
Encoding (Non)Locality in Anaphoric Relations

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1 Introduction*

In this paper I present an analysis of the semantics of the Finnish possessive suffixes. Possession in Finnish is shown by means of a possessive suffix (Px) which, in certain contexts, co-occurs with an overt possessive/genitive pronoun (Hakulinen and Karlsson 1988, Toivonen 2000, *inter alia*). I argue that the presence vs. absence of the possessive pronoun is governed by a locality constraint at work in two realms of the grammar, namely in (pragmatic) discourse anaphora resolution and in (semantic) variable binding. In the latter case, I claim that the absence vs. presence of the third person possessive pronoun visibly encodes the difference between binding and ω -valuation (Reinhart 1997, Heim 1993). I also extend this analysis to ‘regular’ pronouns in Finnish, and show that they are governed by the same locality constraints.

The paper is structured as follows. Section 2 is an overview of Reinhart and Heim’s work on pronoun interpretation, and also contains a brief survey of some of the work done in pronoun resolution from a pragmatic perspective. In Section 3, I present the basics of the Finnish possessive construction

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and review the existing literature. My analysis and the data that motivate it are presented in Section 4. Section 5 discusses two other phenomena – ellipsis and pronoun resolution – that provide further evidence that semantic and pragmatic locality constraints guide the interpretation of null and overt forms. Section 6 is the conclusion.

2 Pronoun interpretation

In this section, I discuss the semantics of pronoun interpretation, based on work by Reinhart (1983, 1997) and Heim (1993), and then take a closer look at the pragmatic aspects of pronoun resolution. As this section shows, locality plays an important role in semantic and pragmatic pronoun interpretation.

2.1 Binding vs. Coreference: Locality in anaphor binding in semantics

A pronoun, such as ‘she’ in (1b) below, can receive an interpretation in two different ways: by binding or by coreference (Reinhart 1982, 1997, Heim 1993). Before defining these two terms in more detail, we should note that sentence (1b) is ambiguous: it can mean that Lili thinks that Lucie has the flu, or that Lili thinks Lili herself has the flu.

- (1a) Lucie didn’t show up today.
 (1b) Lili thinks **she’s** got the flu.

According to Reinhart and Heim’s approach, these two interpretations result from the two ways in which the pronoun ‘she’ can be interpreted. When the pronoun is resolved by *binding*, it is a variable that is bound by the λ -operator, as illustrated in (2a).

- (2a) Binding: Lili (λx (x thinks **x** has got the flu))
 (2b) Coreference: Lili (λx (x thinks **z** has got the flu) & $z = \underline{\text{Lucie}}$)
 (2c) Coreference: Lili (λx (x thinks **z** has got the flu) & $z = \underline{\text{Lili}}$)

Under the binding construal, ‘she’ refers to Lili and the sentence is interpreted as meaning ‘Lili thinks that she herself has the flu’. However, the pronoun can also receive its interpretation via *coreference*, in which case it is ‘a free variable [that is] assigned a value from the discourse storage’ (Reinhart 1997:1). This is illustrated in (2b,c). Under this interpretation, the free variable can be associated with Lucie (2b) or with Lili (2c). As a result, the coreference construal generates two possible interpretations for the sen-

tence in (1b): Lili thinks Lili herself has the flu, or Lili thinks that Lucie has the flu.¹

In order to understand the nature of binding and coreference more fully, and to attain a more fine-grained analysis, we need to consider a more complex configuration with an embedded predicate such as the one given below. This sentence, like the preceding examples, is ambiguous.

- (3) Liisa thinks that only she respects her husband.
(adapted from Reinhart 1997:5)

On the one hand, the sentence can mean that Liisa thinks she is the only woman who respects her husband. In other words, Liisa thinks that other wives do not respect their husbands, and thus Liisa thinks she is the only ‘good wife.’

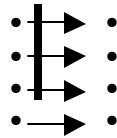


Diagram 1. ‘Good wife’ interpretation [Binding]

On the other hand, the sentence can also mean that Liisa thinks that she is the only one who respects *her* husband; she thinks that no other wives respect Liisa’s husband. In other words, she has an ‘unpopular husband’.

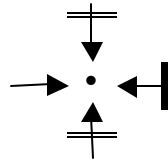


Diagram 2. ‘Unpopular husband’ interpretation [Coreference]

We will now consider these two interpretations in more detail to understand how they are generated. We can use the two procedures discussed above, binding and coreference, to generate the two different readings: binding for

¹ Note that the ambiguous nature of this sentence can be derived simply by the coreference construal alone. However, it would be a mistake to conclude that binding is unnecessary. Reinhart (1983) discusses cases where the effects of Binding Theory can be waived, and shows how, in order to account for these, we need both binding and coreference. See Reinhart (1983), Heim (1993) and Fox (1998) for further discussion.

the ‘good wife’ construal, and coreference for the ‘unpopular husband’ construal. The semantic λ -expressions are given below in (4a,b).

