

# Optimal Binding

Silke Fischer

Universität Stuttgart

February 2003

## **Abstract:**

According to Chomsky's Binding Theory (cf. Chomsky 1981), the distribution of anaphors, pronouns, and R-expressions is regulated by three principles: Principle A, B, and C. Although the predictions of these principles are very often borne out, they cannot account for phenomena like long distance anaphors, the difference between different types of anaphors, data where anaphors and pronouns are not in complementary distribution, or languages like Vietnamese in which R-expressions may be bound.

The aim of this paper is therefore to develop a theory of binding which captures these phenomena. Based on a close analysis of English, German, Dutch, Italian, and Icelandic I want to show that these apparent exceptions can easily be integrated into a uniform theory of binding if it is assumed that the principles that regulate binding are violable. Thus I will present an optimality-theoretic analysis that makes it possible to account for the occurrence of simplex anaphors, complex anaphors, pronouns, and R-expressions in a uniform and straightforward way. The approach is based on the interaction of two universal constraint hierarchies. One of them takes into account that binding is sensitive to domains of different size, the other one prohibits elements of different anaphoric degree. On the basis of these two constraint hierarchies, the competition selects the optimal element in a given context.

## **1. Introduction**

The standard Binding Theory developed in Chomsky (1981) provides two principles that regulate the distribution of anaphors and pronouns: Principle A and Principle B.<sup>1</sup>

---

<sup>1</sup>The following definitions are based on formulations in Roberts (1997, p. 142, 148).

- (1) *Principle A:*  
Anaphors must be A-bound in their binding domain.  
*Principle B:*  
Pronouns must be A-free in their binding domain.
- (2) The *binding domain* of  $\alpha$  is the smallest XP containing  $\alpha$  and either  
(i) a subject distinct from  $\alpha$  which does not contain  $\alpha$ , or  
(ii) the T with which  $\alpha$  checks its (Nominative) Case features.

For sentences like (3) and (4), these two principles make the correct predictions. In (3), the binding domain is vP, thus *himself* satisfies Principle A, whereas *him* is ruled out by Principle B. In (4), the binding domain is the embedded vP, which means that the anaphor is not bound in this domain and therefore excluded by Principle A. However, the pronoun fulfils Principle B and is thus allowed.

- (3) [TP Max<sub>1</sub> [vP t<sub>1</sub> hates himself<sub>1</sub>/\*him<sub>1</sub>]]
- (4) Max<sub>1</sub> knows that [TP Mary [vP t<sub>Mary</sub> likes him<sub>1</sub>/\*himself<sub>1</sub>]]

In these examples, anaphors and pronouns are in complementary distribution, and this is in fact what the two principles in (1) generally suggest. However, this prediction is not always borne out, as (5)-(9) illustrate.<sup>2</sup>

- (5) Max<sub>1</sub> glanced behind himself<sub>1</sub>/him<sub>1</sub>.
- (6) Max<sub>1</sub> saw a gun near himself<sub>1</sub>/him<sub>1</sub>.
- (7) Max<sub>1</sub> saw a picture of himself<sub>1</sub>/him<sub>1</sub>.
- (8) Max<sub>1</sub> likes jokes about himself<sub>1</sub>/him<sub>1</sub>.
- (9) Max<sub>1</sub> counted five tourists in the room apart from himself<sub>1</sub>/him<sub>1</sub>.

In view of the contrast between sentences like (3)-(4) and the unexpected examples in (5)-(9), there are grounds for the assumption that the binding principles are not strict rules, but may be violated. Thus I propose an optimality-theoretic approach according to which the principles that favour anaphors and those that require pronouns are in conflict with each other, which accounts for the contrasts in (3) and (4); but since these principles are violable, it can be explained why the two elements do not necessarily exclude each other, as observed in (5)-(9).<sup>3</sup>

<sup>2</sup>Although the BT-compatibility algorithm, which was introduced in Chomsky (1986b), makes it possible to predict a non-complementary distribution in certain configurations, this is not the case in the examples (5)-(9); but cf. Hestvik (1991) as far as a corresponding modification is concerned.

<sup>3</sup>Former competition-based approaches to binding include Burzio (1989; 1991; 1992; 1994;

To begin, I briefly introduce some central assumptions of Optimality Theory (OT) syntax (cf., among others, Prince and Smolensky 1993; Grimshaw 1997; Müller 2000; Vikner 2001). The optimality-theoretic competition is based on the input, which is the common denominator of the competing candidates.<sup>4</sup> In the present approach it is assumed that sentences which differ only with regard to the question as to whether the bound element they contain is realized as anaphor or pronoun are output candidates ( $O_i$ ) in the same competition. This means that the input must contain the information that a binding relation between the designated antecedent and an element  $x \in \{\text{pronoun, anaphor}\}$  will be established.<sup>5</sup> The competition then determines the realization of  $x$ , i.e., the optimal bindee. (With respect to the remaining syntactic structure, I do not make any specific assumptions; cf. footnote 4 for various possibilities.)

Based on the input, the so-called Generator (=Gen), i.e., the grammatical component which comprises all constraints that are universally inviolable, generates the candidate set. The structures contained in this set are then evaluated on the basis of the OT-constraints, whose main properties are that they are violable, universal, and ordered in a hierarchy. The candidate that comes off best in this competition is called the optimal candidate, all other candidates must be rejected as ungrammatical.

There can be more than one optimal candidate. Apart from the possibility that two candidates may have the same optimal constraint profile, tied constraints can also lead to the result that two candidates win a competition. Informally, a tie can be explained as follows: If two constraints X and Y are tied (notation:  $X \circ Y$ ), a violation of X is as serious as a violation of Y. In the tableaux in this article, tied constraints can be recognized by the fact that they are not separated from each other by lines.

In the literature, several definitions of constraint ties can be found (cf. the summary in Müller 2000, chapter 5.4); however, the ties in this analysis will all be global ties, which can be interpreted as follows. A constraint hierarchy with

---

1996; 1998), Menuzzi (1999), Wilson (2001), and Kiparsky (2002).

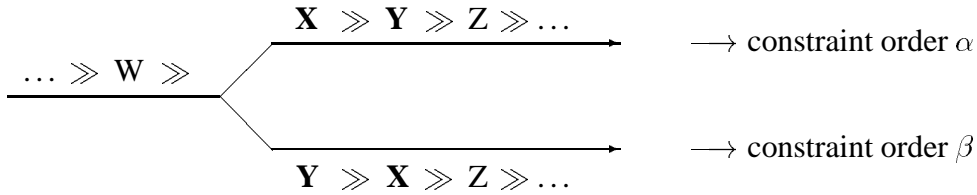
<sup>4</sup>There is no uniform definition of the input, but what has been proposed, *inter alia*, is the same numeration (following Chomsky 1995), the same predicate-argument structure plus identical LF (cf. Grimshaw 1997), and the same target LF (cf. Legendre *et al.* 1998). Heck *et al.* (2002) propose an input-free system.

<sup>5</sup>This assumption is sufficient as long as only bound pronouns are taken into consideration. If the theory is extended to pronouns in general, the input must be modified in such a way that it does not necessarily presuppose a binding relation (cf. also section 9).

Following Heck *et al.* (2002), it could also be assumed that there is no input in the technical sense. In this case, the identical meaning of the output candidates would be the defining property of the candidate set.

the global tie  $X \circ Y$  stands for two separate hierarchies, one of them containing the dominance relation  $X \gg Y$ , the other one containing the relation  $Y \gg X$ . (10) serves as a graphical illustration.

(10)



The consequences are the following: if  $C_1$  satisfies  $X$  better than  $C_2$  but violates  $Y$  more often than  $C_2$  and they behave alike with respect to higher-ranked constraints, but all the other candidates come off worse, then both  $C_1$  and  $C_2$  are optimal:  $C_1$  wins the competition with the underlying constraint order  $\alpha$ ,  $C_2$  wins with the underlying constraint order  $\beta$ . What follows is that potential violations of lower-ranked constraints (like  $Z$  in (10)) by  $C_1$  or  $C_2$  do not play a role in this case.

## 2. The Basic Inventory

It is beyond question that it is the aim of any good theory to capture the empirical facts as accurately as possible while at the same time reducing the axiomatic weight of the underlying principles as much as possible. The first point I want to address is therefore which principles are dispensable and which ones are necessary.

If we start with the principles in (1) and consider again the examples in (5)-(9), the following conclusion can be drawn. Since in all sentences the binding domain is  $vP$ , Principle A is fulfilled in all examples, but Principle B is violated. Thus the occurrence of the pronoun should be predicted to be ungrammatical unless there is a further constraint  $X$  which is violated by the anaphor and which is tied with Principle B. Tableau  $T_1$  schematically illustrates the situation.<sup>6</sup>

$T_1$ : (5)-(9), e.g., *Max<sub>1</sub> glanced behind himself<sub>1</sub>/him<sub>1</sub>*

	Input: Max <sub>1</sub> glanced behind $x_1$	X	Pr.B
$\Rightarrow$	O <sub>1</sub> : Max <sub>1</sub> glanced behind himself <sub>1</sub>	*(!)	
$\Rightarrow$	O <sub>2</sub> : Max <sub>1</sub> glanced behind him <sub>1</sub>		*(!)

<sup>6</sup>Subsequent tableaux are simplified insofar as the input and the candidates are no longer fully represented.

At the same time, it has to be guaranteed that we do not get the same result for sentence (3), where the pronoun has to be ruled out. This means that there must be a crucial difference between examples like (3) and (5)-(9). Reinhart and Reuland (1991; 1993) point out that the sentences in (5)-(9) differ from (3) insofar as the bound elements and their antecedents are arguments of the same predicate only in (3). In (5)-(9), the preposition forms its own predicate, thus the bound elements and their antecedents are not coarguments. This means that the binding relation in (5)-(9) is not as local as the one in (3), although in both cases binding takes place within the binding domain of the bound element. This suggests that binding domains as defined in (2) are not the only domains that are relevant for binding;<sup>7</sup> it seems as if binding is also sensitive to a smaller domain, the so-called  $\theta$ -domain.

- (11) The  $\theta$ -domain of  $\alpha$  is the smallest XP containing the head that  $\theta$ -marks  $\alpha$  plus its argument positions.

The predicate that  $\theta$ -marks the bound element in (3) is the verb *hate*, and the argument positions that go with it are the object position and the subject position (=SpecvP). Hence, the relevant  $\theta$ -domain is vP. Thus, the difference between (3) and (5)-(9) can be described as follows. In (3), the bound element is not only bound in its binding domain but also in its  $\theta$ -domain (by the subject trace), whereas in (5)-(9) the bound element is free in its  $\theta$ -domain (=PP).

With respect to the question of which principles are needed, the consequence of this observation is that Principle B as defined in (1) should be replaced with a relativized version of Principle B that distinguishes between different domains.

- (12) Pr.B<sub>BD</sub>: Pronouns must be A-free in their binding domain.
- (13) Pr.B<sub>ThD</sub>: Pronouns must be A-free in their  $\theta$ -domain.

So far, the attempt to restrict the underlying principles has not been very successful. Instead of reducing the number of constraints, we have come to the conclusion that one of the binding principles has to be split up further. However, it has often been observed that we do not need both Principle A and Principle B of Chomsky's Binding Theory (cf., for example, Pica 1986; Burzio 1989; 1991; 1992; 1994; 1996; 1998; Fanselow 1991; Richards 1997; Wilson 2001). Instead, it is sufficient to keep (some variant of) one of the binding principles and replace the other with a much more general type of constraint against the occurrence of certain elements.<sup>8</sup>

---

<sup>7</sup>The proposal that domains of different size play a role in Binding Theory is implicitly made in Manzini and Wexler (1987). In their approach, the notion of governing category is defined on the basis of various parameters that provide a means to distinguish binding relations in different domains.

<sup>8</sup>Here it is assumed that Principle B is split up and that Principle A effects are the "elsewhere

Thus, the following two constraints are introduced.

(14) \*ANAPHOR: Avoid anaphors.

(15) \*PRON: Avoid pronouns.

The sentences in (3)-(9) can now be accounted for on the basis of these four constraints, as  $T_2$ - $T_4$  illustrate.

$T_2$ : (3)  $Max_1$  hates himself<sub>1</sub>/\*him<sub>1</sub>

Candidates	Pr.B <sub><i>T<sub>hD</sub></i></sub>	*ANAPHOR	Pr.B <sub><i>BD</i></sub>	*PRON
⇒ O <sub>1</sub> : himself <sub>1</sub>		*		
O <sub>2</sub> : him <sub>1</sub>	*!		*	*

$T_3$ : (4)  $Max_1$  knows that Mary likes him<sub>1</sub>/\*himself<sub>1</sub>

Candidates	Pr.B <sub><i>T<sub>hD</sub></i></sub>	*ANAPHOR	Pr.B <sub><i>BD</i></sub>	*PRON
O <sub>1</sub> : himself <sub>1</sub>		*!		
⇒ O <sub>2</sub> : him <sub>1</sub>				*

$T_4$ : (5)-(9), e.g.,  $Max_1$  glanced behind himself<sub>1</sub>/him<sub>1</sub>

Candidates	Pr.B <sub><i>T<sub>hD</sub></i></sub>	*ANAPHOR	Pr.B <sub><i>BD</i></sub>	*PRON
⇒ O <sub>1</sub> : himself <sub>1</sub>		*(!)		
⇒ O <sub>2</sub> : him <sub>1</sub>			*(!)	*

$T_4$  reveals that the constraint X in  $T_1$  corresponds to \*ANAPHOR. Moreover, it shows that the tie between Pr.B<sub>*BD*</sub> and \*ANAPHOR must be a global tie, since violations of lower-ranked constraints do not play a role.

