Symmetric but non complementary: On the gradient paradigmatic opposition of possessive forms in Estonian

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1 Introduction: possessives and binding theory

This talk will investigate properties of *reflexive* proforms, which strive to be bound by a member of a designated set of local expressions, and *antireflexive* proforms, which have the opposite tendency. In English, reflexive *himself/herself/itself* can be bound by any local less oblique element, while antireflexive *him/her/it* can't. In many other languages the designated set is limited to the local subject. Both reflexives and antireflexives contrast with *neutral* proforms that are not subject to such binding constraints, such as the English possessives *his/her/its*.

Classical binding theory regulates the distribution of reflexives and antireflexives through the separate but complementary principles A and B: reflexives must be bound by a commanding expression in their binding domains, while antireflexives can't. An appropriate definition of binding domains that captures the whole distribution of each proform is thus a crucial ingredient of the theory. For English, the relevant binding domain for reflexives is taken to be what Büring (2005) calls the SUBJECT DOMAIN, i.e. the smallest constituent containing the reflexive and either a subject or a possessive. This makes the correct predictions about the binding of *herself* in the following examples, where the binding domain is indicated in square brackets.

(1) a. [She$_i$ washes herself$_i$].
b. [She$_i$ saw a picture of herself$_i$].
c. [Jane$_i$'s picture of herself$_i$] is beautiful.

One of the main challenges facing classical binding theory was to account for situations of noncomplementarity in the distribution of reflexives and antireflexives.[1] Standard accounts (Chomsky, 1981; Kuno, 1987; Hestvik, 1991) rely on the idea that different proforms have qualitatively different binding domains. In particular, English antireflexives rely on the COARGUMENT DOMAIN, the smallest constituent containing the head assigning a θ–role to the proform. As the coargument domain is, in some configurations, smaller than the subject domain, this correctly predicts an overlap between the distribution of English reflexives and antireflexives. Sometimes smaller than the subject, rather than the subject domain, accounting for the overlap between their distribution and that of antireflexives. This is for instance the case in (2), where *around* assigns a θ–role to its object but does not have a subject.

(2) [$_{\text{SD}}$ John$_i$ looked [$_{\text{CD}}$ around himself$_i$/him$_i$]]

In this talk we focus on POSSESSIVE reflexives and antireflexives, which present important challenges to standard views on binding. Estonian is an example of a language with such types of proforms. In simple clauses, they exhibit the expected complementary distribution: reflexive *oma* must be bound by the local subject, while adnominal genitive pronouns such as 1SG *minu* and 2SG *sinu*, as antireflexives, can't (Erelt et al., 1993; Metslang, 2013).

[1] Other challenges include what we call above neutral proforms (Zribi-Hertz, 1995), exempt anaphors (Pollard & Sag, 1992), and long-distance reflexives (Dalrymple, 1993). Note that we avoid the descriptive vocabulary of Chomsky (1981), which does not do justice to the diversity of binding tendencies investigated here. We also ignore reciprocals.

(3) a. *Ma* *loe-n* *oma* *ramatut.*
1SG.NOM read-1SG REFL.POSS book.PART
'I read my book.'

b. *Ma* *loe-n* *sinu* *ramatut.*
1SG.NOM read-1SG 2SG.GEN book.PART
'I read your book.'

c. * *Ma* *loe-n* *minu* *ramatut.*
1SG.NOM read-1SG 1SG.GEN book.PART

Now, let us lets consider the distribution of these forms in embedded infinitives, where both reflexives and antireflexives may be bound by either the implicit embedded subject or the subject of the embedding finite clause.