- (4) Liisa thinks that only she respects her husband.
(adapted from Reinhart 1997:5)
- (4a) Liisa (λx (x thinks that (only x (λy (y respects **y’s** husband)))))))))
- (4b) Liisa (λx (x thinks that (only x (λy (y respects **her** husband))))))))))
& her = Liisa

First, let us consider the binding construal, as illustrated in (4a). Here, the possessive pronoun is locally *bound* by a λ -operator. The lower λ -predicate (λy (y respects y ’s husband) denotes the set of individuals who respect their own husbands (Reinhart 1997:3). The sentence thus means that Liisa thinks that she is the only woman who respects her husband and that other wives do not respect their husbands (“good wife” interpretation).

Now, let us turn to the coreference interpretation, illustrated in (4b). Here, the possessive pronoun is coreferential with Liisa, an entity already in discourse storage. Thus, the lower λ -predicate in (4b) denotes the set of individuals who respect Liisa’s husband (see Reinhart 1997:3). The entire expression thus means that Liisa thinks that she is the only one who respects *her* (Liisa’s) husband (‘unpopular husband’ interpretation).

2.1.1 Coreference is not enough

In the preceding discussion, we saw evidence indicating that a pronoun can receive its interpretation in two ways: by binding or by coreference. However, on the basis of data from quantified noun phrases (QuNPs), Heim (1993) argues that these two approaches alone are not sufficient. The crucial example in favor of her argument is given in (5). Here we have simply replaced ‘Liisa’ in example (4) with the QuNP ‘Every wife’, and the sentence is still ambiguous.

- (5) Every wife thinks that only she respects her husband.
(Reinhart 1997:4)

Example (5) has both the ‘good wife’ interpretation and the ‘unpopular husband’ interpretation. It can mean that every wife thinks that she is the only one who respects her husband, i.e., she thinks that other wives do not respect their husbands. As we saw above, this interpretation is generated when the possessive pronoun is interpreted by binding. In addition, (5) can also mean that every wife thinks that she is the only one who respects *her* husband, i.e. she thinks that other wives do not respect her husband. In Section 2.1, we attributed this ‘unpopular husband’ interpretation to corefer-

ence. However, the coreference construal cannot be the explanation for the ambiguity of (5), because ‘every wife [and any other QuNP, *author’s note*] does not have a discourse value that the pronoun can pick up’ (Reinhart 1997:5). In other words, QuNPs do not permit the coreference construal.

We are thus faced with the question: What mechanism generates the second reading of (5), given that coreference is not possible with QuNPs? According to Heim (1993), the answer is covaluation (also known as ‘co-binding’) which, in addition to Reinhart’s coreference, includes non-local binding. Example (6) below illustrates the difference between *local* binding (what we have simply been calling ‘binding’ in the preceding discussion), and *non-local* binding (covaluation). In (6a), the possessive pronoun *y* is bound by the closest λ -operator, and, as in (4a), the lower λ -predicate denotes the set of individuals who respect their own husbands (Reinhart 1997:3). As above, this results in the ‘good wife’ interpretation (i.e. Every wife thinks that she is the only wife who respects her husband, and thinks that other wives do not respect their husbands).

However, in the representation in (6b), the possessive pronoun *x* is not bound by the closest λ -operator (since it is λy). Instead, it is bound by λx , which is further away. Here, the lower λ -predicate denotes the set of people who respect *x*’s husband (Reinhart 1997:3). The configuration shown in (6b) thus generates the ‘unpopular husband’ interpretation, i.e. the construal that every wife thinks that she is the only one who respects *her* husband, and that other wives do not respect her husband.

(6a)

Every wife (λx (x thinks that (only x (λy (y respects y ’s husband)))))
 → binding

(6b)

Every wife (λx (x thinks that (only x (λy (y respects x ’s husband)))))
 → covaluation

Thus, when QuNPs are involved, the only difference between binding and covaluation is the degree of locality between the binder and the bound variable. In binding, the variable is bound by the most local λ -operator, whereas in covaluation (non-local binding), the λ -operator that is capable of binding the variable is not the closest one.

In sum, in this section we saw evidence for three subtypes of anaphoric relations: (local) binding, coreference and covaluation (non-local binding). Under Reinhart’s approach, coreference and covaluation are grouped together, and (local) binding is treated as another type of relation. However, as we saw in our discussion above (ex. (6)), (local) binding and covaluation

are in fact similar, differing only in the degree of locality involved (see Fox 1998). This raises the question: if binding can be split into two types (local and non-local), what about (pragmatic) coreference? Does it have local and non-local subtypes as well? This is the question we will tackle in the next section, and I will suggest that the answer is yes.

2.2 A closer look at ‘coreference’

In this section, we look in more detail at coreference and the constraints which guide it. I present evidence indicating that, like binding, coreference can be divided into two subtypes: (i) coreference with the local topic and (ii) coreference with something that is not the local topic.