As far as the underlying constraints are concerned, it can be concluded that they basically belong to two different constraint families. First, there is a group of constraints that have the effect of Chomsky's Principle B and that are only modified with respect to the domain to which they apply. These constraints favour anaphors in more or less local domains. Second, there is a group of markedness

---

case" (cf.  $T_3$ ). So far, nothing hinges on this decision. In principle, the binding constraints in this section could as well be reformulated as Principle A constraints, and the reverse ranking within the hierarchies in (16) would yield exactly the same result (in  $T_2$ - $T_4$ : Pr.A<sub>*BD*</sub>  $\gg$  \*PRON  $\circ$  Pr.A<sub>*T<sub>hD</sub>*</sub>  $\gg$  \*ANAPHOR). But in the next sections, when the analyses become more complex, it no longer suffices just to reverse the rankings of the hierarchies to get the same result with Principle A. However, although the analysis is probably still reformulable in such a way that Principle A is split up and Principle B is given up, it seems to me that the underlying universal hierarchies would have to be given up, which would be an unwanted result. (To explore this alternative in more detail is beyond the scope of this paper.) Another advantage of the direction taken here is that unbound anaphors can be integrated into the analysis straightforwardly since the approach is not based on a principle that requires anaphors to be bound. This issue will be addressed in section 9.

constraints that punish the occurrence of certain elements in general. Since these constraints have to counterbalance the effects of the constraints of the other group, they must favour pronouns; thus I assume that \*ANAPHOR universally outranks \*PRON. Moreover, I propose that the constraints of the other family are also ordered in a universal hierarchy such that the principles that refer to smaller domains are universally higher ranked than those that refer to bigger domains.

(16) *Universal hierarchies:*

\*ANAPHOR  $\gg$  \*PRON; Pr.B<sub>ThD</sub>  $\gg$  Pr.B<sub>BD</sub>

The consequences of these assumptions are twofold. On the one hand, the system is quite restrictive, since it is based on two groups of constraints only, which are inherently universally ordered. Thus, crosslinguistic variation is restricted to different rankings between the two hierarchies. The axiomatic burden is moreover reduced by the fact that the system is only based on one type of binding principle and replaces the other one with a much more general type of constraint. On the other hand, the concept of constraint families makes it possible to get as fine-grained a net of constraints as necessary to capture the empirical facts. Elaborations like these will be examined in the next sections.

But before we modify the present system along these lines, let us take a closer look at another influential approach to binding which has been developed as an alternative to the Chomskyan Binding Theory and which addresses some of its drawbacks – Reinhart and Reuland’s theory of reflexivity.

### 3. Reinhart and Reuland’s (1993) Theory of Reflexivity

It is not accidental that the examples considered so far are all in English. What has not been taken into account yet – neither by the analysis in section 2 nor by the original binding principles in (1) – is the fact that a language may have different types of anaphors which differ in their distribution. So far, the principles suggest that all anaphors behave alike. However, the following Dutch examples show that this is not always the case. Although the two anaphors *zich* and *zichzelf* can sometimes occur in the same position (cf. (17)), the sentences in (18) and (19) indicate that this is not always possible.

(17) Max<sub>1</sub> wast zich<sub>1</sub>/zichzelf<sub>1</sub>.  
 Max washes SE/himself  
 ‘Max<sub>1</sub> washes himself.’

(18) Max<sub>1</sub> haat zichzelf<sub>1</sub>/\*zich<sub>1</sub>.  
 Max hates himself/SE

‘Max<sub>1</sub> hates himself<sub>1</sub>.’

- (19) Max<sub>1</sub> keek achter zich<sub>1</sub>/\*zichzelf<sub>1</sub>.  
Max glanced behind SE/himself  
‘Max<sub>1</sub> glanced behind himself<sub>1</sub>.’

Reinhart and Reuland refer to these two types of anaphors as SE (simplex expression) vs SELF anaphors. What these two elements have in common is that they are referentially defective, which means that they depend on their antecedents in order to pick out a referent, a property that distinguishes them from pronouns. However, the two anaphors differ from each other in one important aspect. According to Reinhart and Reuland, only SELF anaphors can function as reflexivizers, which means that they can ensure that a coargument of theirs refers to the same thing, which makes the predicate they belong to reflexive. By contrast, SE anaphors and pronouns have no reflexivizing function. On the basis of these assumptions, Reinhart and Reuland propose to replace the Chomskyan binding principles A and B with the following conditions.<sup>9</sup>

- (20) *Condition A:*  
A reflexive-marked (syntactic) predicate is reflexive.
- (21) *Condition B:*  
A reflexive (semantic) predicate is reflexive-marked.
- (22) *Condition on A-Chains:*  
A maximal A-chain ( $\alpha_1, \dots, \alpha_n$ ) contains exactly one link –  $\alpha_1$  – which is +R.

---

<sup>9</sup>The conditions are based on the following definitions:

- (i) a. The *syntactic predicate* of (a head) P is P, all its syntactic arguments, and an external argument of P (subject).  
b. The *syntactic arguments* of P are the projections assigned  $\theta$ -role or Case by P.  
c. The *semantic predicate* of P is P and all its arguments at the relevant semantic level.  
d. A predicate P is *reflexive* iff two of its arguments are coindexed.  
e. A predicate P is *reflexive-marked* iff either P is lexically reflexive or one of P’s arguments is a SELF anaphor.  
f. *Generalized Chain Definition:*  
C=( $\alpha_1, \dots, \alpha_n$ ) is a chain iff C is the maximal sequence such that there is an index  $i$  such that for all  $j, 1 \leq j \leq n, \alpha_j$  carries that index, and for all  $j, 1 \leq j < n, \alpha_j$  governs  $\alpha_{j+1}$ .  
g. An NP is +R iff it carries a full specification for  $\phi$ -features (gender, number, person, Case). The absence of contrasts within the domain of a class implies the absence of a specification for that class (cf. Reuland and Reinhart 1995, p. 255).

In contrast to the standard Binding Theory, this approach no longer predicts a complementary distribution of anaphors and pronouns, and with respect to examples like those in (5)-(9) (e.g., *Max<sub>1</sub> glanced behind himself<sub>1</sub>/him<sub>1</sub>*), the conditions in (20)-(22) make correct predictions: Since the preposition lacks a subject in these sentences, it does not form a syntactic predicate and hence Condition A does not apply, even if a SELF anaphor occurs as an argument of the preposition. Condition B does not apply either, because the coindexed elements are not coarguments; so there is no reflexive predicate. As far as chain formation is concerned, Reuland and Reinhart (1995, p. 261) assume that there is a chain between the bound element and its antecedent.<sup>10</sup> Thus both the anaphor and the pronoun fulfil the Chain Condition in the English sentences under discussion, since in these positions they are both [-R].<sup>11</sup>

However, the German and Dutch counterparts of example (5) (cf. (23b) and (23c) respectively) cannot be analysed as straightforwardly.

- (23) a. Max<sub>1</sub> glanced behind himself<sub>1</sub>/him<sub>1</sub>.  
 b. Max<sub>1</sub> blickte hinter sich<sub>1</sub>/??sich selbst<sub>1</sub>/\*ihn<sub>1</sub>.  
 c. Max<sub>1</sub> keek achter zich<sub>1</sub>/\*zichzelf<sub>1</sub>/hem<sub>1</sub>.

As in English, the Dutch pronoun satisfies the Chain Condition, since it is unspecified for (inherent) Case. In German, the situation is different. Since German shows a Case contrast within the inherent Case system, the pronoun is fully specified for all  $\phi$ -features; hence, it is [+R] and violates the Chain Condition.

However, the question remains open as to why SELF anaphors are ungrammatical in both Dutch and German. As argued above, neither Condition A nor Condition B apply, which accounts for the grammaticality of the SE anaphors, since they do not violate any condition. But in order to rule out the SELF anaphors, it would have to be assumed that they violate either Condition A or the Chain Condition. The first possibility must be rejected because the English account crucially relies on the fact that Condition A does not apply; and a violation of the Chain Condition would only occur if there was a barrier between the anaphor and its antecedent and the trivial chain (anaphor<sub>1</sub>) was a maximal A-chain. However, this

---

<sup>10</sup>This is not the case in Reinhart and Reuland (1993, p. 702), where they assume that the preposition in these sentences forms a minimality barrier (following Chomsky 1986a). (However, on this assumption the Chain Condition would rule out the anaphor, because the trivial chain (himself<sub>1</sub>) would then be a maximal A-chain but would not contain a [+R]-element.)

But since the Chain Condition has to rule out the pronoun in sentences like (5)-(9) in languages like German (cf. (23b)), Reuland and Reinhart (1995) propose a modified analysis based on Rizzi's (1990) framework, according to which P does not block government.

<sup>11</sup>The pronoun is [-R] since it bears inherent Case and English shows no contrast within the inherent Case system. Thus, the pronoun is not specified for Case in these sentences.

solution must also be excluded, because Reinhart and Reuland's (1995) account of the ungrammaticality of pronouns in German sentences like (23b) is based on the assumption that  $(Max_1, ihn_1)$  forms a chain that violates the Chain Condition. Hence, the ungrammaticality of the SELF anaphors in (23b) and (23c) cannot be derived directly from the three conditions in (20)-(22) and something more needs to be said with respect to these cases.<sup>12</sup>

Generally, it can be concluded that the broad range of crosslinguistic variation we encounter in the field of binding poses a problem for any theory based on inviolable principles, because it would have to come up with principles that all languages would have to obey; at the same time it would not be attractive from a conceptual point of view to replace general rules with more and more specific supplements in order to achieve this goal. Hence, crosslinguistic variation serves as a further argument for a competition-based analysis of binding.

#### 4. Further Modifications

As the previous section has shown, it is necessary to distinguish between different types of anaphors. Following Reinhart and Reuland, I will also make use of the terms SE and SELF anaphor. However, unlike Reinhart and Reuland, who assume that this distinction is not necessarily determined by the complexity of the morphological form (cf. Reuland and Reinhart 1995, p. 250) and who assume moreover that SE anaphors have no reflexivizing function, I consider both forms as reflexivizers and use the terms strictly in the morphological sense; i.e., morphologically simplex anaphors are referred to as SE anaphors and morphologically complex anaphors as SELF anaphors. In order to capture the different behaviour of the two types of anaphors, the general constraint \*ANAPHOR is no longer sufficient; however, as mentioned before, the present system can be straightforwardly elaborated by splitting up \*ANAPHOR into the two more fine-grained constraints \*SE and \*SELF.

(24) \*SE: Avoid simplex anaphors.

(25) \*SELF: Avoid complex anaphors.

In section 2 it was furthermore argued that \*ANAPHOR is universally higher ranked than \*PRON. Regarding the ranking between the two new constraints in (24) and (25), I assume that \*SELF universally outranks \*SE.

This ranking can be motivated as follows. First, there seems to be a tendency

---

<sup>12</sup>Further problematic aspects concerning Reinhart and Reuland's theory of reflexivity have been discussed, for example, in Safir (1997), Burzio (1998), and Menuzzi (1999).

that the locality conditions are much stricter for complex anaphors than for simplex anaphors. Thus, the hierarchy can be interpreted as reflecting the decreasing correlation between the respective elements and their requirement for local binding.

Furthermore, König and Siemund (2000) emphasize that SELF anaphors like *zichzelf* are composed of a simplex anaphor plus an adnominal intensifier. From this point of view it could be argued that the latter also intensifies the anaphoric properties of the expression, and hence the hierarchy can be interpreted as an indication of the decrease in anaphoricity.

(26) *Universal hierarchy:* \*SELF  $\gg$  \*SE  $\gg$  \*PRON

As far as the Principle B constraints are concerned, they also have to be modified in such a way that they are sensitive to different degrees of anaphoricity. Pr.B<sub>BD</sub> and Pr.B<sub>ThD</sub> are therefore replaced with the following constraints, which do not simply refer to pronouns, but to the degree of anaphoricity of a given element. Moreover, since more than one domain seems to play a role in Binding Theory, the term binding domain might be misleading; thus, the name of this domain will be replaced with the term subject domain.

(27) The *subject domain* of  $\alpha$  is the smallest XP containing  $\alpha$  and either  
 (i) a subject distinct from  $\alpha$  which does not contain  $\alpha$ , or  
 (ii) the T with which  $\alpha$  checks its (Nominative) Case features.

(28) REFLEXIVITY IN SD (Refl.<sub>SD</sub>):  
 If  $\alpha$  is bound in its subject domain,  $\alpha$  must be maximally anaphoric.

(29) REFLEXIVITY IN THD (Refl.<sub>ThD</sub>):  
 If  $\alpha$  is bound in its  $\theta$ -domain,  $\alpha$  must be maximally anaphoric.

The constraints in (28) and (29) are gradient, which means the following: If, in a given language, there are  $n$  elements that are more anaphoric than  $\alpha$ , the element under consideration, and  $\alpha$  is bound in its subject/ $\theta$ -domain, it violates REFLEXIVITY IN SD/REFLEXIVITY IN THD  $n$  times. The analyses in the following sections will reveal the effects of these constraints.

Apart from the hierarchy in (26), it is furthermore still assumed that REFLEXIVITY IN THD universally outranks REFLEXIVITY IN SD; thus, the approach is based on two universal constraint subhierarchies, which restricts language-particular variation to different combinations of these two underlying hierarchies. The concept of universal constraint subhierarchies has already been successfully applied in OT syntax by Aissen (1999; 2000), who derives them by means of local

constraint conjunction and harmonic alignment from underlying grammatical hierarchies that express markedness relations (like the Thematic Hierarchy).<sup>13</sup> The question that might therefore arise at this point is whether the universal constraint subhierarchies introduced above can also be derived from simpler constraints by some general means of constraint generation. In fact, the answer will be yes, as will be thoroughly discussed in the appendix.

