Peter lacks talents.
b. = Peter's opinion is that John lacks talents.

This is evidence that the relation between *Jón* and *sig* in (49) must be one of coreference, rather than syntactic binding.[15]

In fact, the situation is even more problematic for the view that *sig* must be bound. There are cases where *sig* may occur, and be interpreted, without any linguistic antecedent whatsoever. This is illustrated in (50) from Sigurðsson (1990: 317):

(50) María$_i$ var alltaf svo andstyggileg. Þegar Ólafur$_j$ kæmi segði hún sér$_{i/*j}$ áreiðanlega að fara.
. . .
Mary was always so nasty. When Olaf would come-Subj, she would certainly tell himself [the person whose thoughts are being presented – not Olaf] to leave.

Taking such examples seriously forces one to abandon the idea that anaphors must be syntactically bound for reasons of interpretability (see Reuland 1996, 1998a). This leads to two questions. (i) What principle governs the interpretation of anaphors when they are not syntactically bound? (ii) Why is the option of such an interpretation not always available? The first question is answered in Ariel (1990). Central in her theory is the notion of *accessibility*, which reflects the discourse prominence of an antecedent. On the basis of an investigation of cross-sentential anaphoric relations in actual texts, Ariel establishes that the degree of lexical specification of an element is inversely related to the accessibility of its discourse antecedent. Full NPs can be used anaphorically; but only felicitously if the discourse antecedent is low on the scale of accessibility. The felicitous use of pronouns requires a discourse antecedent that is more accessible.[16] An expression that is less specified, such as the Icelandic anaphor *sig*, should require a discourse antecedent that is even higher on the scale of accessibility (cf. n. 17). This is precisely what is reflected in the conditions on the logophoric interpretation of *sig* we discussed. We found structurally equivalent environments where a felicitous use of *sig* solely depended on the status of its antecedent in the discourse (cf. (44a) vs. (44b)).[17] Thus, the logophoric use of *sig* realizes an option that Ariel's theory predicts to exist. How, then, should we interpret the fact that *sig* in other than subjunctive contexts does require a syntactic binder?

It seems we have found a situation with respect to the binding requirement on anaphors (condition A) that is similar to that found earlier with respect to condition B. As observed, pronominals can be either bound by or coreferent with a c-commanding antecedent. The former situation is subject to condition B, the latter is not, potentially allowing condition B to be circumvented. Rule I acts as a traffic rule, giving priority to binding, and determining when it can be circumvented by a coreference strategy.

Precisely such a principle is needed for anaphor binding as well. A pronoun-type interpretation of "anaphors" is possible, but in most contexts anaphoric binding takes precedence. Again some traffic rule is needed to specify which option must be taken. In Reuland (1996, 1998a), elaborating on Reinhart and Reuland (1993) (see section 6), it is argued that the crucial property of syntactic

anaphors is that they can be tails or intermediate members of syntactic chains. It is possible for an antecedent–anaphor relation to be syntactically encoded by chain formation, only exploiting properties of the computational system C_{HL} in the sense of Chomsky (1995b). Whenever there is a choice, using the computational system takes precedence over any other interpretive strategy. Only where the computational system has nothing to say can the effects of pragmatic conditions on interpretation be directly observed. The relevant principle can be stated as in (51):

(51) **Rule R: Variable interpretation**
NP A cannot be interpreted as an argument/semantic variable if there is an NP B such that there is a derivation within C_{HL} yielding a chain <B, A>.[18]

An extensive discussion of how binding relations can be captured by the computational system, and to what extent, is given in Reuland (1996, 1998a). It would carry us beyond the scope of this overview to recapitulate that discussion. Let it suffice that in that discussion subjunctive morphology on the verb is argued to do precisely this: block chain formation between the subject and an anaphor such as *sig* in its domain (see the final section for some further discussion). To conclude, note that Rule R puts a different perspective on condition A; it effectively reduces it to conditions on chain formation. We will now proceed to the next challenge to standard Binding Theory.

5 Types of Anaphoric Expression

One of the major reasons to reassess the standard Binding Theory is provided by languages that divide the domain of binding relations in a rather different way than English. Such examples among languages abound. Cases that are reasonably well described include the Scandinavian languages,[19] Malayalam, Russian, Polish, Chinese, Japanese, and quite a few others. Here, we will focus on West Germanic, which despite being a closely related group of languages exhibits a very interesting diversity in anaphoric systems.[20]

There are, roughly speaking, four standard languages in this group, namely (i) English, (ii) Dutch, (iii) Frisian, and (iv) German, and it exemplifies as many different anaphoric systems. The systems differ both in the choice of anaphoric elements and in the environments in which (cognate) elements occur.