2.2.1 Pragmatics of pronouns

To understand the process of anaphor interpretation by means of coreference, we need to take a look at the referential properties of pronouns. It has often been noted that the weakest anaphoric elements that exist in a given language (e.g. pronouns in English, null *pro* in prodrop language such as Spanish) tend to refer to the most topical/salient entities at that point in the discourse, i.e. to the entities that are at the center of attention (see e.g. Samek-Lodovici 1996:29, Walker, Joshi & Prince 1998, Centering Theory on pronouns, *inter alia*). Before turning to some examples that illustrate this, it is important to consider the notion ‘topic’ in more detail. In the present discussion, I follow Strawson (1964), who defines the topic of an utterance as ‘what is of current interest or concern’ (Strawson 1964:104), and Reinhart, who characterizes the topic of a sentence as ‘the expression whose referent the sentence is about’ (Reinhart 1982:5). I will thus be using the term ‘topic’ to refer to the entity that is at the center of attention at that point in the discourse (see Grosz, Joshi & Weinstein 1995). A large body of research has shown the subject of a sentence tends to be the most salient (most ‘topical’) entity in the sentence (see e.g. Brennan, Friedman & Polard 1987, Crawley & Stevenson 1990, Grosz, Joshi & Weinstein 1995, and many others).

Now, let us return to the connection between topics and weak anaphoric elements, and consider example (7) below. ‘John’ is the subject of the first sentence, and thus more topical than the object, ‘Bill’. The second sentence contains the pronoun ‘he’. Given the claim that a weak anaphor prefers to have the most salient/topical entity as its antecedent, we would predict that ‘he’ refers to ‘John.’ And, intuitively, this is indeed the case, as noted by Hudson-D’Zmura and Tanenhaus: ‘[I]ntuition suggests a clear preference for *John* to be the antecedent of *he* rather than *Bill*’ (Hudson-D’Zmura and Tanenhaus 1998:200). This prediction is also supported psy-

cholingistic studies of language processing (e.g. Hudson-D’Zmura & Tanenhaus 1998).

- (7) John saw Bill walking down the street.
He_{John} waved hello to him.
 (Hudson-D’Zmura and Tanenhaus 1998:200).

Additional evidence for the psycholinguistic reality of the correlation between pronouns and subjects/topics comes from eye-tracking work by Arnold, Eisenband, Brown-Schmit & Trueswell (2000). By studying the eye-movements of people who were looking at a picture and listening to a short story (in English) that refers to the characters in the picture, they found that, in contexts where gender doesn’t disambiguate the referent of the pronoun, people tended to interpret a pronoun as referring to the subject of the preceding sentence.

This same pattern can be shown to exist in Spanish, a pro-drop language where the weakest anaphoric element is null *pro*. On the basis of the preceding discussion, we would predict that, like English pronouns, the Spanish *pro* (denoted with \emptyset below) should display a tendency to have the most topical/salient entity as its antecedent. This is indeed the case, as illustrated by the example below (Maribel Romero, p.c.).

- (8a) Juan vió a Guille en la calle.
 Juan.n see-past.3s Guille.a in the street.
 ‘Juan saw Guille in the street.’
- (8b) # En cambio, \emptyset no lo vió. [\emptyset = Juan]
 Instead \emptyset neg he.a see-past.3s
 # ‘Instead, **he**_{Juan} didn’t see him.’
- (8c) En cambio, **él** no lo vió. [él = Guille]
 Instead **he.n** neg he.a see-past.3s
 ‘Instead, **he**_{Guille} didn’t see him.’

The continuation shown in (8b) ‘Instead, \emptyset didn’t see him’ is pragmatically infelicitous in the context of Juan having seen Guille, because the null *pro* can only refer to the subject of the preceding sentence, Juan. It cannot be interpreted as referring to the object, Guille. This is exactly what we would expect if the null *pro*, the weakest anaphoric element in Spanish, is coreferential with the current topic. When the overt pronoun is used, as in (8c) ‘Instead, **he**_{overt} didn’t see him’, it is interpreted as referring to the object of the previous sentence, namely Guille (i.e. not the local topic), and the continua-

tion is felicitous. Data from Turkish (Turan 1998) and Greek (Dimitriadis 1996), two other prodrop languages, pattern the same way.

These examples from English and Spanish illustrate that, from a pragmatic perspective, pronouns (or null pronouns, if the language has them) prefer to refer to the current topic, i.e. the most salient entity under discussion at each relevant point in the discourse. Finnish differs from languages of the Spanish type in that Finnish permits only partial prodrop (see Vainikka & Levy 1999). Finnish first and second person singular pronouns can be dropped freely (ex. (9a)), but third person prodrop only occurs in a limited number of contexts. It is usually not possible to have a null third person subject (so Finnish is unlike Spanish in this respect), but it is possible for a third person subject to be null if it is coreferential with a higher subject in the same sentence, as illustrated below (see Vilkuna 1996:131).

(9a) *Null first and second person pronouns (brackets indicate optionality)*

(Me) kävimme eilen ostoksilla, mutta (sinä) et ostanut mitään.

(We.n) go-past.1p yesterday shopping, but (you.n) neg.2s buy-pp.2s anything.p.

‘We went shopping yesterday, but you didn’t buy anything.’

(9b) **Null matrix third person subject*

Pekka tuli kotiin. *ømeni heti nukkumaan.

Pekka come-past.3s home.ill. ø go-past.3s right-away sleep-inf.

‘Pekka came home. He went to sleep right away.’

(9c) *Null embedded third person subject*

Pekka tulee kun øehtii. (adapted from Vilkuna 1996:131)

Pekka come-pre.3s when ø have-time-pres.3s.

‘Pekka will come when he has time.’