## 5. English, German, Dutch, and Italian

On the basis of the constraints introduced in the previous section, let us now turn to the analysis of the following English, German, Dutch, and Italian data, which correspond to the English examples discussed in section 2 and which can be characterized as follows: In (30), the binding relation is so local that binding does not only take place within the subject domain but also within the  $\theta$ -domain. By contrast, (31) serves as an example where the antecedent is in neither of these two domains. Finally, in (32)-(36), the bound element is only bound within its  $\theta$ -domain, but not within its subject domain.<sup>14</sup>

- (30) a. Max<sub>1</sub> hates himself<sub>1</sub>/\*him<sub>1</sub>.  
 b. Max<sub>1</sub> hasst sich selbst<sub>1</sub>/sich<sub>1</sub>/\*ihn<sub>1</sub>.  
 c. Max<sub>1</sub> haat zichzelf<sub>1</sub>/\*zich<sub>1</sub>/\*hem<sub>1</sub>.  
 d. Max<sub>1</sub> si<sub>1</sub> odia/ odia se stesso<sub>1</sub>/ \*lo<sub>1</sub> odia.
- (31) a. Max<sub>1</sub> knows that Mary likes him<sub>1</sub>/\*himself<sub>1</sub>.  
 b. Max<sub>1</sub> weiß, dass Maria ihn<sub>1</sub>/\*sich<sub>1</sub>/\*sich selbst<sub>1</sub> mag.  
 c. Max<sub>1</sub> weet dat Mary hem<sub>1</sub>/\*zich<sub>1</sub>/\*zichzelf<sub>1</sub> leuk vindt.  
 d. Max<sub>1</sub> sa che Maria lo<sub>1</sub> ama /\*si<sub>1</sub> ama/ ama \*se stesso<sub>1</sub>.
- (32) a. Max<sub>1</sub> glanced behind himself<sub>1</sub>/him<sub>1</sub>.  
 b. Max<sub>1</sub> blickte hinter sich<sub>1</sub>/??sich selbst<sub>1</sub>/\*ihn<sub>1</sub>.

---

<sup>13</sup>These grammatical hierarchies, which have generally emerged from functional linguistics, usually reflect tendencies, and Newmeyer (2002a; b) points out that it might be questionable to what extent these functionally-motivated, exception-ridden hierarchies can serve as a basis for universal constraint hierarchies; moreover he doubts whether OT-constraints should generally be linked to some functional motivation.

On the other hand, Bresnan & Aissen (2002) argue that it is exactly the violability of OT-constraints that permits the integration of such tendencies into a formal theory of grammar.

<sup>14</sup>The Dutch and English data are from Koster (1984), Reinhart and Reuland (1991, 1993), Pollard and Sag (1992), Reuland and Reinhart (1995), Reuland and Everaert (2001) as well as from Eric Reuland (p.c.) and Erik Jan van der Torre (p.c.). The Italian data is mainly from Roberta D'Alessandro (p.c.), but cf. also Giorgi (1984). As far as the German data is concerned, cf., for example, Sternefeld (1985) and Fanselow (1991).

- c. Max<sub>1</sub> keek achter zich<sub>1</sub>/\*zichzelf<sub>1</sub>/hem<sub>1</sub>.
  - d. Max<sub>1</sub> ha dato un'occhiata dietro di sé<sub>1</sub>/\*dietro se stesso<sub>1</sub>?/dietro di lui<sub>1</sub>.
- (33)
- a. Max<sub>1</sub> saw a gun near himself<sub>1</sub>/him<sub>1</sub>.
  - b. Max<sub>1</sub> bemerkte eine Pistole neben sich<sub>1</sub>/??sich selbst<sub>1</sub>/\*ihm<sub>1</sub>.  
Max noticed a gun next.to SE/himself/him
  - c. Max<sub>1</sub> zag een pistool naast zich<sub>1</sub>/\*zichzelf<sub>1</sub>/hem<sub>1</sub>.
  - d. Max<sub>1</sub> vide un fucile vicino a sé<sub>1</sub>/\*se stesso<sub>1</sub>/lui<sub>1</sub>.
- (34)
- a. Max<sub>1</sub> saw a picture of himself<sub>1</sub>/him<sub>1</sub>.
  - b. Max<sub>1</sub> sah ein Foto von sich<sub>1</sub>/sich selbst<sub>1</sub>/\*ihm<sub>1</sub>.
  - c. Max<sub>1</sub> zag een foto van \*zich<sub>1</sub>/zichzelf<sub>1</sub>/hem<sub>1</sub>.
  - d. Max<sub>1</sub> vide una foto di ??sé<sub>1</sub>/se stesso<sub>1</sub>?/lui<sub>1</sub>.
- (35)
- a. Max<sub>1</sub> likes jokes about himself<sub>1</sub>/him<sub>1</sub>.
  - b. Max<sub>1</sub> mag Späße über sich<sub>1</sub>/sich selbst<sub>1</sub>/\*ihn<sub>1</sub>.
  - c. Max<sub>1</sub> houdt van grappen over \*zich<sub>1</sub>/zichzelf<sub>1</sub>/hem<sub>1</sub>.
  - d. Max<sub>1</sub> ama le barzellette ??su di sé<sub>1</sub>/su se stesso<sub>1</sub>/su di lui<sub>1</sub>.
- (36)
- a. Max<sub>1</sub> counted five tourists in the room apart from himself<sub>1</sub>/ him<sub>1</sub>.
  - b. Max<sub>1</sub> zählte fünf Touristen im Raum außer sich<sub>1</sub>/sich selbst<sub>1</sub>/ \*ihm<sub>1</sub>.
  - c. Max<sub>1</sub> telde vijf toeristen in de kamer behalve \*zich<sub>1</sub>/zichzelf<sub>1</sub>/??hem<sub>1</sub>.
  - d. Max<sub>1</sub> contò cinque turisti nella stanza oltre a sé<sub>1</sub>/se stesso<sub>1</sub>/lui<sub>1</sub>.

As far as English is concerned, the sentences in (32)-(36) pattern alike; both the anaphor and the pronoun are allowed. However, this is not true for the other languages under consideration. In these languages, the examples in (32) and (33) seem to be different from those in (34)-(36). Koster (1984) suggests that the relevant factor might be the distinction between locational vs non-locational PPs. But since in Dutch and Italian, (36) does not really pattern like (34) and (35) either, additional factors (like the degree of logophoricity) might play a role; I therefore restrict the analysis to examples like (32) and (33) and leave the question open in what respect sentences like (34)-(36) might be different.

## 5.1 English

With respect to the English examples, which have already been discussed before, it can be concluded that the analyses in T<sub>2</sub>-T<sub>4</sub> are not affected by the modification of the constraints in (28) and (29). In particular, the gradience of the reflexivity

constraints does not play a role here. Since English lacks simple anaphors, there is only one element which is more anaphoric than the pronoun – the complex anaphor *himself*. Hence the pronominal candidate gets only one star if it violates a reflexivity constraint, and the constraint \*SE can be neglected.

As far as the ranking of the other constraints is concerned, it can be concluded first of all that REFLEXIVITY IN THD must be higher ranked than \*SELF (cf. T<sub>5</sub>). As T<sub>7</sub> shows, \*SELF must be tied with REFLEXIVITY IN SD, and T<sub>6</sub> illustrates that this tie must be higher ranked than \*PRON, in accordance with the underlying universal hierarchies. Thus, the ranking for English looks as follows.

(37) *English ranking:*

$$\text{Refl.}_{ThD} \gg *SELF \circ \text{Refl.}_{SD} \gg *PRON$$

T<sub>5</sub>: (30a) *Max<sub>1</sub> hates himself<sub>1</sub>/\*him<sub>1</sub>*

Candidates	Refl. <sub>ThD</sub>	*SELF	Refl. <sub>SD</sub>	*SE	*PRON
⇒ O <sub>1</sub> : himself		*			
O <sub>2</sub> : him	*!		*		*

T<sub>6</sub>: (31a) *Max<sub>1</sub> knows that Mary likes him<sub>1</sub>/\*himself<sub>1</sub>*

Candidates	Refl. <sub>ThD</sub>	*SELF	Refl. <sub>SD</sub>	*SE	*PRON
O <sub>1</sub> : himself		*!			
⇒ O <sub>2</sub> : him					*

T<sub>7</sub>: (32a)-(36a), e.g., *Max<sub>1</sub> glanced behind himself<sub>1</sub>/him<sub>1</sub>*

Candidates	Refl. <sub>ThD</sub>	*SELF	Refl. <sub>SD</sub>	*SE	*PRON
⇒ O <sub>1</sub> : himself		*(!)			
⇒ O <sub>2</sub> : him			*(!)		*

## 5.2 German

As in Dutch, there are two different types of anaphors in German.<sup>15</sup> In sentences like (30b), where binding takes place within the  $\theta$ - and thus also within the subject domain, both anaphors are grammatical, whereas the pronoun must be excluded (as in English). However, if there is neither a binding relation within the  $\theta$ - nor in the subject domain, as in (31b), the situation is exactly the reverse: in this case, only the pronoun is grammatical and both anaphors are ungrammatical. In (32b) and (33b), binding is more local than in (31b), but it is not as local as in (30b)

<sup>15</sup>The German anaphors *sich* and *sich selbst* are more interchangeable than Dutch *zich* and *zichzelf*. However, examples like (32b) and (33b) show that they do not always have the same distribution; thus it is necessary to draw this distinction.

– the bound element is bound in its subject domain, but not in its  $\theta$ -domain. In sentences like these, only the simple anaphor is allowed in German, and both the SELF anaphor and the pronoun must be excluded.

On the whole, there are two elements that are more anaphoric than the pronoun, and the violation of a reflexivity constraint by the latter is therefore marked with two stars (as in  $T_8$ , for example). Since a simple anaphor which violates a reflexivity constraint gets only one star, the system makes the correct prediction for sentences like (30b) if \*SELF and REFLEXIVITY IN THD are tied (cf.  $T_8$ ).  $T_{10}$  shows that REFLEXIVITY IN SD must be ranked below this tie and above \*SE. Again it is crucial that the reflexivity constraints are gradient, otherwise the pronoun would beat the anaphor.  $T_9$  finally illustrates that \*PRON must be ranked below \*SE, which is predicted by the underlying hierarchy.

(38) *German ranking:*

$$\text{Refl.}_{ThD} \circ *SELF \gg \text{Refl.}_{SD} \gg *SE \gg *PRON$$

$T_8$ : (30b) *Max<sub>1</sub> hasst sich selbst<sub>1</sub>/sich<sub>1</sub>/\*ihn<sub>1</sub>*

Candidates	Refl. <sub>ThD</sub>	*SELF	Refl. <sub>SD</sub>	*SE	*PRON
⇒ O <sub>1</sub> : sich selbst		*(!)			
⇒ O <sub>2</sub> : sich	*(!)		*	*	
O <sub>3</sub> : ihn	**!		**		*

$T_9$ : (31b) *Max<sub>1</sub> weiß, dass Maria ihn<sub>1</sub>/\*sich<sub>1</sub>/\*sich selbst<sub>1</sub> mag*

Candidates	Refl. <sub>ThD</sub>	*SELF	Refl. <sub>SD</sub>	*SE	*PRON
O <sub>1</sub> : sich selbst		*!			
O <sub>2</sub> : sich				*!	
⇒ O <sub>3</sub> : ihn					*

$T_{10}$ : (32b), (33b), e.g., *Max<sub>1</sub> blickte hinter sich<sub>1</sub>/??sich selbst<sub>1</sub>/\*ihn<sub>1</sub>*

Candidates	Refl. <sub>ThD</sub>	*SELF	Refl. <sub>SD</sub>	*SE	*PRON
O <sub>1</sub> : sich selbst		*!			
⇒ O <sub>2</sub> : sich			*	*	
O <sub>3</sub> : ihn			**!		*

### 5.3 Dutch

In sentences like (31) (no binding within  $\theta$ - or subject domain) the situation in Dutch is the same as in English and German; the bound element must be a pronoun. If binding takes place within the  $\theta$ - and subject domain (cf. (30c)), Dutch differs from German insofar as the simple anaphor must be excluded in addition

to the pronoun. In sentences like (32c) and (33c) (binding within the subject but outside the  $\theta$ -domain), the situation is reversed. In contrast to German, both the SE anaphor and the pronoun are grammatical and only the SELF anaphor must be excluded.

As far as the Dutch ranking is concerned,  $T_{11}$  indicates that, unlike in German, REFLEXIVITY IN THD must be higher ranked than \*SELF. Moreover,  $T_{13}$  shows that REFLEXIVITY IN SD must be tied with \*SE, and the tie must be ranked below \*SELF. Since the reflexivity constraints are gradient, it is then correctly predicted that both the simple anaphor and the pronoun are winners of the competition.  $T_{12}$  confirms once more the universal hierarchy \*SE  $\gg$  \*PRON.

(39) *Dutch ranking:*

$\text{Refl.}_{ThD} \gg *SELF \gg \text{Refl.}_{SD} \circ *SE \gg *PRON$

$T_{11}$ : (30c) *Max<sub>1</sub> haat zichzelf<sub>1</sub>/\*zich<sub>1</sub>/\*hem<sub>1</sub>*

Candidates	$\text{Refl.}_{ThD}$	*SELF	$\text{Refl.}_{SD}$	*SE	*PRON
$\Rightarrow$ O <sub>1</sub> : zichzelf		*			
O <sub>2</sub> : zich	*!		*	*	
O <sub>3</sub> : hem	*!*		**		*

$T_{12}$ : (31c) *Max<sub>1</sub> weet dat Mary hem<sub>1</sub>/\*zich<sub>1</sub>/\*zichzelf<sub>1</sub> leuk vindt*

Candidates	$\text{Refl.}_{ThD}$	*SELF	$\text{Refl.}_{SD}$	*SE	*PRON
O <sub>1</sub> : zichzelf		*!			
O <sub>2</sub> : zich				*!	
$\Rightarrow$ O <sub>3</sub> : hem					*

$T_{13}$ : (32c), (33c), e.g., *Max<sub>1</sub> keek achter zich<sub>1</sub>/\*zichzelf<sub>1</sub>/hem<sub>1</sub>*

Candidates	$\text{Refl.}_{ThD}$	*SELF	$\text{Refl.}_{SD}$	*SE	*PRON
O <sub>1</sub> : zichzelf		*!			
$\Rightarrow$ O <sub>2</sub> : zich			*	*(!)	
$\Rightarrow$ O <sub>3</sub> : hem			**(!)		*

## 5.4 Italian

With respect to sentences like (30d) (binding within  $\theta$ - and subject domain), Italian patterns like German; both anaphors are allowed, but the pronoun is ungrammatical. In sentences like (31d) (no binding within  $\theta$ - or subject domain), the opposite is true. As in the other languages under consideration, only the pronoun is grammatical. If binding takes place within the subject but outside the  $\theta$ -domain (cf. (32d), (33d)), Italian patterns like Dutch – both the pronoun and the

SE anaphor are grammatical, whereas the SELF anaphor must be excluded.