English has essentially provided the empirical basis for the standard Binding Theory with its simple two-way distinction between pronominals (*him*, etc.) and anaphors (*himself*, etc.). Nevertheless, as was already observed in Chomsky (1981), pronominals in locative PPs may be bound in their governing category, violating condition B, as in (52):

(52) John_i saw a snake near him_i/?himself_i

As already noted in section 2, a variety of contexts allows anaphors to be free in their governing category in violation of condition A. This is illustrated in (53) (= (27)):

(53) a. There were five tourists in the room apart from myself.
b. Physicists like yourself are a godsend.
c. Max boasted that the queen invited Lucie and himself for a drink.

From the perspective of the standard Binding Theory, then, both the context in (52) and that in (53) are puzzling.

The Dutch system poses an additional challenge. Instead of having a binary pronominal/anaphor distinction it has a three-way distinction between pronominals (*hem* "him"), complex anaphors (*zichzelf* "himself"), and simplex anaphors (*zich*). A similar typology of anaphoric expressions is found in the Scandinavian languages (cf. Hellan 1988, Vikner 1985, Sigurjónsdóttir 1992), although there are some crucial distributional differences. *Zich* lacks a direct counterpart in English, and it and similar elements will be referred to and glossed as SE(-anaphors). Complex anaphors will also be referred to as SELF-anaphors. The system is illustrated in (54)–(55). In local binding environments, the occurrence of the simplex anaphor versus the complex anaphor correlates with lexical properties of the verbs (as is shown by Everaert 1986). If the predicate is inherently reflexive, as in (54), the simplex anaphor occurs. If it is not, the complex anaphor is used, as in (55):

(54) Max_i gedraagt zich_i/*zichzelf_i/*hem_i
Max behaves SE/himself/*him (meaning: Max behaves)

(55) a. Max_i haat zichzelf_i/*zich_i/*hem_i
Max hates himself/*SE/*him
b. Max_i praat met zichzelf_i/*zich_i/*hem_i
Max speaks with himself/*SE/*him

The verb *gedragen* "behave" in (54) is intrinsically reflexive. This is witnessed by the fact that it cannot take any object distinct in reference from the subject. Certain verbs, like *wassen* "wash," are doubly listed in the lexicon, both as reflexive and as transitive: they clearly allow non-reflexive usage as in *Jan wast Marie* "John is washing Mary." However, without any marking (56a) allows a reflexive interpretation, but (56b), with a different verb, does not:

(56) a. Wassen is gezond
Washing (oneself) is healthy
b. Haten is ongezond
Hating (only someone else) is unhealthy

A way to capture this contrast is by assuming a lexical difference between verbs like *wassen* and verbs like *haten*. For *wassen* there is both an inherently

reflexive and a transitive entry, and *haten* has only a transitive entry. It is the reflexive entry for *wassen*, which allows the SE-anaphor. Its transitive entry occurs with a SELF-anaphor, as witnessed in (57):

(57) Max_i wast zich_i/zichzelf_i/*hem_i
Max washes SE/himself/*him

This class of verbs, then, allows either anaphor type, unlike the purely transitive verbs such as *haten* "hate" or *praten met* "speak with," which require a complex anaphor unconditionally.

SE-anaphors also occur in locative PPs. Here, in many varieties of Dutch, they are in free variation with bound pronominals:

(58) Max_i legt het boek achter zich_i/hem_i
Max puts the book behind SE/him

Such a relation between lexical properties of predicates and the distribution of anaphors is entirely unexpected from the perspective of the standard Binding Theory.

The following set of facts is even more puzzling. Frisian has, like English, a two-way distinction between pronominals (*him* "him") and anaphors (*himsels* "himself"), but the distribution of the pronominal is quite different from English: bound *him* occurs wherever Dutch has the anaphor *zich* or the pronominal *hem*. This is illustrated in (59)–(62):

(59) Max_i hâld him_i/*himsels_i
Max behaves him

(60) a. Max_i hatet himsels_i/*him_i
Max hates himself/*him
b. Max_i pratet mei himsels_i/*him_i
Max speaks with himself/*him

(61) Max_i wasket him_i/himsels_i
Max washes him/himself

(62) Max_i leit it boek efter him_i
Max puts the book behind him

This pattern calls into question the very core of condition B, since (61) suffices to demonstrate that it is impossible to define a notion of governing category such that the subject is included in that of the anaphor, and excluded from that of the pronominal. Similar facts are found in Creole languages (Muysken 1993, Déchaine and Manfredi 1994), Flemish dialects and Afrikaans (cf. Everaert 1986). Older stages of English have pronominals in many positions where Modern

English requires anaphors, and thus seem to behave as Frisian (Van Gelderen to appear).