Thus, in some sense, the requirements for third-person prodrop in Finnish are more demanding than in languages such as Spanish. In Finnish, the topic of the *current* sentence (here, the matrix subject) must refer to the same entity as the null pronoun, whereas in Spanish, a subject can be null as long as it refers to the current *discourse* topic. One could interpret the Finnish third person prodrop facts as a result of binding or coreference. Perhaps the most reasonable assumption is that null pronouns with referential antecedents can be interpreted by binding, or by coreference with the topic of the current sentence (cf. ex (2)), whereas null pronouns with QuNP antecedents must be interpreted by binding. As we will see, this type of assumption enables us to explain the asymmetries that will be discussed in Sections 4 and 5 in a straightforward manner.

As we will see, the asymmetry between first/second person pronouns and third person pronouns also exists in the possessive construction, as does the requirement that a null third person pronoun be coreferential with (or bound by) the topic (subject) of the *current* sentence.

3 Finnish possessives

In this section I present the basic semantic and morphological features of the Finnish possessive construction and briefly review some of the existing literature on the topic. I will present my analysis in Section 4.

3.1 Basic description of the Finnish possessive construction

In Finnish, possession is represented by a system of possessive pronouns and possessive suffixes (Px's). In this paper we will focus on the third person possessive suffix, which surfaces as [-nsA] or [-An] (the capital letter indicates that the vowel undergoes vowel harmony and can surface as [a] or [ä]). In third person possessive constructions with pronominal possessors (e.g. 'his book'), the possessive suffix is present on the possessed noun. However, the possessive pronoun itself is null in certain contexts: According to the judgments reported in the literature, when an overt possessive pronoun is *not* present, the referent of the subject of the sentence is the possessor (Vilkuna 1996:228-230, Nelson 1998:13), as illustrated in (10a). When an overt possessive pronoun is present, the subject cannot be interpreted as the possessor (10b) (Nelson 1998:13).² (First and second person possessive pronouns pattern differently. Just like first and second person pronouns, they can freely occur as null elements. See Nelson (1998) for details.)

² However, in contrast to these 'standard judgments', some of my Finnish informants permit the subject to be the possessor even when the possessive pronoun is present (10b). Other sources also indicate that the interpretation of possessive constructions with an overt possessive pronoun may not be altogether straightforward. For example, in a corpus study of written Finnish, Niendorf and Peterson (1999) found examples of overt third person possessive pronouns co-occurring with the possessive suffix in contexts where the subject is the possessor. In addition, Ikola (1986:74-75) notes that overt possessive pronouns are sometimes present (in naturally-occurring language) in sentences where the subject is the possessor. In other words, violations of the standard generalization (i.e., that an overt possessive pronoun cannot be used when the subject is the possessor) are not unheard of. I will say more about this below.

As is pointed out by an anonymous reviewer, speakers' judgments about sentences such as (10b) are likely to be influenced by their knowledge of and attitudes towards the norms of Standard Finnish, as well as their dialect background (see Paunonen (1995) for more information on the sociolinguistics of the Finnish possessive suffixes).

- (10a) Liisa_j luki ∅ kirja[nsa]_j.
 Liisa.n read-past.3s ∅ book-a.Px3
 Liisa_j read her_j book.
- (10b) Liisa_j luki hänen_k kirja[nsa]_k.
 Liisa.n read-past.3s s/he-g book-a.Px3
 Liisa_j read her_{k/*j} book.

When an overt possessive pronoun is absent, the *subject* is interpreted as the possessor, even when the sentence contains another semantically possible possessor, such as a direct or indirect object (see Trosterud 1993 for discussion and some exceptions). Moreover, the possessive pronoun cannot be null if it is part of the matrix subject, as illustrated below.

- (10c) *(Hänen) kirjansa putosi lattialle.
 s/he-g book-a.Px3 fall-past.3s floor-all
 'His/her book fell to the floor.'

3.2 Previous analyses of the possessive construction

A number of analyses have been proposed concerning the Finnish possessive suffix and its relation to the possessive pronoun, and three are briefly outlined in this section. One avenue of research analyses the possessive suffix as an anaphor (e.g. Vainikka (1989), Nelson (1998)). According to this approach, third person possessive suffixes are anaphors which must be bound by the subject of the sentence or by a third person possessive pronoun (e.g. Nelson 1998:187-188; see Trosterud 1993 for a slightly different account of the role of the third person possessive pronoun). A different treatment of possessives is proposed by van Steenbergen (1991), who claims that possessive constructions without an overt possessive pronoun contain an empty element (*pro*) instead. According to van Steenbergen's analysis, *pro* is an empty anaphor which can only be bound by the subject and which occurs whenever 'it corefers with a c-commanding NP' (van Steenbergen 1991:234). She argues that the possessive suffix marks nominal inflection (van Steenbergen 1991:232).

A third approach is presented by Toivonen (2000) within Lexical Functional Grammar (LFG). She argues that the third person possessive suffix [-nsA] is 'a single phonological form [that] corresponds to two distinct sets of lexical features' (Toivonen 2000:34). She argues that when the third person possessive suffix occurs without an overt possessive pronoun in a context where the subject is the possessor, then the [-nsA] suffix is a subject-bound reflexive pronoun. According to her analysis, when the suffix occurs

in the presence of an overt possessive pronoun and with a subject that is disjoint in reference, the possessive suffix is an agreement marker (Toivonen 2000:30).