As far as the Italian ranking is concerned,  $T_{14}$  shows that REFLEXIVITY IN THD must be tied with \*SELF, as in German (cf.  $T_8$ ). With respect to the sentences in (32) and (33), Italian patterns like Dutch, thus it has to be assumed that REFLEXIVITY IN SD and \*SE are tied (cf.  $T_{13}/T_{16}$ ). Furthermore,  $T_{16}$  shows that \*SELF must be higher ranked than the second tie, and  $T_{15}$  illustrates again that \*SE  $\gg$  \*PRON.<sup>16</sup>

(40) *Italian ranking:*

$$\text{Refl.}_{ThD} \circ *SELF \gg \text{Refl.}_{SD} \circ *SE \gg *PRON$$

$T_{14}$ : (30d)  $Max_1 si_1 odia/odia se stesso_1/ *lo_1 odia$

Candidates	Refl. $_{ThD}$	*SELF	Refl. $_{SD}$	*SE	*PRON
$\Rightarrow$ O <sub>1</sub> : se stesso		*(!)			
$\Rightarrow$ O <sub>2</sub> : si	*(!)		*	*	
O <sub>3</sub> : lo	**!		**		*

$T_{15}$ : (31d)  $Max_1 sa che Maria lo_1 ama/ *si_1 ama/ ama *se stesso_1$

Candidates	Refl. $_{ThD}$	*SELF	Refl. $_{SD}$	*SE	*PRON
O <sub>1</sub> : se stesso		*!			
O <sub>2</sub> : si				*!	
$\Rightarrow$ O <sub>3</sub> : lo					*

$T_{16}$ : (32d), (33d), e.g.,  $Max_1 vide un fucile vicino a sé_1/ *se stesso_1/ lui_1$

Candidates	Refl. $_{ThD}$	*SELF	Refl. $_{SD}$	*SE	*PRON
O <sub>1</sub> : se stesso		*!			
$\Rightarrow$ O <sub>2</sub> : sé			*	*(!)	
$\Rightarrow$ O <sub>3</sub> : lui			**(!)		*

## 5.5 Predictions

As the analyses above show, the presented binding approach captures straightforwardly the crosslinguistic variation we find in the examples (30)-(33). However, this does not mean that this theory can describe any arbitrary binding system. For example, a language which allows neither the element  $E_1$  nor any element that is more anaphoric than  $E_1$  as bound element in a binding relation within the domain X, but which allows these elements in a less local binding relation (i.e., within a

<sup>16</sup>Whether the elements occur as clitics or full forms is regulated by different constraints and is not subject to the Binding Theory.

domain  $Y$  such that  $X \subset Y$ ), is generally excluded.

situation: binding in domain $X$	*SELF ana.	*SELF ana. and *SE-ana.
prediction: binding in domain $Y \supset X$	*SELF ana.	*SELF ana. and *SE ana.

This can be explained as follows. If in the competition a candidate  $O_1$  loses against a candidate  $O_2$ , and  $O_2$  contains a less anaphoric bound element than  $O_1$ , the fatal violation of  $O_1$  cannot result from a reflexivity constraint, since these constraints always favour those candidates that contain more anaphoric bindees. Hence,  $O_1$  loses because of a constraint belonging to the \*SELF-hierarchy. If binding is even less local, i.e., if the binding relation is restricted to an even bigger domain, the constraint violations of the \*SELF-hierarchy remain the same; the only difference is that there are fewer violations concerning the reflexivity constraints. Therefore  $O_1$  cannot be optimal in this competition either.

Conversely, it is predicted that there is no language which allows a pronoun in a relatively local binding relation, but which excludes it if binding is less local.

situation: binding in domain $X$	pron. grammatical
prediction: binding in domain $Y \supset X$	pron. grammatical

It has already been noted that the difference between local and less local binding is reflected in the competition only insofar as the number of violations of the reflexivity constraints is smaller in the latter case. But since these constraints favour anaphors, the pronominal candidate can only improve if violations of this type are lost. Hence the pronoun remains optimal if the binding relation becomes less local – a prediction which is again borne out by natural languages.

## 6. ECM Verbs

ECM (‘exceptional Case-marking’) verbs pose a problem for the analysis presented so far, since they only allow anaphors in the embedded subject position. In sentences like (41),<sup>17</sup> the subject domain and the  $\theta$ -domain of the bound element do not coincide, and the element is only bound in its subject domain (=matrix vP) but not in its  $\theta$ -domain (=embedded vP).

(41) [TP Jan<sub>1</sub> [vP t<sub>1</sub> heard [vP himself<sub>1</sub>/\*him<sub>1</sub> sing]]]

<sup>17</sup>This example is chosen because Dutch and German have no *to*-infinitival ECM structures. However, the analysis of English ECM constructions with *to*-infinitive is the same.

As in (32a)-(36a) (cf.  $T_7$ ), it is therefore predicted that in English not only anaphors but also pronouns should be allowed in the embedded subject position.

$T_{17}$ : *wrong prediction*

Candidates	Refl. $_{ThD}$	*SELF	Refl. $_{SD}$	*PRON
$\Rightarrow$ O <sub>1</sub> : himself		*(!)		
* $\Rightarrow$ O <sub>2</sub> : him			*(!)	*

However, there is a crucial difference between the examples in (32)-(36) and (41) concerning Case. In (32)-(36), the bound element checks its Case features against the Case features of the preposition; i.e., Case checking takes place within the  $\theta$ -domain (=PP). In (41), on the other hand, Case marking is “exceptional”, which means that the bound element checks Case against the features of the matrix v. Hence, Case checking does not take place within the  $\theta$ -domain but within the matrix vP, the Case domain of the bound element.

- (42) The *Case domain* of  $\alpha$  is the smallest XP containing  $\alpha$  and the head that bears the Case features against which  $\alpha$  checks Case.

The difference between ECM structures and the previous examples can thus be described as follows. In all sentences discussed so far, the Case domain has corresponded to the  $\theta$ -domain (vP in (30), (31); PP in (32)-(36)). The ECM example in (41) is the first sentence where the Case domain and the  $\theta$ -domain are not identical. Since this property seems to have an impact on the binding behaviour, the following constraint is introduced.

- (43) REFLEXIVITY IN CD (Refl. $_{CD}$ ):  
If  $\alpha$  is bound in its Case domain,  $\alpha$  must be maximally anaphoric.

As (41) illustrates, the relation between the domains introduced so far is as shown in (44a), which suggests that the underlying universal constraint hierarchy should be extended as in (44b).

- (44) a.  $\theta$ -domain  $\subseteq$  Case domain  $\subseteq$  subject domain  
b. Refl. $_{ThD}$   $\gg$  Refl. $_{CD}$   $\gg$  Refl. $_{SD}$

Since REFLEXIVITY IN CD is not ranked above REFLEXIVITY IN THD, the introduction of the new constraint does not affect the analyses in the previous sections, where Case domain and  $\theta$ -domain were identical. However, it does have the desired effect on the analysis of ECM structures. As  $T_{18}$  shows, REFLEXIVITY IN CD makes it possible to rule out the pronoun in sentences like (41).

(45) *English:*

$\text{Refl.}_{ThD} \gg \text{Refl.}_{CD} \gg *SELF \circ \text{Refl.}_{SD} \gg *PRON$

$T_{18}$ : (41) *Jan<sub>1</sub> heard himself<sub>1</sub>/\*him<sub>1</sub> sing*

Candidates	$\text{Refl.}_{ThD}$	$\text{Refl.}_{CD}$	*SELF	$\text{Refl.}_{SD}$	*PRON
$\Rightarrow$ O <sub>1</sub> : himself			*		
O <sub>2</sub> : him		*!		*	*

So far, it looks as if we could dispense with REFLEXIVITY IN THD completely and replace it with REFLEXIVITY IN CD instead. However, consider ECM structures in Dutch.

(46) Jan<sub>1</sub> hoorde zichzelf<sub>1</sub>/zich<sub>1</sub>/\*hem<sub>1</sub> zingen.

Jan heard himself/SE/him sing

‘Jan<sub>1</sub> heard himself<sub>1</sub> sing.’

In contrast to English, where REFLEXIVITY IN CD must be higher ranked than \*SELF, the two constraints must be tied in Dutch. As a result, both types of anaphors turn out to be winners of the competition, whereas the pronoun is ruled out because it comes off worse with regard to the gradient reflexivity constraints (cf.  $T_{19}$ ).

(47) *Dutch:*

$\text{Refl.}_{ThD} \gg \text{Refl.}_{CD} \circ *SELF \gg \text{Refl.}_{SD} \circ *SE \gg *PRON$

$T_{19}$ : (46) *Jan<sub>1</sub> hoorde zichzelf<sub>1</sub>/zich<sub>1</sub>/\*hem<sub>1</sub> zingen*

Candidates	$\text{Refl.}_{ThD}$	*SELF	$\text{Refl.}_{CD}$	$\text{Refl.}_{SD}$	*SE	*PRON
$\Rightarrow$ O <sub>1</sub> : zichzelf		*(!)				
$\Rightarrow$ O <sub>2</sub> : zich			*(!)	*	*	
O <sub>3</sub> : hem			**!	**		*

However, the analysis of sentences like (30c) (cf.  $T_{11}$ ) has shown that REFLEXIVITY IN THD must be higher ranked than \*SELF in Dutch. Hence, it can be concluded that REFLEXIVITY IN THD is independently needed and cannot be replaced with REFLEXIVITY IN CD.

German also allows both types of anaphors in sentences like the following.

(48) Jan<sub>1</sub> hörte sich selbst<sub>1</sub>/sich<sub>1</sub>/\*ihn<sub>1</sub> singen.

Jan heard himself/SE/him sing

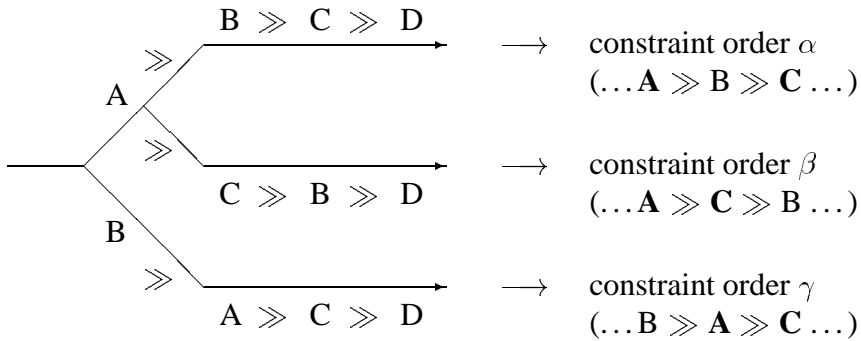
‘Jan<sub>1</sub> heard himself<sub>1</sub> sing.’

This suggests that \*SELF and REFLEXIVITY IN CD must be tied here too. However, this raises a problem with respect to the underlying hierarchy indicated in

(44b), since it has been shown in the previous section (cf.  $T_8$ ) that \*SELF must also be tied with REFLEXIVITY IN THD. On the standard assumption that constraint rankings are transitive, this would lead to the conclusion that REFLEXIVITY IN THD must be tied with REFLEXIVITY IN CD, too, which contradicts the ranking in (44b).<sup>18</sup>

If (44b) represents a universal hierarchy, the assumption that the notion of tie is transitive must be discarded. I will therefore assume that transitivity is restricted to dominance relations, an alternative that has already been explored in Fischer (2001). According to this approach, global ties are not necessarily transitive, which means that  $A \circ B$  and  $B \circ C$  does not necessarily imply that  $A \circ C$ . Instead, it is assumed that a ranking in which  $A \circ B$  and  $B \circ C$  holds is compatible with a ranking according to which  $A$  must always be higher ranked than  $C$ . Note that this modification is not a conceptual weakening; after all,  $A \circ B$  is just an abbreviation for  $A \gg B \vee B \gg A$ , and it is still assumed that the dominance relation is transitive. Hence, transitivity is locally preserved in the constraint orders that result if the ties are resolved. This is graphically illustrated in (49).

(49)



With respect to the analysis of German ECM constructions, this means that although REFLEXIVITY IN THD is tied with \*SELF and \*SELF is tied with REFLEXIVITY IN CD, it can be assumed that REFLEXIVITY IN THD is still higher ranked than REFLEXIVITY IN CD. In  $T_{20}$ , the non-transitivity of this tie is indicated by the dotted lines, in (50) it is indicated by the brackets.<sup>19</sup>

<sup>18</sup>Note, however, that it would not affect the previous analyses from section 5.

<sup>19</sup>If the tie in (50) is resolved, we get the following three constraint orders:

- (i)  $\text{Refl.}_{ThD} \gg \text{Refl.}_{CD} \gg *SELF \gg \text{Refl.}_{SD} \gg *SE \gg *PRON$
- (ii)  $\text{Refl.}_{ThD} \gg *SELF \gg \text{Refl.}_{CD} \gg \text{Refl.}_{SD} \gg *SE \gg *PRON$
- (iii)  $*SELF \gg \text{Refl.}_{ThD} \gg \text{Refl.}_{CD} \gg \text{Refl.}_{SD} \gg *SE \gg *PRON$

This means that a candidate is optimal under the ranking in (50) if it is optimal under at least one of these three orders.