German, finally, we will claim has, again, a ternary system: a pronominal *ihn* "him," and two anaphors, a simplex anaphor *sich* and and a complex anaphor which, at least in some environments, surfaces as *sich selbst* "himself." Whereas the locally bound pronominal is ruled out in all cases of (63) and (64), and the inherent reflexives of (63) admit *sich*, a distinction between inherent and non-inherent reflexives shows up in (64), as in Dutch and Frisian:

(63) a. Max_i benimmt sich_i/*ihn_i (gut)
Max behaves himself (well)
b. Max_i wäscht sich_i/*ihn_i
Max_i washes himself/*him

(64) a. Peter_i stellte sich_i/??sichselbst_i die Statue vor
Peter imagined (to-himself-Dat) the statue-Prt
b. ?*Peter_i vertraute sich_i seine Tochter an
Peter entrusted to-himself-Dat his daughter-Prt
c. Peter_i vertraute seine Tochter nur sichselbst_i an
Peter entrusted his daughter only to-himself-Dat-Prt

However, unlike in Dutch and Frisian, in other than prepositionless dative contexts this distinction is not reflected in the surface form of the anaphor. Thus, in many contexts, where Dutch requires *zichzelf*, German allows *sich*, as illustrated in (65):

(65) a. Max_i hasst sich_i/*ihn_i
Max hates himself/*him
b. Max_i spricht mit sich_i/*ihn_i
Max speaks with himself/*him

Moreover, in locative PPs *sich* is required, and the pronominal disallowed, as illustrated in (66):

(66) Max_i legt das Buch hinter sich_i/*ihn
Max puts the book behind himself/*him

The question is then what might cause such variation.

All this is hard to reconcile with the original binding conditions A and B. Three major questions arise from these facts. (i) How can the exceptions to binding condition A in English be accounted for? (ii) How can the contrast between simplex and complex anaphors be captured? (iii) How can a system like Frisian be understood with its pervasive violation of the standard condition B? These questions will be taken up in the next section.

6 Reflexivity

Reinhart and Reuland (1993) propose that there are two modules regulating the distribution of anaphors/pronominals. Configurational effects are due to chain formation, while the domain of reflexivization is defined over predicates without making reference to syntactic structure. Furthermore, there is no simple distinction between anaphors and pronouns. NPs are partitioned into three classes according to the properties [SELF] and R: SELF-anaphors (+SELF, –R), e.g. English *himself*; SE-anaphors (–SELF, –R), e.g. Norwegian *seg*; and pronouns/R-expressions (–SELF, +R), e.g. Norwegian *ham*. Being marked [+SELF] means that an element is able to reflexivize the predicate. The property R reflects whether or not an anaphoric expression is fully specified for phi-features. Both what we are used to call reflexives or pronouns could be –R or +R. What counts is feature specification in relation to the paradigm it is part of. This will have consequences for its ability to form a chain with other coindexed elements, as will be explained below. In the remainder of this section we will focus on Dutch and Frisian, but the analyses will, grosso modo, hold for the other languages mentioned above.

The distribution of simplex and complex anaphors in Dutch follows from the interaction between coindexing and properties or predicates. Simplex anaphors are allowed in the following environments in Dutch: (i) as the bound argument of an inherently reflexive verb (54), here repeated; (ii) as the bound argument of a locative or directional PP (58), here repeated; and (iii) as the bound subject of an ECM construction (67).[21]

(54) Max_i gedraagt zich_i
Max behaves SE (meaning: Max behaves)

(58) Max_i legt het boek achter zich_i
Max puts the book behind SE

(67) Max_i voelde [zich_i wegglijden]
Max felt [SE slide away]

What environments (58) and (67) have in common is that the coindexing does not involve arguments of the same predicate. The coindexed elements in (54) are arguments of the same predicate. (55), here repeated, shows that using the coindexed anaphoric element *zich* does not always lead to a reflexive predicate. In these cases using the complex anaphor is necessary:

(55) a. Max_i haat zichzelf_i/*zich_i
Max hates himself/*SE
b. Max_i praat met zichzelfi/*zich_i
Max speaks with himself/*SE

The predicate in (54) is reflexive anyway. So, intuitively, what (58) and (67) have in common with (54) is precisely this: the coindexing does not cause a predicate to become reflexive. In none of these cases is a complex anaphor required. Intuitively, then, what sets (55) apart from the other cases is that in (55) coindexing causes the predicate to become reflexive. To put it differently, it seems as if adding SELF to the anaphor compensates for the lack of inherent reflexivity in the verb. In some sense this puts SELF and inherent reflexivity on a par. Reflexivity, then, is a property of predicates that must be linguistically licensed, either inherently, or by marking the anaphor with SELF. We will refer to this licensing as *reflexive marking*.

In order to make this precise, we need to characterize both *predicate* and *reflexive predicate*. The full set of definitions can now be given as follows (for reasons to be made clear later, we need to distinguish the notions *syntactic predicate* and *semantic predicate*):

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

We can now formulate the following conditions on reflexive predicates:

(69) a. A reflexive-marked (*syntactic*) predicate is reflexive.
b. A reflexive (*semantic*) predicate is reflexive-marked.