The analysis I present in the present paper is, roughly speaking, compatible with most of van Steenbergen's analysis. However, my analysis represents a finer-grained account of the anaphoric nature of possessives, and is motivated by previously unnoticed data. As we will see, it seems that some of the new empirical data cannot be fully captured under existing accounts.

4 Locality and non-locality in Finnish possessives

Having reviewed Reinhart and Heim's work, as well the characteristics of the Finnish possessive construction, let us now turn to the analysis I am arguing in favor of. In this section, I present data illustrating an asymmetry in the behavior of quantified NPs and referential NPs in possessive constructions with and without overt possessive pronouns. In light of the data, I argue that the distribution (presence vs. absence) of the possessive pronoun is subject to a locality constraint that operates in two domains: in the domain of (pragmatic) discourse anaphora resolution, and the domain of (semantic) variable binding.

4.1 Quantified NPs

In sentences with a QuNP subject, the distinction between binding and covaluation correlates with the absence/presence of the third person possessive pronoun. When the possessive pronoun is absent, only the binding interpretation is available (as shown in (11a)), but when the possessive pronoun is present, only the covaluation construal is possible (ex. (11b)).

(11a) *QuNP & no overt possessive pronoun*

Jokainen vaimo uskoo, että vain hän kunnioittaa \emptyset miestään.
 Every.n wife.n think-pres.3s that only s/he.n respect-pres.3s \emptyset husband-p.Px3

'Every wife thinks that only she respects her husband.'

Ⓜ "Unpopular husband" interpretation [Covaluation] = no

Ⓜ "Good wife" interpretation [Binding] = ok

(11b) *QuNP & overt possessive pronoun*

Jokainen vaimo uskoo, että vain hän kunnioittaa **hänen** miestään.

Every.n wife.n think-pres.3s that only s/he.n respect-pres.3s s/he-g
 husband-p.Px3

‘Every wife thinks that only she respects her husband.’

Ⓜ “Unpopular husband” interpretation [Covaluation] = ok

Ⓜ “Good wife” interpretation [Binding] = no

Example (11a), with no overt possessive pronoun, only permits the binding interpretation. It can only mean that every wife thinks that other wives do not respect their husbands. Example (11b), with a possessive pronoun, only has the covalued interpretation. It means that every wife thinks that she is the only one who respects *her* husband.

On the basis of these data, I argue that Finnish visibly encodes the distinction between variable binding and variable covaluation. When no overt possessive pronoun is used, the variable is interpreted by binding. When the overt possessive pronoun *hänen* is used, the variable is interpreted by covaluation (non-local binding).

It might seem, at first glance, that sentences such as (11b) should not be grammatical, since in (11b), an overt possessive pronoun is apparently used when the subject is the possessor. However, my informants found this sentence to be grammatical. This is actually not surprising if we take a closer look at the subject of the embedded clause, ‘only she.’ Semantically, ‘only X’ can be regarded as meaning ‘no one except X’ (see e.g. Rooth 1985). Thus, in a sentence such as (11b), the referent of ‘only she’ is not the same as the possessor. This is also illustrated by the indexing in the semantic structures below (repeated, with added indexation, from (6)). In the covaluation structure in (6b), the referent of the possessive pronoun – x_2 – is not the same as the subject of that sentence – [only x_2]₁ – as is illustrated by the different indices 1 and 2.

(6a) binding

[Every wife]₂ (λx_2 (x_2 thinks that ([only x_2]₁ (λy_1 (y_1 respects y_1 ’s husband))))))

(6b) covaluation

[Every wife]₂ (λx_2 (x_2 thinks that ([only x_2]₁ (λy_1 (y_1 respects x_2 ’s husband))))))

4.2 Referential noun phrases

In addition to functioning as bound variables with quantified antecedents, *pro* and *hänen* can also be referential, as has been suggested for English pronouns in general (e.g., Heim & Kratzer 1998). However, the correlation that we noticed in the preceding section between (a) the presence vs. absence of the possessive pronoun and (b) the availability of covaluation vs. binding seems to break down – partially – when the antecedent is a referen-

tial noun phrase. I will argue that the lack of full parallelism between QuNPs and referential noun phrases is due to the fact that the pragmatic system of anaphor resolution can be used to interpret referential noun phrases, but not QuNPs. This distinction is addressed in more detail below.

Let us turn to the examples that display the asymmetry. Unsurprisingly, example (12b), with an overt possessive pronoun, only permits the covaluation interpretation. It can only mean that Liisa thinks that other people do not respect *her* husband. This is what we would expect on the basis of the data discussed above. However, when the overt possessive pronoun is missing, as in (12a), both the covaluation interpretation and the binding interpretation are available. Example (12a) can have the binding interpretation and mean that Liisa thinks that other women do not respect their own husbands, i.e. that she is the only good wife. However, it can also have the same meaning as (12b) – i.e. the covaluation construal. This is unexpected in light of the earlier claim that an absence of an overt possessive pronoun rules out a covaluation (non-local binding) interpretation.