- (50) *German:*  
 $(\text{Refl.}_{ThD} \gg \text{Refl.}_{CD}) \circ *SELF \gg \text{Refl.}_{SD} \gg *SE \gg *PRON$

$T_{20}$ : (48) *Jan<sub>1</sub> hörte sich selbst<sub>1</sub>/sich<sub>1</sub>/\*ihn<sub>1</sub> singen*

Candidates	$\text{Refl.}_{ThD} \mid *SELF \mid \text{Refl.}_{CD}$	$\text{Refl.}_{SD}$	*SE	*PRON
$\Rightarrow$ O <sub>1</sub> : s. selbst	$\mid *(!)$			
$\Rightarrow$ O <sub>2</sub> : sich	$\mid \mid *(!)$	*	*	
O <sub>3</sub> : ihn	$\mid \mid **!$	**		*

## 7. Long Distance Anaphora

In the previous sections, I showed that the subject domain is not the only domain relevant for binding. There are also smaller domains to which binding is sensitive. In this section, I will discuss the issue of so-called long distance (LD) anaphora, i.e., anaphors that can be bound outside their subject domain. The following Icelandic sentence illustrates this phenomenon.<sup>20</sup>

- (51) Jón<sub>1</sub> skipaði Pétri<sub>2</sub> PRO<sub>2</sub> að raka sig<sub>1</sub>/??sjálfan sig<sub>1</sub>/hann<sub>1</sub> á  
 John ordered Peter to shave-Inf SE/himself/him on  
 hverjum degi.  
 every day  
 ‘John<sub>1</sub> ordered Peter to shave him<sub>1</sub> every day.’

Data like these constitute a further problem for the standard Binding Theory, since the latter is solely based on the notion of binding domain (here: subject domain) and is thus unable to handle data that rely on domains of different size. By contrast, it is straightforwardly possible to integrate phenomena like long distance binding into the present approach; we only have to introduce a new domain which comprises the whole sentence, plus the corresponding reflexivity constraint.

- (52) The *root domain* of  $\alpha$  is the XP that forms the root of the sentence containing  $\alpha$ .

- (53) REFLEXIVITY IN RD ( $\text{Refl.}_{RD}$ ):  
 If  $\alpha$  is bound in its root domain,  $\alpha$  must be maximally anaphoric.

Now we can turn to the analysis of example (51). In (51), the bound element is free in its  $\theta$ -, Case and subject domain (=embedded vP), but it is bound in its root domain (=matrix TP). Hence, the reflexivity constraints concerning  $\theta$ -, Case, and

<sup>20</sup>The Icelandic data are from Gunnar Hrafn Hrafnbjargarson (p.c.) and partly from Reuland and Everaert (2001).

subject domain do not play a role in this competition and are therefore ignored in the following tableaux. As far as REFLEXIVITY IN RD is concerned,  $T_{21}$  shows that the binding facts are correctly captured if REFLEXIVITY IN RD is ranked below \*SELF and tied with \*SE.<sup>21</sup>

$T_{21}$ : (51) *Jón<sub>1</sub> skipaði Pétri að raka sig<sub>1</sub>/??sjálfan sig<sub>1</sub>/hann<sub>1</sub> á hverjum degi*

Candidates	*SELF	Refl. <sub>RD</sub>	*SE	*PRON
O <sub>1</sub> : sjálfan sig	*!			
⇒ O <sub>2</sub> : sig		*	*(!)	
⇒ O <sub>3</sub> : hann		**(!)		*

If REFLEXIVITY IN RD is ranked below \*SE, LD anaphora are ruled out in general. This is what we find, for instance, in German, as the analysis of (54) illustrates.

- (54) Hans<sub>1</sub> befahl Peter, ihn<sub>1</sub>/\*sich<sub>1</sub>/\*sich selbst<sub>1</sub> jeden Tag zu rasieren.  
 John ordered Peter him/SE/himself every day to shave  
 ‘John<sub>1</sub> ordered Peter to shave him<sub>1</sub> every day.’

$T_{22}$ : (54) *Hans<sub>1</sub> befahl Peter, ihn<sub>1</sub>/\*sich<sub>1</sub>/\*sich selbst<sub>1</sub> jeden Tag zu rasieren*

Candidates	*SELF	*SE	Refl. <sub>RD</sub>	*PRON
O <sub>1</sub> : sich selbst	*!			
O <sub>2</sub> : sich		*!	*	
⇒ O <sub>3</sub> : ihn			**	*

However, things are more complicated than it might seem at first sight, because the possibility of LD binding depends on the type of the intervening complement clauses. In Icelandic, only infinitives, as in (51), or subjunctives, as in (55a), may separate an anaphor from its antecedent. If an indicative complement intervenes, LD binding must be expressed with a pronoun (cf. (55b)).

<sup>21</sup>In older literature on Icelandic (cf., e.g., Thráinsson 1979; 1991; Anderson 1986; Everaert 1986), the pronoun is usually ruled out in examples like (51) and the simple anaphor is said to be the only admissible bound element. This result would be achieved if the tie in  $T_{21}$  were replaced with the ranking  $\text{Refl.}_{RD} \gg *SE$ .

I leave it open as to whether these different judgements are due to generational differences, as suggested by Gunnar Hrafn Hrafnbjargarson (p.c.), or whether this is some general variation among speakers of Icelandic, as Joan Maling (p.c.) proposes. In the first case, the interpretation would be that the ranking  $\text{Refl.}_{RD} \circ *SE$  has replaced the ranking  $\text{Refl.}_{RD} \gg *SE$ ; in the latter case, the conclusion would be that both rankings can be found in Modern Icelandic.

Note moreover that in the variant of Icelandic I quote pronominal binding does not get worse in sentences like (51) if *Pétri* is replaced with *mér* (‘me’) or any other DP that does not agree with the matrix subject in person and/or number.

- (55) a. Jón<sub>1</sub> segir að Pétur raki sig<sub>1</sub>/??sjálfan sig<sub>1</sub>/hann<sub>1</sub> á  
 John says that Peter shave-Sub SE/himself/him on  
 hverjum degi.  
 every day  
 ‘John<sub>1</sub> says that Peter shaves him<sub>1</sub> every day.’
- b. Jón<sub>1</sub> veit að Pétur rakar ??sig<sub>1</sub>/\*sjálfan sig<sub>1</sub>/hann<sub>1</sub> á  
 John knows that Peter shaves-Ind SE/himself/him on  
 hverjum degi.  
 every day  
 ‘John<sub>1</sub> knows that Peter shaves him<sub>1</sub> every day.’

In fact, languages may vary with respect to the question of in which type of embedded clause LD binding is allowed. However, languages that allow intervening indicative complements between the antecedent and the LD anaphor will also allow intervening subjunctives, and languages that allow intervening subjunctives will also allow intervening infinitive complements (cf. Burzio 1998). In Russian, for instance, LD binding may only cross infinitive complements, whereas in Faroese, for example, both finite and non-finite clauses may intervene.<sup>22</sup> Italian patterns like Icelandic insofar as only intervening indicative complements block LD binding.

All this suggests that the root domain is not the only domain bigger than the subject domain to which binding is sensitive. There must be a more fine-grained distinction of domains in order to capture the empirical facts. Following Rappaport (1986), I propose that the relevant missing domains are the finite and the indicative domain.

- (56) The *finite domain* of  $\alpha$  is the smallest XP that contains  $\alpha$  and a finite verb.
- (57) The *indicative domain* of  $\alpha$  is the smallest XP that contains  $\alpha$  and an indicative verb.
- (58) REFLEXIVITY IN FD (Refl.<sub>FD</sub>):  
 If  $\alpha$  is bound in its finite domain,  $\alpha$  must be maximally anaphoric.
- (59) REFLEXIVITY IN ID (Refl.<sub>ID</sub>):  
 If  $\alpha$  is bound in its indicative domain,  $\alpha$  must be maximally anaphoric.

Obviously, the finite domain can never be bigger than the indicative domain, since

---

<sup>22</sup>Strictly speaking, there is no subjunctive in Faroese; but both infinitive and indicative complements may intervene between Faroese LD anaphora and their antecedents (cf. Petersen *et al.* 1998).

an XP that fulfils the definition in (57) automatically contains a finite verb.<sup>23</sup> If the domains are again interpreted as the sets of nodes that constitute the respective domain, the following relations between all six domains result.

- (60) a.  $\theta\text{-domain} \subseteq \text{Case domain} \subseteq \text{subject domain} \subseteq \text{finite domain} \subseteq \text{indicative domain} \subseteq \text{root domain}$   
 b.  $\text{Refl.}_{ThD} \gg \text{Refl.}_{CD} \gg \text{Refl.}_{SD} \gg \text{Refl.}_{FD} \gg \text{Refl.}_{ID} \gg \text{Refl.}_{RD}$

Since the reflexivity constraints generally favour anaphoric elements, the following generalization holds: The higher the domain in which binding takes place is placed in the hierarchy in (60b), the more probable it is that the bound element is realized as a (complex) anaphor. At the same time it is predicted that if an anaphor wins if binding takes place within a certain domain, it also wins if binding is even more local. As a consequence, there can be no language that allows LD anaphora but does not have anaphors in more local binding relations. This means that we can now also account for the widely attested tendency that LD anaphora are of the SE type. In order for a SELF anaphor to be LD bound, \*SELF would have to be outranked at least by REFLEXIVITY IN FD, a reflexivity constraint concerning a rather large domain. However, this would imply that the complex anaphor would also be the optimal bindee in every smaller domain, whereas bound pronouns could never occur in these domains, and this is a scenario which is not very probable.

As far as the universal subhierarchy  $\text{Refl.}_{FD} \gg \text{Refl.}_{ID} \gg \text{Refl.}_{RD}$  is concerned, it correctly predicts that LD binding allows most likely intervening infinitive complements, then subjunctive complements, and least of all indicative complements. If only infinitive complements intervene between the antecedent and the bound element, the finite domain becomes so big that it contains exactly the same binding relations as the root domain, and thus binding takes place within the finite domain. Since REFLEXIVITY IN FD is higher ranked than REFLEXIVITY IN ID and REFLEXIVITY IN RD, LD binding is therefore more probable than if binding would only take place in the indicative domain (which would be the case if subjunctive complements intervened) or in the root domain (which would be the case if indicative complements intervened). Since REFLEXIVITY IN RD is the lowest of these three constraints, LD binding is least probable if indicative complements intervene. However, if a language allows anaphors although binding takes only place in the root domain, it follows that anaphors are also allowed if binding takes place in the more local indicative or finite domain.

Let's now reconsider the Icelandic examples in (51) and (55). In order to cap-

---

<sup>23</sup>Following Chomsky (2001), it is assumed that V-to-v movement is obligatory.

ture the split between intervening infinitive/subjunctive complements, which do not block LD binding, and indicative complements, it must be assumed that REFLEXIVITY IN FD and REFLEXIVITY IN ID are tied with \*SE,<sup>24</sup> while REFLEXIVITY IN RD is ranked below.<sup>25</sup>

*T<sub>23</sub>: (51) Jón<sub>1</sub> skipaði<sub>ind</sub> Pétri að raka<sub>inf</sub> sig<sub>1</sub>/??sjálfan sig<sub>1</sub>/hann<sub>1</sub> á hverjum degi*

Cand.	*SELF	Refl. <sub>FD</sub>   *SE   Refl. <sub>ID</sub>	Refl. <sub>RD</sub>	*PRON
O <sub>1</sub> : s.s.	*!			
⇒ O <sub>2</sub> : sig		*   *(!)   *	*	
⇒ O <sub>3</sub> : hann		**(!)     **	**	*

<sup>24</sup>If we also want to exclude pronouns from sentences like (51) (cf. footnote 21), we have to assume the following ranking instead:

Refl.<sub>FD</sub> >> \*SE ◦ Refl.<sub>ID</sub> >> Refl.<sub>RD</sub>

<sup>25</sup>I do not take into account additional factors (like discourse/logophoricity) that might play a role for LD anaphora in Icelandic (for this purpose cf., for example, Maling 1984, Thrainsson 1991; Reuland and Everaert 2001). Although I am aware of the fact that there are instances of LD anaphora that demand an analysis on the basis of pragmatic conditions like these (consider, for instance, Icelandic and Faroese LD anaphora without any syntactic antecedent), I believe that LD anaphora are not generally exempt from structural requirements (cf. also Reuland and Everaert 2001, who argue that LD anaphora in Icelandic infinitive complements obey syntactic conditions rather than logophoric ones).

Otherwise, it would be unclear why the following sentence allows an LD anaphor in Faroese but not in Icelandic, although they have exactly the same meaning and must thus involve the same pragmatic factors.

*Faroese:* (cf. Barnes 1986; Anderson 1986)

- (i) Gunnvør visti, at tey hildu lítið um seg.  
 Gunnvør knew that they held little of SE  
 ‘Gunnvør knew that they had a poor opinion of her.’

*Icelandic:*

- (ii) Gunnvör vissi að Þau höfðu lítið álit á henni/\*sér.  
 Gunnvör knew that they had little opinion on her/SE  
 ‘Gunnvör knew that they had a poor opinion of her.’

However, the difference can be accounted for if it is assumed that Faroese generally allows LD anaphora in indicative complements whereas Icelandic does not, which can be expressed with the rankings \*SE ◦ Refl.<sub>RD</sub> vs \*SE >> Refl.<sub>RD</sub>.

$T_{24}$ : (55a)  $Jón_1$  segir<sub>ind</sub> að Pétur raki<sub>sub</sub> sig<sub>1</sub>/??sjálfan sig<sub>1</sub>/hann<sub>1</sub> á hverjum degi

Cand.	*SELF	Refl. <sub>FD</sub>   *SE   Refl. <sub>ID</sub>	Refl. <sub>RD</sub>	*PRON
O <sub>1</sub> : s.s.	*!			
⇒ O <sub>2</sub> : sig		*(!)   *	*	
⇒ O <sub>3</sub> : hann		**(!)	**	*

$T_{25}$ : (55b)  $Jón_1$  veit<sub>ind</sub> að Pétur rakar<sub>ind</sub> ??sig<sub>1</sub>/\*sjálfan sig<sub>1</sub>/hann<sub>1</sub> á hverjum degi

Cand.	*SELF	Refl. <sub>FD</sub>   *SE   Refl. <sub>ID</sub>	Refl. <sub>RD</sub>	*PRON
O <sub>1</sub> : s.s.	*!			
O <sub>2</sub> : sig		*!	*	
⇒ O <sub>3</sub> : hann			**	*

In a language like Faroese, where even indicative complement clauses may intervene between LD anaphora and their antecedents (cf. Petersen *et al.* 1998), REFLEXIVITY IN RD must also be tied with \*SE, while in languages like Russian, where only infinitive complements may intervene (cf. Rappaport 1986), both REFLEXIVITY IN ID and REFLEXIVITY IN RD must be ranked below \*SE. A language without LD anaphora must have all three constraints below \*SE.<sup>26</sup>

<sup>26</sup>What has also been excluded from the discussion is the fact that LD anaphora are generally subject-oriented. Note, moreover, that this subject-object asymmetry with respect to anaphoric binding can also be found if binding is more local; in Norwegian, for example, it can even be observed if binding takes place within the  $\theta$ -domain (cf. Richards 1997 and Safir 1997).