(4) a. Ma_i *luba-n* $sind_j$ PRO_j $oma_{i/j}$ *kredikaarti* *kasuta-da.*
1SG.NOM autorize-1SG 2SG.PART REFL.POSS credit_card.PART use-INF
'I give you permission to use my/your credit card. '

b. Ma_i *luba-n* $sind_j$ PRO_j $minu_i$ *kredikaarti* *kasuta-da.*
1SG.NOM autorize-1SG 2SG.PART 1SG.GEN credit_card.PART use-INF
'I give you permission to use my credit card. '

c. Ma_i *luba-n* $sind_j$ PRO_j $sinu_j$ *kredikaarti* *kasuta-da.*
1SG.NOM autorize-1SG 2SG.PART 2SG.GEN credit_card.PART use-INF
'I give you permission to use your credit card. '

The data so far is consistent with postulating that reflexive *oma*, must be bound in the TENSE DOMAIN, as has been proposed for its Norwegian equivalent (Hellan, 1988). However, there is no specification of a binding domain that will account for the distribution of antireflexives in both (3) and (4): in (4b-c) the antireflexive can be bound by both the local subject and the subject of the first finite clause, while in (3c), that is ruled out. This pattern, also found in other languages with possessive reflexives, including Czech, Danish (Lundquist, 2014) and Swedish (Tingsell, 2007) suggests that no cross-constructionally valid choice of a binding domain will account for the distribution of antireflexive possessives. However, it is not satisfactory either to assume that these proforms are immune to the constraints captured by binding principles, given the sharp judgements in (3). In the next section we further argue that, in situations like (4) where there is no categorical constraint on the use of a reflexive or antireflexive, there are still gradient preferences going in the direction of the binding principles.

2 Experimental results

This section describes the results of two experiments documenting the interpretation of Estonian reflexive and antireflexive possessives in contexts other than prototypical simple finite clauses. This is a post hoc analysis, as the experiments were run with a different purpose. In both cases, participants read sentences and then answered a question eliciting the referent of the possessive form, with two semantically and morphologically plausible choices.

2.1 Experiment 1: Binding in embedded infinitives

The first experiment ($N = 76$) [2], had six conditions. Three types of expression of the possessor were possible: reflexive, antireflexive possessive or no overt expression. There were also two syntactic contexts: the proform was either in an independent clause preceded by another clause containing a

[2]Lesage & Bonami (2021) describes this experience in detail.

Clause type	Proform	Example
Independent	Reflexive	*Peeter on kõik läbi mõelnud. Triinu jätab oma dokumendid registratuuri.*
	Antireflexive	*Peeter on kõik läbi mõelnud. Triinu jätab tema dokumendid registratuuri.*
		'Peeter made arrangements. Triinu will leave his/her documents at the reception.'
Infinitive	Reflexive	*Peeter laseb Triinul oma dokumendid registratuuri jätta.*
	Antireflexive	*Peeter laseb Triinul tema dokumendid registratuuri jätta.*
		'John allowed Donald to leave his/her documents at the reception.'
Sentence to fill		_____ *dokumendid jäetakse registratuuri.*
		'Someone left _____'s documents at the reception.'

Table 1: Materials for experiment 1

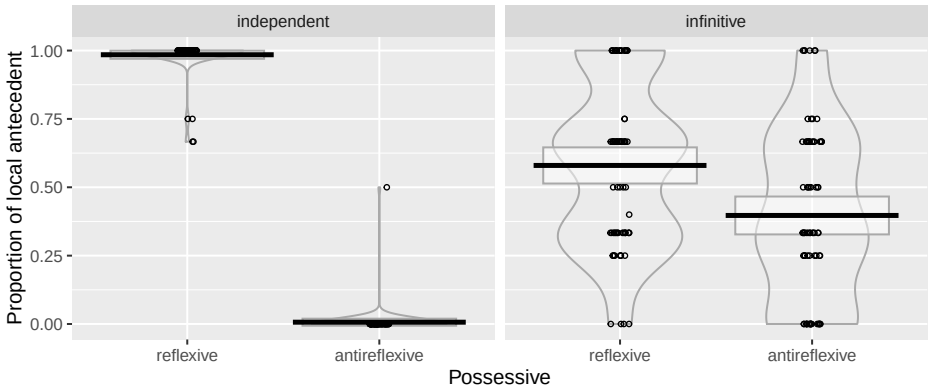

Figure 1: Main results of experiment 1. The horizontal line is the global mean, with the box around it specifying the 95% confidence intervals assuming a normal sampling distribution. Individual points indicate by-participant averages.