As we mentioned above, not all elements that are traditionally called *reflexives* are *reflexive markers* in the sense intended here. The following table summarizes the relevant properties of the elements involved:

(70)

	SELF	SE	PRONOUN
Reflexivizing function:	+	–	–
R(eferential independence):	–	–	+

Ignoring, for the moment, the distinction between semantic and syntactic predicates as expressed in the italicized parts of (69), the reader can now easily verify that the pattern observed in Dutch follows from the conditions stated. In (54) and (57) the predicate is lexically reflexive (cf. (68d)) and thus reflexive marked, satisfying conditions A/B. In (58) and (67) the predicate(s) are not reflexive marked, so condition A does not apply. Condition B does not apply either in these cases because the predicate, *achter* "behind" in (58) and *wegglijden* "to slide away" in (67), is not reflexive, i.e., does not contain two coindexed

arguments. In (55) the predicate is reflexive marked if the *zichzelf* reflexive is chosen; the *zich* and *hem-variants* in (55) are not allowed because the predicate would then be reflexive but not reflexive marked.

6.1 Locally bound pronouns

Turning now to the Frisian examples (59)–(62), here repeated, we see that bound *him* occurs wherever Dutch has the anaphor *zich* or the pronominal *hem*. Ignoring the latter (cf. (62)), the distribution of *himsels* versus *him* is essentially identical to the distribution of *zichzelf* versus *zich*, cf. (59) and (61). To put it differently, whatever may be different, the conditions on reflexive marking are precisely the same in Dutch and Frisian. Again, the odd one out requiring explicit SELF-marking are the non-reflexive predicates like *haatsje* "hate" or *prate mei* "speak with" in (60):

(59) Max_i hâld him_i/*himsels_i
Max behaves him

(60) a. Max_i hatet himsels_i/*him_i
Max hates himself/*him
b. Max_i pratet mei himsels_i/*him_i
Max speaks with himself/*him

(61) Max_i wasket him_i/himsels_i
Max washes him/himself

(62) Max_i leit it boek efter him_i
Max puts the book behind him

So far, this leaves us with two puzzles. (i) What rules out a locally bound pronominal in Dutch (and German)? (ii) What allows a locally bound pronominal in Frisian? Note that Binding condition B as formulated in (69) does not say anything about this issue. It just says that a reflexive predicate must be licensed. Although it correctly rules out the examples in (71), it incorrectly rules in the examples in (72)–(73). In (72) the predicate is lexically reflexive and reflexive; thus the binding conditions are satisfied, and in (73) no predicate is reflexive or reflexive marked and, thus, the binding conditions are vacuously satisfied:

(71) a. *Max_i haat hem_i (= 55a)
b. *Max_i haat zich_i (= 55a)
Max hates him/himself

(72) *Max_i gedraagt hem_i (= 54)
Max behaves him

(73) *Max$_i$ voelde [hem$_i$ wegglijden]
Max felt him slide away

Suppose we ignore Frisian, for the moment, what principle of grammar could be involved? A crucial difference between *zich* and *hem* is that the latter is fully specified for phi-features, whereas the former is not. *Zich* lacks a specification for number and gender. Inspired by the notion of a government chain in Everaert (1990), the notion of a syntactic chain can be extended so as to include any appropriate sequence of coindexation (satisfying c-command and with no barrier between any of the links), regardless of whether its links and its foot are lexical or empty (trace), dropping the stipulation that at most the head of an A-chain is non-empty. So, an A-chain is defined as in (74):

(74) **Generalized Chain definition**
C = ($\alpha_1, \ldots, \alpha_n$) is a chain iff C is the maximal sequence such that
i. there is an index i such that for all j, $1 \leq j \leq n$, α_j carries that index, and
ii. for all j, $1 \leq j < n$, α_j governs α_{j+1}.

Under the definition of (74) all syntactic domains in which a moved NP can bind its trace instantiate A-chains. So, all the configurations in (54), (55), and (57) are A-chains regardless of whether the tail contains a pronominal or an anaphor. Clearly, we must characterize a smaller class of such objects as well formed. But unlike the approach of Chomsky (1981 and subsequent work), which incorporates a well-formedness requirement into the definition, in accordance with Reinhart and Reuland (1993) the well-formedness of such objects can be considered a separate issue. In order to be well formed, then, A-chains must obey the condition that their tail is underspecified for at least one phi-feature. As Bouchard (1984) hypothesized that independent reference requires a full specification for phi-features, let us now understand the property *+R* of pronominals as standing for the morphosyntactic property of being fully specified for phi-features. Conversely, *–R* stands for being underspecified for (at least) one phi-feature:[22]

(75) An NP is +R iff it carries a full specification for phi-features (gender, number, person) and structural Case.