- (i) Karl<sub>1</sub> fortalte Jon<sub>2</sub> om seg selv<sub>1,\*2</sub>.  
Karl told Jon about himself  
'Karl<sub>1</sub> told John about himself<sub>1</sub>.'

The constraints that have been introduced so far do not capture this subject-object asymmetry; however, the constraint in (ii) suffices to account for these effects.

- (ii) \*REFLEXIVITY IN VP (\*Refl.<sub>VP</sub>):  
If the first XP in which  $\alpha$  is bound is a VP,  $\alpha$  must be minimally anaphoric.

It would be taking things too far to illustrate this in more detail, but, depending on its position in the constraint hierarchy, \*Refl.<sub>VP</sub> can in fact capture the variation we encounter with respect to subject-object asymmetries. Moreover, it predicts that if a subject-object asymmetry can be observed in the domain X, it will also surface in any domain bigger than X – a prediction which seems to be borne out.

## 8. Principle C

In the previous section I introduced the additional constraint REFLEXIVITY IN RD, which says something about binding in the sentence in general. Thus, it would seem that it should be possible to account for Principle C effects on the basis of this constraint and thereby extend the presented theory of binding also to the third and last traditional binding principle.

Since Principle C of the standard Binding Theory requires that R-expressions be free, a violation comes about if an R-expression is bound somewhere in the sentence. This can be interpreted in such a way that a binding relation is established in (at least) the root domain of the R-expression, but that the R-expression is not the optimal bindee. On the assumption that R-expressions are integrated into the hierarchy of potential bound elements below pronouns and that they are therefore even less anaphoric than pronouns (cf. (61), (62)), Principle C effects, as in the German sentences in (63), can be derived without direct reference to Principle C (cf. T<sub>26</sub> and T<sub>27</sub>).<sup>27</sup> To this end, the respective R-expression is added to the candidate set, which is actually just a logical consequence if it is assumed that this set comprises *all* variants that are identical in meaning.<sup>28,29</sup>

(61) \*R-EX.: Avoid R-expressions.

(62) \*SELF ≫ \*SE ≫ \*PRON ≫ \*R-EX.

(63) a. Er<sub>1</sub> weiß, dass Maria \*Max<sub>1</sub>/ihn<sub>1</sub>/\*sich<sub>1</sub>/\*sich selbst<sub>1</sub> mag.  
he knows that Mary Max/him/SE/himself likes  
'Max<sub>1</sub> knows that Mary likes him<sub>1</sub>.'  
b. Er<sub>1</sub> mag \*Max<sub>1</sub>/\*ihn<sub>1</sub>/sich<sub>1</sub>/sich selbst<sub>1</sub>.  
he likes Max/him/SE/himself

---

<sup>27</sup>Strictly speaking, it is not necessarily the second violation of REFLEXIVITY IN THD by O<sub>3</sub> and O<sub>4</sub> which is fatal in T<sub>27</sub>. As shown in footnote 19, the tie stands for three different underlying constraint rankings, and for those orders where Refl.<sub>THD</sub> ≫ \*SELF, already the first violation is fatal.

<sup>28</sup>Again, this is just an abbreviation for the complete sentence containing the R-expression in the position of *x*.

<sup>29</sup>Since the general idea is to extend this analysis also to unbound anaphors and pronouns, the question arises as to how an unbound pronoun can ever win against an R-expression, given that \*PRON is universally higher ranked than \*R-EX. What could be assumed is that there are two different competitions. If in one of them the input requires that the element that is sought after is a (free) variable, the R-expression must be excluded from the candidate set. In this case, the pronoun will be optimal. If there is no such requirement and the R-expression is contained in the candidate set, it will come off better than the pronoun and will be the winner of the competition. An approach like this also explains why R-expressions and unbound pronouns are generally equally grammatical.

‘Max<sub>1</sub> likes himself<sub>1</sub>.’

T<sub>26</sub>: (63a) Er<sub>1</sub> weiß, dass Maria \*Max<sub>1</sub>/ihn<sub>1</sub>/\*sich<sub>1</sub>/\*sich selbst<sub>1</sub> mag

Cand.	ThD   *SELF   CD	SD	*SE	FD	ID	RD	*PRON	*R-EX.
O <sub>1</sub> : s.s.	*!							
O <sub>2</sub> : sich			*!			*		
⇒ O <sub>3</sub> : ihn						**	*	
O <sub>4</sub> : Max						* * *!		*

T<sub>27</sub>: (63b) Er<sub>1</sub> mag \*Max<sub>1</sub>/\*ihn<sub>1</sub>/sich<sub>1</sub>/sich selbst<sub>1</sub>

Cand.	ThD   *SELF   CD	SD	*SE	FD	ID	RD	*PRON	*R-EX.
⇒ O <sub>1</sub> : s.s.	*(!)							
⇒ O <sub>2</sub> : sich	*(!)     *	*	*	*	*	*		
O <sub>3</sub> : ihn	**!     **	**		**	**	**	*	
O <sub>4</sub> : Max	**!*     * * *	* * *		* * *	* * *	* * *		*

Examples like the following can be accounted for similarly. The apparently ambiguous behaviour of possessive pronouns like *seine/his*, which can be bound in their subject domain like an anaphor, as in (64), but may as well be free (as in *Mary likes his books*), is derived from the fact that there is no more anaphoric alternative. Thus it turns out to be the optimal bindee, although it is pronominal.<sup>30</sup>

- (64) Er<sub>1</sub> mag seine<sub>1</sub>/\*Peters<sub>1</sub> Bücher.  
 he likes his/Peter’s books  
 ‘He<sub>1</sub>/Peter<sub>1</sub> likes his<sub>1</sub> books.’

<sup>30</sup>Paradigmatic gaps like these generally support competition-based approaches (cf. also Burzio 1989; 1991; 1996; 1998). The distribution of first and second person pronouns in languages like Italian and German (cf. (ia) and (ib) respectively) serves as a further illustration.

- (i) a. Io<sub>1</sub> mi<sub>1</sub> vedo.  
 I me see  
 b. Ich<sub>1</sub> sehe mich<sub>1</sub>.  
 I see me  
 ‘I see myself.’

While it remains unclear in theories based on inviolable constraints why these pronouns can occur in such local binding relations where third person pronouns are generally ruled out, their occurrence in examples like these follows straightforwardly in a competition-based analysis, according to which these pronouns are allowed due to the lack of a better competing candidate.

$T_{28}$ : (64)  $Er_1$  mag seine<sub>1</sub>/\*Peters<sub>1</sub> Bücher

Cand.	ThD	*SELF	CD	SD	*SE	FD	ID	RD	*PRON	*R-EX.
$\Rightarrow$ O <sub>1</sub> : seine									*	
O <sub>2</sub> : Peters			*!		*	*	*	*		*

In contrast to the standard Binding Theory, the account of Principle C effects developed here makes it also possible to integrate languages in which R-expressions may be bound under certain conditions. Vietnamese is a case in point, as (65) illustrates.<sup>31</sup>

- (65) John<sub>1</sub> tin John<sub>1</sub> sẽ thắng.  
 John thinks John will win  
 ‘John<sub>1</sub> thinks he<sub>1</sub> will win.’

In (65), an R-expression is bound within its root domain. In languages that do not allow Principle C violations, this possibility is ruled out by the ranking REFLEXIVITY IN RD  $\gg$  \*PRON, as  $T_{26}$  showed. Thus, the facts in (65) can be easily captured if it is assumed that \*PRON is not ranked below REFLEXIVITY IN RD.<sup>32</sup>

## 9. Illusory Binding

In this section I want to discuss some constructions that are often mistaken for binding phenomena. I will argue that they do not involve binding relations and show how on this assumption the theory outlined in this paper can account for these data.

Consider, for instance, the following examples from German.

- (66) a. Max benimmt sich.  
 Max behaves SE  
 ‘Max behaves (himself).’  
 b. Max hasst sich.  
 Max hates SE  
 ‘Max hates himself.’

<sup>31</sup>The Vietnamese examples are taken from Lasnik (1991).

<sup>32</sup>As Lasnik (1991, p. 19) points out, “[a] less referential expression may not bind a more referential one”. Thus, examples like the following are ruled out.

- (i) \*Nó tin John sẽ thắng.  
 he thinks John will win  
 ‘John<sub>1</sub> thinks he<sub>1</sub> will win.’

Since this restriction seems to hold universally, it can be assumed to be part of Gen.

Superficially, the two sentences in (66) look very similar, but already the English translation indicates that there is a crucial difference. While the German SE anaphor is translated as *himself* in (66b), this is not necessarily the case in (66a). The contrast in (67) confirms the supposition that the role of *sich* cannot be the same in (66a) and (66b).

- (67) a. \*Max benimmt Peter.  
           Max behaves Peter  
       b. Max hasst Peter.  
           Max hates Peter  
           ‘Max hates Peter.’

The ungrammaticality of (67a) is due to a violation of the  $\theta$ -criterion; the verb in (67a) cannot take a direct object, in contrast to the verb in (67b). With respect to (66), it can thus be concluded that only in (66b) does the anaphor function as a direct object. And since this object is not only c-commanded by the subject but also refers to the same person as the subject, it follows that a binding relation is established. In (66a), on the other hand, the anaphor is not an argument of the verb, it rather seems to mark the verb itself. Hence, there is no binding relation between the subject and the anaphor; the subject can rather be considered to be the external argument of the predicate *sich benehmen*. Predicates of this kind are usually referred to as inherently reflexive predicates.

The conclusion that can be drawn is that anaphors in inherently reflexive predicates are occurrences of unbound reflexives.<sup>33</sup> Hence, they *a priori* pose a problem

---

<sup>33</sup>These examples must not be confused with seemingly unbound English SELF anaphors in sentences like (i).

- (i) There were three students in the room apart from himself.

As Baker (1995) and König and Siemund (2000) argue, these locally free SELF forms in English are no reflexives at all but should rather be analysed as intensified pronouns, which are “identical in form, though not in distribution” (cf. König and Siemund 2000, p. 41). This assumption is supported by the fact that in a language like German, where intensified and reflexive pronouns differ in form, only the (intensified) pronoun is grammatical in sentences like these (cf. (ii)).

- (ii) Außer ihm selbst/ihm/\*sich/\*sich selbst waren drei Studenten im Raum.  
       apart from him INTENSIFIER/him/SE/himself were three students in the room

This means that, unlike in English, the form pronoun-SELF is not ambiguous in German; it is always an intensified pronoun and cannot be analysed as SELF anaphor. In the Mainland Scandinavian languages the situation is slightly different; here, the form pronoun-SELF can function as an intensified pronoun (as in the Danish example in (iii)) or as a SELF anaphor (as in (iva)). However, the latter is only the case if the SELF anaphor is bound by an object; otherwise, the alternative SELF anaphor SE-SELF is used (cf. (ivb)). (The following Danish examples are taken

for theories that rely on some version of Chomsky's (1981) Principle A, which requires that anaphors be (locally) bound. In contrast, this is unproblematic for an approach like the present one that is based on some version of Principle B and derives Principle A effects from a syntactic competition between anaphors and pronoun. Consider, for instance, the following examples from English, German, and Dutch, respectively.<sup>34</sup>

- (68) a. Max behaves like a gentleman.  
 b. Max benimmt sich/\*sich selbst/\*ihn wie ein Gentleman.  
 Max behaves SE/himself/him like a gentleman  
 c. Max gedraagt zich/\*zichzelf/\*hem.  
 Max behaves SE/himself/him

Since no binding relation is established in these examples, it follows that the reflexivity constraints are fulfilled vacuously. Hence, they will be neglected in the tableaux in this section. However, let's assume that inherently reflexive predicates require some marking that reflects their reflexivity, and that any type of anaphor can fulfil this requirement.

- (69)  $V_{inh.refl.}$ :  
 Inherently reflexive predicates must be reflexive-marked.

- (70) Anaphors are reflexive-markers.

---

from Vikner 1985.)

- (iii) Komponisten<sub>1</sub> sagde at orkestret kun måtte spille symfonien med  
 composer-the said that orchestra-the only could play symphony-the with  
 ham selv<sub>1</sub>/ham<sub>1</sub> som dirrigent.  
 pron-SELF/him as conductor  
 'The composer said that the orchestra could only play the symphony when he<sub>1</sub> conducted them himself<sub>1</sub>.'
- (iv) a. ... at Susan fortalte Anne<sub>2</sub> om hende selv<sub>2</sub>/\*hende<sub>2</sub>/\*sig<sub>2</sub>/\*sig selv<sub>2</sub>  
 ... that Susan told Ann about pron-SELF/her/SE/SE-SELF  
 '... that Susan told Ann<sub>2</sub> about herself<sub>2</sub>'  
 b. ... at Susan<sub>1</sub> fortalte Anne om sig selv<sub>1</sub>/\*hende selv<sub>1</sub>/\*hende<sub>1</sub>/\*sig<sub>1</sub>  
 ... that Susan told Ann about SE-SELF/pron-SELF/her/SE  
 '... that Susan<sub>1</sub> told Ann about herself<sub>1</sub>'

<sup>34</sup>Native speakers of English seem to disagree with regard to the question of whether (68a) can also occur with the SELF anaphor. Other examples involving *behave* seem to be clearer; thus, sentences like *Did Peter behave himself while I was away?* are grammatical (cf. *Dictionary of Contemporary English*, s.v. *behave*). I will first restrict the discussion to the case where an inherently reflexive predicate occurs without any anaphor or pronoun and come back to the second possibility in footnote 36.