(12a) *No overt possessive pronoun*

Liisa uskoo, että vain hän kunnioittaa \emptyset miestään.

Liisa.n think-pres.3s that only s/he.n respect-pres.3s \emptyset husband-p.Px3

‘Liisa thinks that only she respects her husband.’

Ⓜ “Unpopular husband” interpretation [Covaluation] = ok

Ⓜ “Good wife” interpretation [Binding] = ok

(12b) *Overt possessive pronoun*

Liisa uskoo, että vain hän kunnioittaa **hänen** miestään.

Liisa.n think-pres.3s that only s/he.n respect-pres.3s s/he-g husband-p.Px3

‘Liisa thinks that only she respects her husband.’

Ⓜ “Unpopular husband” interpretation [Covaluation] = ok

Ⓜ “Good wife” interpretation [Binding] = no

In the remainder of this section, we focus on the central question raised by the data: Why is the covaluation reading (“unpopular husband” interpretation) possible in (12a) when the overt pronoun is missing, given that it is not available in (11a), with the QuNP? Recall that QuNP’s, such as ‘every woman’ in (11a) do not permit coreference, whereas referential NP’s, like ‘Liisa’ in (12a), *do* permit coreference (Section 2.1.1). Given this difference, it seems reasonable to conclude that the seemingly surprising availability of the ‘unpopular husband’ reading for (12a) is in fact due to coreference, and not covaluation. In accordance with the pragmatic tendencies noted for pro-drop in Finnish as well as other languages (e.g. Samek-Lodovici 1996, *inter alia*), in (12a) the null possessive pronoun is coreferen-

tial with the current topic, which is Liisa. This generates the “unpopular husband” interpretation, and thus creates the illusion of covaluation being possible.

The binding interpretation of (12b), with an overt possessive pronoun, is still unavailable because, though coreference is possible for the overt form *hänen*, locality considerations apply to pragmatic anaphora resolution as well as to bound variable interpretation. Null pronouns are used for coreference with the closest topic, and use of an overt possessive pronoun – as in (12b) – suggests that the antecedent is *not* the current topic.

Thus, on the basis of the data in (12a,b), I claim that Finnish visibly encodes the distinction between coreference with the local topic and other discourse entities, such that the null pronoun preferably refers to the local topic, and the overt pronominal form *hänen* preferably refers to something else.

4.3 Summary of proposed analysis

In my proposal, I maintain the subject-oriented nature of the null possessive pronoun, but additionally I claim that regardless of whether the pronoun is interpreted semantically or pragmatically, locality plays a crucial role. My claims are summarized in the table below. If no overt possessive pronoun is present, locality constraints apply to both semantic and pragmatic pronoun interpretation. Semantically, the variable must be interpreted by (local) binding. Pragmatically, the anaphoric element is preferably interpreted as coreferential with the current topic. If an overt possessive pronoun is present, non-locality constraints kick in. Semantically, the variable is interpreted by covaluation (non-local binding). Pragmatically, overt pronoun prefers to be coreferential with something else in the discourse, other than the current topic.³ In sum, the null pronoun is subject to a locality requirement, whereas the overt pronoun is governed by a non-locality constraint.

³ As mentioned above, for some speakers this constraint can apparently be overridden by contextual considerations. Some of my informants permit (10b), which has an overt possessive pronoun, to have the ‘subject=possessor’ interpretation (see also Niendorf and Peterson 1999, Ikola 1986). Overt pronouns prefer to refer to something other than the topic – however, one could explain the informants’ judgments by noting that in a sentence such as (10b), there is no other entity to refer to. The only discourse entity at this point is the subject, Liisa. Perhaps the speakers permit the overt pronoun to refer to the topic as some kind of ‘last resort’-type mechanism. Clearly, more research is needed to learn more about the conditions/contexts under which the ‘non-topic’ constraint can be overridden. In addition, it is important to note that my analysis claims that pragmatic coreference is responsible for the ‘subject=possessor’ readings of sentences like (10b). This approach predicts that a sentence with an overt possessive pronoun, like (10b), but with a QuNP subject, should not have the interpretation ‘subject=possessor’. This is because QuNPs cannot be interpreted by coreference. Preliminary data suggest that this may indeed be the case, but further research is needed.

	Semantics	Pragmatics
No overt possessive pronoun	Binding	Coreference with current topic
overt possessive pronoun	Covaluation	Coreference preferably with something other than closest topic

5 Additional phenomena

The claim that null possessive pronouns are subject to locality constraints and overt possessive pronouns to non-locality constraints makes a number of predictions for other phenomena in Finnish. In this section, we focus on two of these, namely (i) ellipsis, and (ii) the resolution of ‘regular’ pronouns. As we will see, the behavior and interpretations of these constructions provide further evidence for the analysis discussed above. Some data from Swedish will also be discussed, and we will see evidence suggesting that the distinction between null vs. overt forms (as opposed to two different overt forms) may be crucial to the locality vs. non-locality distinction.