On the basis of (75) Reinhart and Reuland (1993) formulate the following well-formedness condition on chains:

(76) **Condition on A-chains**
A maximal A-chain ($\alpha_1, \ldots, \alpha_n$) contains exactly one link – α_1 – which is +R.

What grammatical A-chains then have in common is that the tail (all links and the foot) consists of –R NPs. So, *Max$_i$ gedraagt zich$_i$* is well formed because

the tail of the chain, *zich*, is –R. **Max$_i$ haat hem$_i$*, then, violates not only condition B, but also the chain condition. **Max$_i$ gedraagt hem$_i$* and **Max$_i$ voelde [hem$_i$ wegglijden]*, on the other hand, violate the chain condition only. Whereas this might look like an unwarranted overlap between condition B and the chain condition, in fact, sentences violating two conditions are worse than those only violating one condition, in line with what should be expected if two different conditions are involved, as discussed extensively in Reinhart and Reuland (1993).[23]

What, then, about Frisian? The logic of the approach dictates what should be the case: there should be a dimension in which Frisian pronominals are underspecified and their Dutch counterparts are not. There is independent evidence that this is in fact the case.

In order to see this, first consider the pronominal system of Frisian in some more detail. Two pronominals, namely the 3rd person singular feminine and the 3rd person plural (common gender), have two object forms: both have *har* as well as *se*.[24] Often, they are used interchangeably. This is illustrated in (77):

(77) a. Jan hat har juster sjoen
John has her/them yesterday seen
b. Jan hat se juster sjoen
John has her/them yesterday seen

However, *se* is ungrammatical when it is locally bound:

(78) Marie$_i$ wasket harsels$_i$/har$_i$/*se$_i$
Mary washes herself/her

The ungrammaticality of the sentences with bound *se* shows that, for *se*, the chain condition works in Frisian as it does in Dutch. Therefore, we have to explain in what respects *har* is different.

Jarich Hoekstra (1994) has shown that *har* and *se* differ in Case. He concludes that the difference between *se* and *har* is that *se* requires structural Case, whereas *har* is licensed with inherent Case.[25] In accordance with Chomsky (1992), we may assume that structural Case is Case that is assigned by the agreement system. Inherent Case is then Case that is licensed under government by a lexical projection. Suppose, then, that the feature *+R* should be understood as requiring a full specification for *structural Case*. If so, the Dutch–Frisian contrast has nothing to do with Binding Theory. It just reflects a contrast in the Case system, which is entirely insignificant in most respects. Only, it affects the sensitivity of certain pronominal forms to the chain condition, and thus, more or less accidentally, it enlarges their potential to be locally bound.

This is, then, characteristic of the present approach to binding. Binding, chain formation, etc. are all very general processes. So is Case assignment/checking. Only, due to interaction, variations that are insignificant by themselves may

yield results that are baffling on the basis of standard Binding Theory, but which become insignificant again when put into their proper perspective.

6.2 Non-locally bound anaphors

So far we have focussed on standard condition B phenomena, teasing them apart into effects of the revised condition B involving a property of predicates, and the chain condition. The last major puzzle involves violations of the standard condition A in English. Reconsider the following examples discussed in section ((27) = (53)):

(27) a. There were five tourists in the room apart from myself.
b. Physicists like yourself are a godsend.
c. Max boasted that the queen invited Lucie and himself for a drink.

In order to understand why they escape a local binding requirement the italicized parts of the revised binding conditions (69) come into play. (68d) states that a SELF-anaphor reflexive marks the predicate it is an argument of. The revised condition A then says that a syntactic predicate with the formal property of being reflexive marked must in fact have two coindexed arguments, otherwise it is marked ill formed. However, what the anaphors *myself*, *yourself*, and *himself* have in common is that none of them is a syntactic argument of the predicate as defined in (68a). In (27a) *apart from myself* is an adjunct, in (27b) the subject argument of the predicate formed of *be* is *physicists like yourself*, and in (27c) the object argument is *Lucie and himself*. To elaborate on the latter, it is true that there is some sense in which both *Lucie* and *himself* are arguments of *invite*, namely a semantic sense. But the syntactic object, in the sense of the constituent receiving Case, a theta-role, the constituent possibly subject to A-movement, is just the coordinated structure as a whole.

Thus, not being an argument of the syntactic predicate gives a precise reconstruction of the notion of an *exempt anaphor* discussed in Pollard and Sag (1992). Such elements, although they have the morphosyntactic form of an anaphor, need not enter a binding relation in order to be interpreted. Rather, just like Icelandic *sig* in subjunctive contexts, their interpretation is sensitive to pragmatic factors, as illustrated by the following contrast discussed by Pollard and Sag:

(79) a. John_i was going to get even with Mary. That picture of himself_i in the paper would really annoy her, as would the other stunts he had planned.
b. *Mary was quite taken aback by the publicity John_i was receiving. That picture of himself_i in the paper had really annoyed her, and there was not much she could do about it.