possible antecedent, or in an embedded infinitive clause where the main clause contained a possible antecedent. Sample materials are shown in Table 1. Figure 1 confirms our observation that reflexives and antireflexives are in complementary distribution in simple finite clauses but not in embedded infinitives. In addition however, we see that the proportion of local antecedents is higher for reflexives than for antireflexives embedded in an infinitive[3]. A generalized mixed model trained only on possessives in infinitive clauses confirmed the statistical significance of the effect.

2.2 Experiment 2: Binding with noncanonical argument structure constructions

The second experiment ($N = 95$) focuses on simple finite clauses [4], and compares binding preferences in constructions with two arguments: canonical transitive constructions, with an agentive subject and a beneficiary in the allative (henceforth BenAll); canonical transitive constructions with an experiencer subject in the nominative and a stimulus object in the partitive (ExpNom); and noncanonical constructions, with a nominative argument realizing the stimulus and a realization of the experiencer in the allative (ExpAll). In addition, each sentence contained a possessive embedded in an oblique dependent of the verb; hence both arguments were potential antecedents for that possessive. For each construction, type of possessive (reflexive vs. antireflexive) and word order (preverbal vs. postverbal subject) were manipulated. Sample materials are shown in Table 2.

As the descriptive statistics in Figure 2 illustrates, we get near to a complementary distribution

[3]A similar experiment run in Czech exhibits analogous pattern of results.
[4]Lesage (accepted) for more dettail about this experiment.

ARG-ST	Order	Example
BenAll	SX	*Laur laenas Jaanile ülikonna oma/tema õe pulmade jaoks.*
	XS	*Jaanile laenas Laur ülikonna oma/tema õe pulmade jaoks.*
		'Laur lend a suit to Jaan for his sistser's wedding.'
	Question	*Kelle õe pulmadest on juttu?*
		Whose marriage is it about?
ExpNom	SX	*Karl põlgas Tiinat oma/tema sotsiaalse päritolu tõttu.*
	XS	*Tiinat põlgas Karl oma/tema sotsiaalse päritolu tõttu.*
		'Karl despises Tiina because of his/her social class.'
	Question	*Kelle sotsiaalse päritolust on juttu?*
		Whose social condition is in question?
ExpAll	SX	*Inga meeldis Egertile oma/tema õnnetuseks.*
	XS	*Egertile meeldis Inga oma/tema õnnetuseks.*
		'Egert loved Inga for his great misfortune.'
	Question	*Kelle õnnetusest on juttu?*
		Whose misfortune are we talking about?

Table 2: Materials for experiment 2

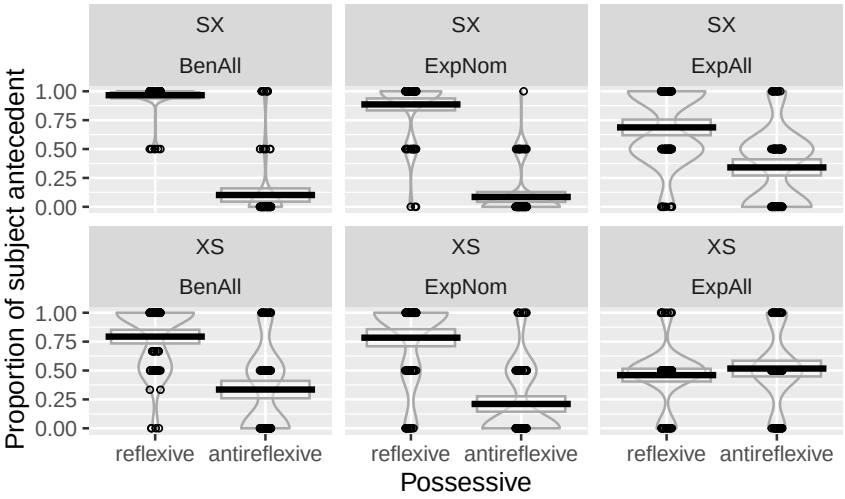

Figure 2: Main results of experiment 2.

between reflexives and antireflexives when the argument structure construction is canonical (BenAll or ExpNom) and the word order is too (SX). If either argument structure or word order depart from the canon, the categorical distinction becomes a mere tendency. No difference of behavior between the two types of possessives is found when the sentence is noncanonical in both dimensions.