Once more, the phrasing here is borrowed from Reinhart and Reuland (1993), but it is again interpreted slightly differently, as (70) indicates. In Reinhart and Reuland's (1993) theory, inherently reflexive predicates are reflexive-marked by definition (cf. footnote 9); hence their Condition A (cf. (20)) requires that the predicate be reflexive. In the cases at hand, their approach is formally slightly inaccurate, since they define reflexivity explicitly via coindexation of coarguments, and, as argued above, it seems questionable whether anaphors that occur with inherently reflexive verbs can be considered to be arguments of these predicates. Moreover, this flaw makes it difficult to compare sentences like (68b) and (68c) with their English counterpart in (68a), which does not require any anaphor or pronoun. Thus, Reinhart and Reuland must refrain from considering English *behave* as an inherently reflexive predicate, since otherwise it would need to have two coindexed arguments in order to fulfil Condition A.

In the present approach, by contrast, there is no need to treat the sentences in (68) differently. In this case, the candidate set contains all kinds of elements that might be able to satisfy the verb's need for reflexive-marking. However, an element which has an extra meaning of its own is not allowed to be added (this is excluded by Gen); thus R-expressions are out of the question, and the candidate set only contains anaphors, pronouns, and  $\emptyset$  as potential reflexive-markers.

In German and Dutch,  $V_{inh.refl.}$  must be higher ranked than \*SE; on this assumption, it is correctly predicted that inherently reflexive predicates only occur with SE anaphors in these languages (cf. T<sub>29</sub>).<sup>35</sup> If \*SELF is higher ranked than  $V_{inh.refl.}$ , we get the correct result for the English examples in which the inherently reflexive predicate occurs without any anaphor or pronoun (cf. T<sub>30</sub>).<sup>36</sup>

---

<sup>35</sup>The availability of the SE anaphor in the Dutch example in (17) (*Max<sub>1</sub> wast zich<sub>1</sub>/zichzelf<sub>1</sub>*) can now also be explained. What is assumed is that verbs like Dutch *wassen* ('wash') are doubly listed in the lexicon (cf., among others, Reuland and Everaert 2001, p. 655); as a transitive verb, it selects the SELF anaphor as object, as inherently reflexive verb, it occurs with the SE anaphor.

<sup>36</sup>The formulation of (69) and (70) precludes SELF anaphors and pronouns from winning such a competition since SE anaphors always beat the former (due to the underlying universal sub-hierarchy), and pronouns are harmonically bounded by  $\emptyset$  because the latter generally has a better constraint profile. However, this result might be an oversimplification of the facts.

First, there are the well-known data from Frisian, where inherent reflexive predicates indeed occur with pronouns (cf., e.g., Reuland and Reinhart 1995; Reuland and Everaert 2001).

- (i) Max hâld him/\*himsels.  
Max behaves him/himself

Second, it is possible that English verbs like *behave* occur with a SELF anaphor (cf. footnote 34).

In order to account for these facts as well, (69) and (70) would have to be modified in the following way.

(69')  $V_{inh.refl.}$ :

$T_{29}$ : (68b), (68c), e.g., *Max benimmt sich/\*sich selbst/\*ihn wie ein Gentleman*

Input: M. benimmt <sub>inh.refl.</sub> wie ein G.	$V_{inh.refl.}$	*SELF	*SE	*PRON
O <sub>1</sub> : sich selbst		*!		
⇒ O <sub>2</sub> : sich			*	
O <sub>3</sub> : ihn	*!			*
O <sub>4</sub> : ∅	*!			

$T_{30}$ : (68a) *Max behaves like a gentleman*

Candidates	*SELF	$V_{inh.refl.}$	*SE	*PRON
O <sub>1</sub> : himself	*!			
O <sub>2</sub> : him		*		*!
⇒ O <sub>3</sub> : ∅		*		

This kind of analysis can be extended to other uses of the SE anaphor where it is no longer used referentially. Consider, for instance, middle constructions in German, where SE anaphors are used “as markers of derived intransitivity” (cf. König and Siemund 2000, p. 59, 63):

- (71) a. Dieses Hemd bügelt sich leicht.  
           this shirt irons SE easily  
       b. This shirt irons easily.

If in the analysis above  $V_{inh.refl.}$  is replaced with a constraint like the following, the theory also accounts for the sentences in (71).

- (72)  $V_{der.intr.}$ :  
       Derived intransitivity must be marked with a reflexive-marker.

Moreover, if it is no longer assumed that the input presupposes a binding relation but is more generally based on the identical meaning of the output candidates, it is possible to account for the following example along the same lines.

---

Inherently reflexive predicates must be *maximally* reflexive-marked.

- (70') The more anaphoric an element is, the better it serves as a reflexive-marker.

$V_{inh.refl.}$  would thus be a gradient constraint that would not be violated at all by SELF anaphors, once by SE anaphors, twice by pronouns, and three times by ∅. On this assumption, all four candidates could turn out to be optimal; SELF anaphors under the ranking  $V_{inh.refl.} \gg *SELF \gg *SE \gg *PRON$ , SE anaphors under the ranking  $*SELF \gg V_{inh.refl.} \gg *SE \gg *PRON$ , pronouns under the ranking  $*SELF \gg *SE \gg V_{inh.refl.} \gg *PRON$ , and ∅ under the ranking  $*SELF \gg *SE \gg *PRON \gg V_{inh.refl.}$ .

- (73) a. \*Sich friert.  
SE is cold
- b. Ihn friert.  
him<sub>acc</sub> is cold  
'He's cold.'

The ungrammaticality of (73a) cannot be derived from Case theory, because, as (73b) shows, the argument must bear Accusative Case, which is available for the German SE anaphor (cf. also Kiss 2001, p. 10). However, on the assumption that the two variants in (73) are candidates in the same competition, it follows naturally that (73b) wins against (73a): If there is no binding relation at all, the reflexivity constraints apply vacuously, and hence, in the unmarked case, the pronoun generally comes off better than the anaphors.<sup>37</sup>

$T_{31}$ : (73) *Ihn*/\**sich* friert

Candidates	*SELF	*SE	*PRON
O <sub>1</sub> : sich selbst	*!		
O <sub>2</sub> : sich		*!	
⇒ O <sub>3</sub> : ihn			*

## 10. Conclusion

To conclude, let me summarize the main findings of this paper. I have argued that many apparent exceptions to the standard Binding Theory can be captured in a straightforward way if it is assumed that the principles relevant for binding are violable. Such an approach is furthermore supported by the near-complementary distribution of anaphors and pronouns (optionality can only result from tied con-

<sup>37</sup>Here, the candidate involving  $\emptyset$  is not a competitor because it violates the  $\theta$ -criterion, which is part of Gen.

Note moreover that in contrast to the general observation that unbound pronouns and R-expressions are interchangeable (cf. footnote 29), this is not the case in (73) (cf. (i)). But the reason why an R-expression (with Accusative Case) sounds weird in this example seems to me to be related to the fact that the construction in (ii) is the more common way to express this. Thus, (i) might just be obsolete.

- (i) ??Den Mann friert.  
[the man]<sub>acc</sub> is cold  
'The man is cold.'
- (ii) Der Mann friert.  
[the man]<sub>nom</sub> is cold  
'The man is cold.'

straints), paradigmatic gaps in the anaphoric system of languages, and in particular the broad range of crosslinguistic variation we encounter in this field. Thus I propose an optimality-theoretic analysis which is basically restricted to two groups of constraints.

Based on the insight that binding is sensitive to different kinds of domains, I have introduced the so-called reflexivity constraints. These constraints penalize the binding of non-maximally anaphoric elements in domains of different size. The data considered in this paper reveal that the set of domains relevant for binding does not only comprise the well-known traditional binding domain (here: subject domain), but also the  $\theta$ -domain, the Case domain, the finite domain, the indicative domain, and the root domain. Furthermore, it is assumed that the reflexivity constraints associated with smaller domains are universally higher ranked than those associated with bigger domains. Thus, we obtain the following universal hierarchy.

$$(74) \quad \text{Refl.}_{ThD} \gg \text{Refl.}_{CD} \gg \text{Refl.}_{SD} \gg \text{Refl.}_{FD} \gg \text{Refl.}_{ID} \gg \text{Refl.}_{RD}$$

The constraints of the second group penalize the occurrence of certain elements in general. They are ordered in such a way that less anaphoric elements are generally preferred. This is expressed in the universal hierarchy in (75).

$$(75) \quad *SELF \gg *SE \gg *PRON \gg *R\text{-EX.}$$

The result is a system which is both restrictive and flexible. As far as crosslinguistic variation is concerned, reranking is restricted to the interaction between the two hierarchies in (74) and (75); but since each group of constraints can be split up into even more fine-grained constraints, the system remains flexible enough to capture all kinds of variation.

The competition itself works as follows. If there is a binding relation in a given sentence, it selects the optimal bindee for the designated antecedent. If there is no binding relation at all, the reflexivity constraints do not play a role, but the occurrence of an element  $\in \{SE \text{ anaphor}, SELF \text{ anaphor}, \text{pronoun}, \emptyset\}$  can still be predicted on the basis of the other constraints. Thus, this theory makes it possible to account for the occurrences of simplex anaphors, complex anaphors, pronouns, and R-expressions in a uniform and straightforward way.

## 11. Appendix: Universal Constraint Subhierarchies

Let us now come back to the question of whether the two universal constraint subhierarchies in (74) and (75) can be derived by some established mechanism of

constraint generation.

As far as the hierarchy in (75) is concerned, it has already been argued that it is based on a hierarchy that reflects a decrease in anaphoricity.<sup>38</sup> The constraint ranking is then derived by assuming that elements that are less anaphoric are generally preferred.

The second constraint subhierarchy is first of all based on the set-theoretic relation that underlies all the domains involved: If the domains are abbreviated as  $D_1-D_n$  ( $n \in \mathbb{N}$ ), it can be concluded that  $D_i \subseteq D_j$  or  $D_j \subseteq D_i \forall i, j \in \{1, \dots, n\}$ , which means that the domains can be ordered as follows:  $D_1 \subseteq \dots \subseteq D_n$ . This relation implies that if a binding relation is established within  $D_i$ , it is also established within  $D_j$ ,  $i < j$  (consider for example  $D_i := \theta$ -domain,  $D_j :=$ subject domain); and if we assume further that there are constraints that generally penalize binding within certain domains (cf. (76a)), it follows that violations of constraints that concern smaller domains always imply violations of constraints concerning bigger domains.

- (76) a. A: NO BINDING WITHIN  $D_i$   
          B: NO BINDING WITHIN  $D_j, i < j$   
      b. violation of constraint A  $\Rightarrow$  violation of constraint B

Because of this relation (cf. (76b)) it seems reasonable to assume that constraint A outranks constraint B; otherwise a candidate violating only B (like  $O_2$  in  $T_{32}$  and  $T_{33}$ ) would in many configurations turn out to be as bad as a candidate that violates both A and B (like  $O_1$  in  $T_{32}$  and  $T_{33}$ ), which would inevitably assimilate the effects of the two constraints (cf. the scenario in the following two tableaux, where an additional constraint C is involved).<sup>39</sup>

---

<sup>38</sup>If we consider the hierarchy SELF > SE > pronoun > R-expression (where A>B indicates that A is more anaphoric than B), it becomes evident that the decrease in anaphoricity correlates to some extent with an increase in referentiality, a notion that is central to Burzio's (1989; 1991; 1996; 1998) work. His approach to binding, which is also based on violable principles, crucially relies on the referential hierarchy anaphor > pronoun > R-expression. What he assumes is that, in the default case, a bound NP must be maximally underspecified referentially (Referential Economy). Thus, anaphors are generally preferred to pronouns, which are in turn preferred to R-expressions, unless the preferred elements are blocked by some other principle, e.g. a locality requirement; however, an explicit technical elaboration is not provided (but cf. Wilson 2001, which crucially relies on Burzio's work).

The present approach seems to work exactly the other way round; due to the subhierarchy in (75), less anaphoric elements are generally preferred unless some other constraint (e.g. a reflexivity constraint) intervenes. However, (77b) shows that the connection between the two types of approaches is closer than one might think initially (cf. also footnote 41).

<sup>39</sup>However, it is not the case that A would no longer have any effect at all if it were ranked below B. In a scenario like the following, for example, it still depends on A whether  $O_1$  or  $O_2$  wins.

$T_{32}: A \gg B: O_1$  and  $O_2$  come off differently because  $O_1$  additionally violates A;

Candidates	A	C	B
$O_1$	*!		*
$\Rightarrow O_2$			*(!)
$\Rightarrow O_3$		*(!)	

$T_{33}: B \gg A: the additional violation of A by  $O_1$  does not have an effect; B alone decides the competition, and thus  $O_1$  and  $O_2$  come off equally bad;$

Candidates	B	C	A
$O_1$	*!		*
$O_2$	*!		
$\Rightarrow O_3$		*	

What we have seen so far is that, given the set-theoretic relation between the domains, it is plausible to assume a constraint hierarchy like the following: NO BINDING WITHIN  $D_i \gg$  NO BINDING WITHIN  $D_j, i < j$ . Let's assume further that there is another (gradient) constraint which says that if we do have a binding relation, the bound element should be maximally anaphoric (cf. (77b)).

- (77) a.  $A \gg B :=$  NO BIND. WITHIN  $D_i \gg$  NO BIND. WITHIN  $D_j, i < j$   
 b. C := Bound elements must be maximally anaphoric.