Structurally both text fragments are on a par. What is different is the perspective on the sentence containing the anaphor.

Given the line taken in section 3 on the division of labor between syntax, semantics, and pragmatics, the definition of reflexive marking and the revised condition A are only first steps. What is needed is to establish a relation between reflexive marking and a specific syntactic computation that is blocked in case the SELF-anaphor is not a syntactic argument of the predicate involved. A possible candidate is covert head movement, moving SELF onto the head of the predicate. It is easily seen that such movement would indeed be blocked in the cases under consideration. However, at this point no final conclusions will be drawn.

We have now seen that condition A needs to be stated in terms of syntactic predicates. So far, we have not discussed the necessity to state condition B in terms of semantic predicates. This following asymmetry will establish this need:

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

The anaphor in (80a) is in an exempt position; it is nevertheless in complementary distribution with a pronoun, as we see in (80b). So, how does condition B block anaphora in (80b)? At either S-structure or LF, the predicates in (80) are not defined as reflexive, since the coindexed NPs are not coarguments of *invite* (the anaphoric expression being embedded). However, if we look at a more abstract level of semantic interpretation, the conjunction in (80) is interpreted as something equivalent to the representation in (81):

(81) The queen (λx (x invited Max & x invited X))

This representation does contain a reflexive predicate (*x invited x*) as one of its conjuncts. If condition B applies at the stage of mapping from LF to semantic representations, like (81), it finds that in (80a), one of the arguments of this new semantic predicate which is about to be formed is, appropriately, realized in the syntax (LF) as a SELF anaphor. But in (80b), no argument is a SELF-anaphor in the syntax, so the reflexive translation is disallowed and the derivation is filtered out.

To capture such cases, then, condition B must operate on semantic predicates (i.e., at the stage of translating syntactic predicates into semantic ones). A further illustration of the relevance of semantic predicates is given by the contrasts in (82) and (83):

(82) a. Max$_i$ convinced both Lucie and him$_i$ [PRO to leave early]
b. Max$_i$ expected [both Lucie and him$_i$ to leave early]

(83) a. John$_i$ looked at Sally and him$_i$ together in the mirror
b. *John$_i$ looked at Sally and then him$_i$ in the mirror

In both (82a) and (82b) the constituent *both Lucy and him* is a syntactic argument of the predicate formed of the matrix verb; in (82a) both for reasons of Case and theta, in (82b) only for reasons of Case. In (82a) *him* (in addition to *Lucy*) is a semantic argument of *convinced*. Hence a semantic reflexive predicate is formed, which must be licensed. It is, thus, that the sentence is unacceptable under the given indexing. In (82b) the semantic object argument of *expect* is the lower clause, not *him* or *Lucy*, which means that under the given indexing no reflexive semantic argument is formed. Condition B is not violated, and the sentence is well formed.

In (83) the presence of *together* seems to force a collective interpretation for the conjunction, and the reflexive or the pronoun is permitted, while the presence of *then* in (83b) forces a distributive interpretation of the conjuncts. In accord with the notion of a semantic predicate, there would be two such predicates in (83b), forcing Condition B to come into play, accounting for its ungrammaticality.

Note that the "disjoint reference" discussed in section 2 (cf. (29)) provides independent support for the relevance of semantic predicates for condition B.

Consider how anaphora should be ruled out in (84), comparing this to (85) and (86):

(84) a. *We$_2$ voted for me$_1$
b. *[Felix and Lucie$_1$]$_2$ praised her$_1$

(86) was observed as grammatical by Fiengo and May (1990), and the (85) cases are better, for many speakers, than (84):

(85) a. We elected me
b. Felix and Lucie$_1$ authorized her$_1$ to be their representative

(86) Max$_1$ and Lucie talked about him$_1$

The factor determining acceptability seems to be semantic as well. While (84a, b) prefer a distributive interpretation of the plural set, (85a, b) force a collective interpretation only. This can also be verified by comparing (86) with (87):

(87) *Both Max$_1$ and Lucie talked about him$_1$

Both, in (87), forces the distributive reading (so it entails two separate acts of talking, by Max, and by Lucie). In (86), the preferred interpretation is the collective, 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 (84) and (87)). The interpretations of (86) and (87) are approximated in (88a, b):

(88) a. Max and Lucie (λx (x talked about him))
b. Max (λx (x talked about x)) & Lucie (λx (x talked about him))

Under the collective interpretation in (88a), the predicate is not distributed over the two NPs in the subject, but rather, they are taken as one set. This way, no reflexive predicate is formed. Under the distributive interpretation in (88b), one of the predicates (*x talked about x*) is reflexive. None of its arguments has been reflexive marked, so condition B blocks the derivation.