3 Gradient paradigmatic opposition

The experimental results above lead to two striking generalizations. First, while the binding preferences of reflexives and antireflexives do not always lead to a complementary distribution, they are always symmetric: the proportion of choice of one antecedent for the reflexive matches the proportion of choice of the other for the antireflexive. Second, the strength of these preferences varies with the typicality of the syntactic configuration: preferences are maximal in simple finite clauses with a canonical word order and no oblique; weaker for less typical clause types (nonfinite), argument structure constructions, or word orders; unperceivable if the configuration is atypical in more than

one dimension.

To account for this situation, we propose to appeal to the logic of paradigmatic opposition. We start from the many studies (Bouchard, 1983; Yadurajan, 1987; Burzio, 1996, 1998; Kiparsky, 2002; Rooryck & Vanden Wyngaerd, 2011) arguing that the symmetric behavior of reflexive and antireflexive expressions should be accounted for with a single mechanism, rather than two independent principles. To this end they posit that the distribution of antireflexives is due to a blocking effect attributable to the Elsewhere Principle familiar from phonology and morphology (Kiparsky, 1973; Anderson, 1992): antireflexive forms are used where reflexives forms are not available. As elegant as it is, this formulation cannot deal with the present data, as it is crucially dependent on reflexives and antireflexives being non only paradigmatically opposed but in complementary distribution. Instead, we submit that an adequate account of binding constraints for Estonian possessives relies on replacing binding principles with four ingredients:

(5) a. A characterization of the BINDING DOMAIN for each reflexive proform. In any sentence, we call REFLEXIVE BINDING TARGETS (RBTs) all commanding referential expressions within the binding domain.

b. A statement of the strength of reflexive binding preferences in different syntactic configurations.

c. A paradigmatic pairing of each (collection of) reflexive proforms with matching antireflexive proforms.

d. The SYMMETRIC BINDING PRINCIPLE (SBP), stating that:
In any syntactic configuration, reflexives and antireflexives display symmetric preferences for the binding of RBTs.

The SBP is readily interpreted in probabilistic terms. In a situation where there is a single RBT e, as with Estonian *oma*, given some sentence frame with a slot containing a proform, the probability of choosing e as an antecedent if the proform is reflexive is the complement of the probability of choosing e if the proform is antireflexive:

$$P(e|\text{reflexive}) = 1 - P(e|\text{antireflexive})$$

Together these four ingredients provide a general account of gradient binding preferences allowing for an account of the Estonian data while also encompassing the effects of classical binding theory as a special case. Note that, in the situation where $P(e|\text{reflexive}) = 1$, the SBP makes exactly the same predictions as Rooryck & Vanden Wyngaerd's account.

The proposal in (5) makes room for binding preferences being stronger or weaker, but says nothing about the conditions under which such differences occur. We tentatively submit that the role of typicality in influencing the strength of binding preferences may be a consequence of the familiarity of speakers with different construction types: in the same way as more familiar items lead to sharper acceptability judgements (Divjak, 2017), more familiar syntactic configurations lead to stronger preferences for binding.

Interestingly, the account developed so far does *not* extend readily to the situation of English, as can be seen by considering again examples such as (2) above: here the crucial observation is that the distribution of antireflexives is not a mirror image of that of reflexives, in direct contradiction with the account in (5). More work on the typology of binding constraints is needed to assess whether this can be taken to follow from other differences between the two systems.

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