5.1 Ellipsis data

Data from ellipsis show the same asymmetry between presence vs. absence of an overt possessive pronoun that was discussed above, and thus provide corroborating evidence for my claim concerning the role of locality in pronoun interpretation. First, let us consider (13). This sentence does not contain an overt possessive pronoun, and, according to my analysis, the null *pro* is subject to locality constraints. Thus, my analysis predicts that it could be interpreted semantically by (local) binding and pragmatically by coreference with the local topic. If the null *pro* is interpreted semantically by (local) binding, and the resulting predicate (given in (13a)) is used to resolve the ellipsis, the sloppy interpretation is generated. This reading is indeed possible, according to my informants. If the null *pro* is interpreted pragmatically by coreference with the local topic, and this predicate (given in (13b)) is used to resolve the ellipsis, then we generate the strict reading. This reading is somewhat marked, but still possible. Given that both readings are possible for the elided predicate, my analysis makes the correct prediction for (13). However, existing analyses of Finnish possessives, to the best of my understanding, predict that the strict interpretation of the ellipsis (given in (13b)) should be impossible, because the pronoun is null and thus should be bound by the subject Jussi.

(13) *No overt possessive pronoun*

Pekka puolusti ystävänsä paremmin kuin Jussi ▲.
 Pekka.n defend-past.3s ø friend-p.Px3 better than Jussi.n
 ‘Pekka defended his friend better than Jussi.’

(a) ok Jussi defended Jussi’s friend

[ok sloppy] ▲ = $\lambda x.x$ defended x’s friend

(b) ? Jussi defended Pekka’s friend

[? strict] ▲ = $\lambda x.x$ defended y’s friend & y=Pekka

(14) *Overt possessive pronoun*

Pekka puolusti hänen ystävänsä paremmin kuin Jussi ▲.
 Pekka.n defend-past.3s s/he-g friend-p.Px3 better than Jussi.n
 ‘Pekka defended his friend better than Jussi.’

(a)* Jussi defended Jussi’s friend.

[*sloppy] ▲ = $\lambda x.x$ defended x’s friend

(b) ok Jussi defended Pekka’s friend

[ok strict] ▲ = $\lambda x.x$ defended y’s friend & y=Pekka

Now let us turn to (14), which contains an overt possessive pronoun, predicted to be subject to non-locality constraints. Here, the first predicate could be interpreted as meaning that Pekka defended some unnamed third person’s friend. However, some of my informants also permit the interpretation that Pekka defended his own friend.

Under the interpretation that Pekka defended someone else’s friend, the overt possessive pronoun is interpreted by coreference with something other than the local topic, Pekka. We would thus expect the elided predicate to mean that Jussi also defended the unnamed third person’s friend – and this interpretation is indeed possible. However, for our purposes, the more interesting interpretation is the one in which Pekka defended Pekka’s friend. My approach predicts that the sloppy interpretation of the elided predicate is unavailable, because (local) binding is not possible with an overt possessive pronoun. This prediction is supported by informant judgements. What about the strict interpretation? We concluded earlier that overt pronouns can be interpreted by covaluation or by coreference with (preferably) something other than the local topic. Covaluation is not possible here, because only one λ -binder is present. Coreference with something other than the local topic generates the reading that both Pekka and Jussi defended some third person’s friend. However, speakers who permit the interpretation that Pekka defended his own friend (i.e. who allow an overt possessive pronoun to be coreferential with the local topic in certain contexts) can interpret the ellipsis as meaning that Jussi defended Pekka’s friend – as we would predict if

the predicate shown in (14b) is used to resolve the ellipsis. Thus, we also predict the availability of the strict interpretation.⁴

5.2 Pronoun resolution in embedded clauses

The preceding discussion has focused on the distinction between null and overt *possessive* pronouns in Finnish. In this section I provide data which suggests that – as one might expect – ‘regular’ pronouns are also guided by the same locality constraints as possessive pronouns. First, consider a sentence such as (15), which is ambiguous.

(15) Peter thinks that only he notices that he is tired.

One of the interpretations can be described as follows. Imagine a scenario where Tom, John and Peter are hiking in the woods, and Peter suddenly starts to feel tired. However, he thinks he is the only one who notices feeling tired, i.e. he thinks that Tom and John do not notice that they are tired. This ‘self-awareness’ reading can be generated via variable binding. As shown in (15a) below, the subject of the predicate ‘is tired’ is bound by the closest λ -operator, and the lowest predicate thus denotes the set of people that notice their own tiredness.

The second interpretation of (15) is that Peter feels tired, and thinks that John and Tom do not notice that he is tired. In other words, Peter thinks his tiredness is not ‘visible’ to others. This ‘invisible tiredness’ reading is generated by covaluation, as illustrated in (15b) below. In (15b), the subject of the predicate ‘is tired’ is bound by the matrix λ -operator. The lowest predicate thus denotes the set of people who notice x’s tiredness. As shown in (15c), this ‘invisible tiredness’ reading can also be generated by pragmatic coreference with the current topic (i.e. the subject of the sentence, Peter).