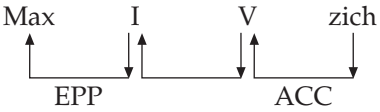
The distributive interpretation of (84a) (**We voted for me*) will also contain a reflexive predicate (*x voted for x*) whose argument is one of the members of the *we*-set (i.e., *me*) which is ruled out, since *me* is not SELF-marked.

All these results are quite unexpected under any account that does not make a distinction between semantic and syntactic predicates and they show, furthermore, that condition B applies to semantic predicates.

7 Conclusion and Beyond

With the introduction of Chomsky's *Minimalist Program* the perspective on interpretive dependencies radically changes. The computational system manipulates morphological objects (lexical items and features) by Merge and Move/Attract. Dependencies are the result of Move/Attract and checking relations triggered by properties of features. Since indices are not morphological objects, it is not clear how they can be manipulated by the computational system. According to Chomsky indices are basically the expression of a relationship and they should be replaceable without loss by a structural account of the relation they annotate (Chomsky 1995b: 217). Since much of Binding Theory does indeed take indices as theoretical entities, there lies ahead the huge task of finding ways to encode anaphoric dependencies with the mechanisms available within the computational system (C_{HL}). It means that "dependency derived by coindexation" must be replaced by "dependency derived by movement." Reuland (1996, 1998a) explores ways of doing this. In essence it is shown that independently existing dependencies such as *subject–verb agreement*, *assignment of structural case*, and *V–I relations* which can be represented by movement forced by checking requirements can in principle be composed by a chain linking operation in the sense of Chomsky (1995b). That is, an object anaphor is linked to a verb and the verb's inflectional system by structural Case, the verb is linked to its functional system, and the functional V-system in turn is linked to the subject. In a case such as (67) a linked chain is formed between *Max* and *zich*, mediated by these relations, as in (89):

(67) Max_i voelde [zich_i wegglijden]
Max felt [SE slide away]

(89) 

It is argued that grammatical number on the object blocks the process of chain composition (accounting for the contrast between (67) and (73)), and that also verbal morphology such as the Icelandic subjunctive will have this effect (see the discussion at the end of section 4). Given the exploratory status of this work, for present purposes these brief remarks will have to suffice.

Not all interpretive dependencies can be brought under such a mechanism, however. For sure, also semantic and pragmatic principles must be involved that are outside C_{HL}. Some authors, in fact, explore such principles as full scale alternatives, for instance Cantrall (1974) and Kuno (1987), and, more recently, Levinson (1991) and Huang (1994), among many others. In any case, determining the division of labor between such principles is a matter for future investigation.

NOTES

1 In addition to A-binding, which is concerned with binding relations between elements in argument positions (positions to which either a theta-role or Case can be assigned), there is A'-binding, where the antecedent is not in an A-position. A standard instance of A'-binding is that of a *wh*-element binding its trace. We will not be concerned with A'-binding in this overview. Aoun (1986), among others, argues for a Binding Theory which generalizes over A- and A'-binding.

2 Taking further grammatical rather than lexical features as the defining characteristic might seem a bit surprising, but it is necessary in view of the fact that the variable bound by a *wh*-operator behaves like an R-expression. Assuming *wh* to be a grammatical, rather than a lexical feature, *wh*-words such as *who* or *what* are not distinct from the corresponding pronouns in lexical content, yet give rise to R-expressions (Chomsky 1981: 330).

3 This is the currently standard version of c-command, discussed in Reinhart (1976). It should be noted that Reinhart explicitly argued in favor of using a different definition, which in current theory could be straightforwardly stated in terms of maximal projections:

(i) *a* c-commands *b* if and only if *a* does not contain *b* and the first maximal projection dominating *a* also dominates *b*

4 See Pollard and Sag (1994) for an overview of some of the problems with the c-command requirement.

5 Under the assumption that the type of agreement involved in anaphoric binding falls under specifier–head agreement, it would mean that the anaphor has to move to the head position of which the antecedent of the anaphor occupies the specifier position, which means that the LF-movement analysis must be a case of head movement.

6 In the remainder of this chapter nothing will be said about the distribution and interpretation of reciprocals as elements subject to condition A. For recent discussion of the syntax and semantics of

reciprocals, see Heim et al. (1991) and Dalrymple et al. (1994). (cf. Nishigauchi 1992 for an interesting discussion of Japanese.)

7 É. Kiss (1987) argues, on similar grounds, for a Case hierarchy.

8 Reinhart (to appear) shows that this is somewhat of a simplification. However, for present purposes this account suffices.

9 But see Levinson (1991) for a position where all condition B effects are subsumed under discourse theoretic principles.