If (77b) is now locally conjoined with the subhierarchy in (77a), we get, by definition, the subhierarchy  $A \& C \gg B \& C$ .<sup>40</sup> What is unclear so far is how local conjunction interacts with gradiency. In order to be able to derive gradient constraints by local conjunction, it must be assumed that gradiency is transmitted to the conjoined constraints from its components. Thus I propose that the gradiency of constraint C in (77b) is passed over to the constraint subhierarchy  $A \& C \gg B \& C$ , which corresponds now exactly to the second universal subhierarchy proposed in the present approach (cf. (74)).<sup>41</sup> This result is illustrated in the

$T_i: possible effect of constraint A under the ranking  $B \gg A$$

Candidates	B	A	C
$O_1$	*	*!	
$\Rightarrow O_2$	*		*

<sup>40</sup>Local conjunction:

- (i) The local conjunction of  $C_1$  and  $C_2$  in domain  $D$ ,  $C_1 \& C_2$ , is violated when there is some domain of type  $D$  in which both  $C_1$  and  $C_2$  are violated. Universally,  $C_1 \& C_2$  dominates  $C_1$  and  $C_2$  (cf. Smolensky 1995; Aissen 1999).  
 (ii) The local conjunction of  $C_1$  with subhierarchy  $[C_2 \gg C_3 \gg \dots \gg C_n]$  yields the subhierarchy  $[C_1 \& C_2 \gg C_1 \& C_3 \gg \dots \gg C_1 \& C_n]$  (cf. Aissen 1999).

<sup>41</sup>Constraint C comprises Burzio's Principle of Referential Economy (cf. also footnote 38).

following tableaux, where  $D_i$  is replaced with ThD ( $\theta$ -domain) and  $D_j$  with SD (subject domain), for concreteness' sake. As can be seen, A & C then corresponds to REFLEXIVITY IN THD, and B & C corresponds to REFLEXIVITY IN SD.

(78) *Constraints:*

A: NO BINDING WITHIN THD

B: NO BINDING WITHIN SD

C: Bound elements must be maximally anaphoric.

Refl.<sub>ThD</sub>: If  $\alpha$  is bound in its ThD,  $\alpha$  must be maximally anaphoric.

Refl.<sub>SD</sub>: If  $\alpha$  is bound in its SD,  $\alpha$  must be maximally anaphoric.

$T_{34}$ : *binding outside SD/ThD*

Candidates	A	B	C	A & C	B & C	Refl. <sub>ThD</sub>	Refl. <sub>SD</sub>
O <sub>1</sub> : SELF							
O <sub>2</sub> : SE			*				
O <sub>3</sub> : pron.			**				

$T_{35}$ : *binding within SD but outside ThD*

Candidates	A	B	C	A & C	B & C	Refl. <sub>ThD</sub>	Refl. <sub>SD</sub>
O <sub>1</sub> : SELF		*					
O <sub>2</sub> : SE		*	*		*		*
O <sub>3</sub> : pron.		*	**		**		**

$T_{36}$ : *binding within SD/ThD*

Candidates	A	B	C	A & C	B & C	Refl. <sub>ThD</sub>	Refl. <sub>SD</sub>
O <sub>1</sub> : SELF	*	*					
O <sub>2</sub> : SE	*	*	*	*	*	*	*
O <sub>3</sub> : pron.	*	*	**	**	**	**	**

## Acknowledgements

For valuable comments and discussion I want to thank Artemis Alexiadou, Gunnar Hrafn Hrafnbjargarson, Joan Maling, Gereon Müller, Wolfgang Sternefeld, Sten Vikner, and the audiences at talks given at the GGS-conference 2001 (Bochum University), at Tübingen University, at the *Workshop zur Reflexivierung* (IDS Mannheim, 2001), and at WOTS 6 (Potsdam University, 2002). Thanks also to all native speakers who helped me with their judgements.

---

Hence, the reflexivity constraints can be considered to be an elaboration of this principle that additionally take into account the different domains in which binding can take place and the resulting differences with respect to the realization of the bound element.

## References

- Aissen, Judith. 1999. 'Markedness and Subject Choice in Optimality Theory', *Natural Language and Linguistic Theory* **17**, 673-711. Reprinted in G. Legendre, J. Grimshaw, and S. Vikner (eds.), *Optimality-Theoretic Syntax*, Bradford Books and MIT Press, London and Cambridge, MA, pp. 61-96.
- Aissen, Judith. 2000. 'Differential Object Marking: Iconicity vs. Economy', ms., University of California at Santa Cruz.
- Anderson, Stephen. 1986. 'The Typology of Anaphoric Dependencies: Icelandic (and other) Reflexives', in L. Hellan and K. Koch Christensen (eds.), *Topics in Scandinavian Syntax*, Reidel, Dordrecht, pp. 65-88.
- Baker, Carl L. 1995. 'Contrast, Discourse Prominence, and Intensification, with Special Reference to Locally Free Reflexives in British English', *Language* **71**, 63-101.
- Barnes, Michael P. 1986. 'Reflexivisation in Faroese: A Preliminary Survey', *Arkiv för Nordisk Filologie* **101**, 95-126.
- Bresnan, Joan and Judith Aissen. 2002. 'Optimality and Functionality: Objections and Refutations', *Natural Language and Linguistic Theory* **20**, 81-95.
- Burzio, Luigi. 1989. 'On the Non-Existence of Disjoint Reference Principles', *Rivista di Grammatica Generativa* **14**, 3-27.
- Burzio, Luigi. 1991. 'The Morphological Basis of Anaphora', *Journal of Linguistics* **27**, 81-105.
- Burzio, Luigi. 1992. 'On the Morphology of Reflexives and Impersonals', in C. Lauefer and T. Morgan (eds.), *Theoretical Analyses in Romance Linguistics (LSRL XIX)*, John Benjamins, Amsterdam, pp. 399-414.
- Burzio, Luigi. 1994. 'Weak Anaphora', in G. Cinque, J. Koster, L. Rizzi, and R. Zanuttini (eds.), *Paths towards a Universal Grammar: Studies in Honor of Richard S. Kayne*, Georgetown University Press, Washington DC, pp. 59-84.
- Burzio, Luigi. 1996. 'The Role of the Antecedent in Anaphoric Relations', in R. Freidin (ed.), *Current Issues in Comparative Grammar*, Kluwer, Dordrecht, pp. 1-45.
- Burzio, Luigi. 1998. 'Anaphora and Soft Constraints', in P. Barbosa, D. Fox, P. Hagstrom, M. McGinnis, and D. Pesetsky (eds.), *Is the Best Good Enough?*, MIT Press, Cambridge, MA, pp. 93-113.
- Chomsky, Noam. 1981. *Lectures on Government and Binding*, Foris, Dordrecht.
- Chomsky, Noam. 1986a. *Barriers*, MIT Press, Cambridge, MA.
- Chomsky, Noam. 1986b. *Knowledge of Language*, Praeger, New York.
- Chomsky, Noam. 1995. *The Minimalist Program*, MIT Press, Cambridge, MA.

- Chomsky, Noam. 2001. 'Beyond Explanatory Adequacy', ms., MIT, Cambridge, MA.
- Dictionary of Contemporary English*. <sup>3</sup>1995. Langenscheidt-Longman, München.
- Everaert, Martin. 1986. *The Syntax of Reflexivization*, Foris, Dordrecht.
- Fanselow, Gisbert. 1991. *Minimale Syntax*, habilitation thesis, Universität Passau.
- Fischer, Silke. 2001. 'On the Integration of Cumulative Effects into Optimality Theory', in G. Müller and W. Sternefeld (eds.), *Competition in Syntax*, Mouton de Gruyter, Berlin, pp. 151-173.
- Giorgi, Alessandra. 1984. 'Toward a Theory of Long Distance Anaphors: A GB Approach', *The Linguistic Review* **3**, 307-361.
- Grimshaw, Jane. 1997. 'Projection, Heads, and Optimality', *Linguistic Inquiry* **28**, 373-422.
- Heck, Fabian, Gereon Müller, Ralf Vogel, Silke Fischer, Sten Vikner, and Tanja Schmid. 2002. 'On the Nature of the Input in Optimality Theory', *The Linguistic Review* **19**, 345-376.
- Hestvik, Arild. 1991. 'Subjectless Binding Domains', *Natural Language and Linguistic Theory* **9**, 455-496.
- Kiparsky, Paul. 2002. 'Disjoint Reference and the Typology of Pronouns', in I. Kaufmann and B. Stiebels (eds.), *More than Words. A Festschrift for Dieter Wunderlich*, Akademie Verlag, Berlin, pp. 179-226.
- Kiss, Tibor. 2001. 'Anaphora and Exemptness. A Comparative Treatment of Anaphoric Binding in German and English', ms., Ruhr-Universität Bochum, <http://www.linguistics.ruhr-uni-bochum.de/~kiss>.
- König, Ekkehard and Peter Siemund. 2000. 'Intensifiers and Reflexives: A Typological Perspective', in Z. Frajzyngier and T. S. Curl (eds.), *Reflexives. Forms and Functions*, John Benjamins, Amsterdam, pp. 41-74.
- Koster, Jan. 1984. 'Reflexives in Dutch', in J. Guéron, H.-G. Obenauer, and J.-Y. Pollock (eds.), *Grammatical Representation*, Foris, Dordrecht, pp. 141-167.
- Lasnik, Howard. 1991. 'On the Necessity of Binding Conditions', in R. Freidin (ed.), *Principles and Parameters in Comparative Grammar*, MIT Press, Cambridge, MA, pp. 7-28.
- Legendre, Géraldine, Paul Smolensky, and Colin Wilson. 1998. 'When is Less More? Faithfulness and Minimal Links in Wh-Chains', in P. Barbosa, D. Fox, P. Hagstrom, M. McGinnis, and D. Pesetsky (eds.), *Is the Best Good Enough?*, MIT Press, Cambridge, MA, pp. 249-289.
- Maling, Joan. 1984. 'Non-Clause-Bounded Reflexives in Modern Icelandic', *Linguistics and Philosophy* **7**, 211-241.

- Manzini, Rita M. and Kenneth Wexler. 1987. 'Parameters, Binding Theory, and Learnability', *Linguistic Inquiry* **18**, 413-444.
- Menuzzi, Sergio. 1999. *Binding Theory and Pronominal Anaphora in Brazilian Portuguese*, Holland Academic Graphics, Leiden.
- Müller, Gereon. 2000. *Elemente der optimalitätstheoretischen Syntax*, Stauffenburg, Tübingen.
- Newmeyer, Frederick. 2002a. 'Optimality and Functionality: A Critique of Functionally-Based Optimality-Theoretic Syntax', *Natural Language and Linguistic Theory* **20**, 43-80.
- Newmeyer, Frederick. 2002b. 'A Rejoinder to Bresnan and Aissen', *Natural Language and Linguistic Theory* **20**, 97-99.
- Petersen, Hjalmar P., Jógvan í Lon Jacobsen, Zakaris S. Hansen, and Höskuldur Thráinsson. 1998. 'Faroese: An Overview for Students and Researchers', ms., University of Iceland and Academy of the Faroes.
- Pica, Pierre. 1986. 'De Quelques Implications Théoriques de l'Étude des Relations à Longue Distance', in M. Ronat and D. Couquaux (eds.), *La Grammaire Modulaire*, Minuit, Paris, pp. 187-209.
- Pollard, Carl and Ivan A. Sag. 1992. 'Anaphors in English and the Scope of Binding Theory', *Linguistic Inquiry* **23**, 261-303.
- Prince, Alan and Paul Smolensky. 1993. 'Optimality Theory: Constraint Interaction in Generative Grammar', ms., Rutgers University and University of Colorado at Boulder.
- Rappaport, Gilbert. 1986. 'On Anaphor Binding in Russian', *Natural Language and Linguistic Theory* **4**, 97-120.
- Reinhart, Tanya and Eric Reuland. 1991. 'Anaphors and Logophors: An Argument Structure Perspective', in J. Koster and E. Reuland (eds.), *Long-Distance Anaphora*, Cambridge University Press, Cambridge, pp. 283-321.
- Reinhart, Tanya and Eric Reuland. 1993. 'Reflexivity', *Linguistic Inquiry* **24**, 657-720.
- Reuland, Eric and Martin Everaert. 2001. 'Deconstructing Binding', in M. Baltin and C. Collins (eds.), *The Handbook of Contemporary Syntactic Theory*, Blackwell, Oxford, pp. 634-669.
- Reuland, Eric and Tanya Reinhart. 1995. 'Pronouns, Anaphors and Case', in H. Haider, S. Olsen, and S. Vikner (eds.), *Studies in Comparative Germanic Syntax*, Kluwer, Dordrecht, pp. 241-268.
- Richards, Norvin. 1997. 'Competition and Disjoint Reference', *Linguistic Inquiry* **28**, 178-187.
- Rizzi, Luigi. 1990. *Relativized Minimality*, MIT Press, Cambridge, MA.
- Roberts, Ian. 1997. *Comparative Syntax*, Arnold, London.

- Safir, Ken. 1997. 'Symmetry and Unity in the Theory of Anaphora', in H. Bennis, P. Pica, and J. Rooryck (eds.), *Atomism and Binding*, Foris, Dordrecht, pp. 341-379.
- Smolensky, Paul. 1995. 'On the Internal Structure of Con, the Constraint Component of UG', ms., Johns Hopkins University.
- Sternefeld, Wolfgang. 1985. 'Deutsch ohne grammatische Funktionen: Ein Beitrag zur Rektions- und Bindungstheorie', *Linguistische Berichte* **99**, 394-439.
- Thráinsson, Höskuldur. 1979. *On Complementation in Icelandic*, Garland, New York.
- Thráinsson, Höskuldur. 1991. 'Long-Distance Reflexives and the Typology of NPs', in J. Koster and E. Reuland (eds.), *Long-Distance Anaphora*, Cambridge University Press, Cambridge, pp. 49-75.
- Vikner, Sten. 1985. 'Parameters of Binder and of Binding Category in Danish', *Working Papers in Scandinavian Syntax* **23**, 1-61.
- Vikner, Sten. 2001. *Verb Movement Variation in Germanic and Optimality Theory*, habilitation thesis, Universität Tübingen.
- Wilson, Colin. 2001. 'Bidirectional Optimization and the Theory of Anaphora', in G. Legendre, J. Grimshaw, and S. Vikner (eds.), *Optimality-Theoretic Syntax*, Bradford Books and MIT Press, London and Cambridge, MA, pp. 465-507.