10 See Chien and Wexler (1990) and Avrutin (1994) for an alternative formulation of "Rule I."

11 There is an extensive literature on some East Asian languages such as Chinese (cf. Cole et al. 1990, Huang and Tang 1991, Huang 1994, and references there), Japanese (cf. Iida 1996, and references there), and Korean (Yang 1984).

12 We abstract away from the two different verb classes which have different effects on the interpretation of *sig*. With one class of verbs, like the verb *raka* "shave" exemplified in (41a), *sig* can take either a local or a long distance antecedent in the infinitive and subjunctive domain. With the other class of verbs, *sig* can only refer to the long distance antecedent. These lexical effects in Icelandic (first noted by Thráinsson) are described by Sigurjónsdóttir (1992) and Sigurjónsdóttir and Hyams (1992). Similar lexical effects have been discussed by Everaert (1986) and Reinhart and Reuland (1991) for Dutch and by Hellan (1988) for Norwegian.

13 The term logophor was introduced in Hagège (1974) in order to characterize a class of pronouns that refer to the "source of a discourse." That is, they refer to the individual cited, the speaker, as opposed to the primary speaker. Hagège observes that many languages have a formally characterized set of pronouns for this type of use, which he terms "logophors." The notion is further developed in Clements (1975).

14 Note that *sig* in Icelandic does not have a nominative form (see Everaert 1990 for a discussion of this fact). Hence, *sig* can occur in subject position only with those verbs that select a non-nominative subject, i.e., with the so-called "quirky" case verbs in Icelandic. The verb *vanta* "to lack, need" which appears in example (42a) is one of these verbs and takes an accusative subject. Quirky subjects in Icelandic have been discussed by a number of authors; see, for example, Thráinsson (1979) and Zaenen et al. (1985).

15 It should be noted, in this connection, that locally bound *sig* does not allow a strict reading. This is illustrated in (i):

(i) Jón$_i$ rakaði sig$_i$ og Pétur$_j$ gerði pad líka.
"John shaved SIG and Peter did so too."
≠ Peter shaved John

Yet in the long distance infinitive case both readings are possible:

(ii) Jón$_i$ skipaði prófessornum$_j$ [að PRO$_j$ fella$_{inf}$ sig$_i$ á prófinu] og Ari gerði pað líka.
"John ordered the professor to fail SIG on the test and Ari did so too."
a. = Ari ordered the professor to fail Ari on the test.
b. = Ari ordered the professor to fail John on the test.

This may indicate that what forces the sloppy reading (i) is not a property of the antecedent–anaphor

relation, but a property of the predicate. In (i) the copied predicate is intrinsically reflexive, whereas (ii) has no reflexive predicate (see n. 13).

16 To give an example, in a text such as (i) the repeated use of *the chairman* is odd:

(i) The chairman came in late. When the chairman had welcomed the speaker, the chairman leaned back with a slight feeling of relief.

Replacing the second and third occurrences of the chairman by pronominals makes the text felicitous. Instead of pronominals, also epithets such as *the idiot* could be used. Since after the first mention the chairman has become a high accessibility referent, it is appropriately referred to by a linguistic element with low lexical content, such as an epithet or a pronominal. Note that using the same epithet twice is infelicitous as well. Epithets are intermediate in degree of lexical specification between full NPs and pronominals.

17 Ultimately, an understanding of these phenomena requires a more elaborated theory of discourse prominence. That is, although our results make clear that well-formedness changes with perspective, it is not at all trivial to construct an adequate theory of perspective.

18 As disussed in Reuland (1996, 1998a) cancelled derivations in the sense of Chomsky (1995b) are derivations in the sense required, in order to guarantee that mismatch in phi-features does not free an anaphor for interpretation as a semantic variable.

19 See, among others, Vikner (1985), Everaert (1986), Hellan (1988), Riad (1988), Hestvik (1990), and Sigurjónsdóttir (1992).

20 The anaphoric systems of Creole languages deserve special attention because it seems as if different anaphoric systems are lexically determined (Muysken 1993).

21 Note that it does not have to be the case that one and the same element is used in all these environments.

22 Observe that in this approach referential (in)dependence of an item finds a straightforward translation in terms of the morphological feature specification of that item. See Anagnostopoulou and Everaert (1999) for discussion.

23 This also seems to be confirmed by acquisition research (Philip and Coopmans 1996a, 1996b).

24 Note that *se* is a pronoun, not an anaphor; the plural pronoun has the form *harren* as well, but for all purposes it behaves just like *har*.

25 Hoekstra's argument is based on a number of distributional differences between *se* and *har*. For instance, locative PPs require *har* instead of *se*, as in *Ik seach it boek neist har*/**se* "I saw the book next to her." The same holds true where the pronominal is licensed by an adjective, as in *It boek wier har*/**se te djoer* "The book was too expensive for her." In all those cases one can argue that precisely a structural Case assigner is lacking.