(15a) Peter λx (x thinks that only x (λy (y notices that y is tired))))
→ binding (‘self-awareness’ reading)

(15b) Peter λx (x thinks that only x (λy (y notices that x is tired))))
→ covaluation (‘invisible tiredness’ reading)

⁴ The behavior of QuNP subjects in elided contexts also needs to be examined in order to test the validity of this analysis. The crucial test sentence would be one with two QuNPs (e.g. ‘Every boy defended his friend better than every man did’), but unfortunately, due to the complex semantics of this type of sentence, clear judgments concerning the availability of strict and sloppy readings are hard to obtain.

- (15c) Peter λx (x thinks that only x (λy (y notices that he is tired))))
 & he = Peter
 → pragmatic coreference with current topic ('invisible tiredness'
 reading)

If it is the case that, in Finnish, the null vs. overt pronoun distinction is subject to semantic and pragmatic locality constraints, then the two interpretations of sentence (15) should correlate with the presence vs. absence of an overt pronoun in the lowest predicate. More specifically, we predict that in sentences where the subject of the embedded predicate 'is tired' is a null pronoun, the null *pro* could be interpreted semantically by (local) binding and pragmatically by coreference with the local topic. Similarly, in sentences where an overt pronoun is the subject the lowest predicate, we predict that it could be interpreted by covaluation or by coreference with (preferably) something other than the local topic.

However, it is important to note that, in sentences such as (9c) (Pekka_i will come when \emptyset has time), *pro*-drop of the third person pronoun is not *required*, whereas using a null form of the possessive pronoun in sentences such as (10a) (Liisa_i read \emptyset 's book) is strongly preferred (and required, by many speakers). In other words, the requirements on pronouns are not as strict as those on possessive pronouns. This may be a result the different degrees of locality between the pronoun and its antecedent on the one hand, and the possessive pronoun and the possessor on the other hand. We might thus expect the predicted locality/non-locality requirements to be somewhat less strict for the regular pronouns.

As we will see, most of the data pattern as predicted. Let us first consider the examples with nonreferential QuNP subjects. Example (16a), with an overt pronoun in the lowest predicate, only permits the covaluation interpretation ('invisible tiredness'). It means that every boy thinks that none of the other boys notices that that particular boy is tired. However, example (16b), with a null pronoun in the lowest predicate, allows the binding interpretation ('self-awareness'), i.e. that every boy thinks that he is the only one who notices feeling tired; he thinks no one else notices any feelings of tiredness in themselves.⁵

⁵ For some people, sentence (16b) can also have, often fairly marginally, the 'invisible tiredness' reading, which we have so far treated as being generated by covaluation or coreference. At first glance, this reading is surprising given the claim that null pronouns are interpreted either by binding (which generates the 'self-awareness' reading) or by coreference with the local topic (QuNPs do not create discourse referents that would permit coreference). The reasons for the (marginal) availability of the 'invisible tiredness' reading might be related to the double embedding structure of the sentence or/and the presence of the two verbs 'think' and 'notice.' These two verbs might create a telescoping-type effect, encouraging the reader to take the

(16a) *QuNP and overt pronoun*

Jokainen poika luulee, että vain hän huomaa, että hän on väsynyt.

Every.n boy.n think-pres.3s that only he.n notice-pres.3s that he.n be-pres.3s tired.

‘Every boy thinks that only he notices that he is tired.’

Ⓜ “Invisible tiredness” reading [Covaluation]= *ok*

Ⓜ “Self-awareness” reading [Binding]= *no*

(16b) *QuNP and no overt pronoun*

Jokainen poika luulee, että vain hän huomaa, että \emptyset on väsynyt.

Every.n boy.n think-pres.3s that only he.n notice-pres.3s that \emptyset be-pres.3s tired.

‘Every boy thinks that only he notices that he is tired.’

Ⓜ “Invisible tiredness” reading [Covaluation]= ??(?)

Ⓜ “Self-awareness” reading [Binding]= *ok*

Now, turning to sentences with a referential subject, we see that example (17a) below, with an overt pronoun in the lowest predicate, only permits the covaluation interpretation, i.e. it means that Pekka thinks no one else notices that Pekka is tired. However, example (17b), with a null pronoun, permits both the binding and the covaluation interpretations. This pattern is exactly like the one we saw for the examples in Section 4.2. The availability of both binding and covaluation interpretations for a sentence with a null pronoun can be explained as follows: The binding reading is due to variable binding, as expected. The covaluation reading, however, is only ‘illusory’, in that it is not a result of long-distance binding (covaluation), and is actually due to pragmatic coreference with the discourse topic.

(17a) *Overt pronoun*

Pekka luulee, että vain hän huomaa, että hän on väsynyt.

Pekka.n think-pres.3s that only he.n notice-pres.3s that he.n be-pres.3s tired.

‘Pekka thinks that only he notices that he is tired’

Ⓜ “Invisible tiredness” reading [Covaluation]= *ok*

Ⓜ “Self-awareness” reading [Binding]= *no*

perspective of one of the boys. This would then enable the ‘invisible tiredness’ interpretation to be generated via pragmatic coreference.

(17b) *No overt pronoun*

Pekka luulee, että vain hän huomaa, että \emptyset on väsynyt.

Pekka.n think-pres.3s that only he.n notice-pres.3s that \emptyset be-pres.3s tired.

‘Pekka thinks that only he notices that he is tired.’

Ⓜ “*Invisible tiredness*” reading [Covaluation]= ok

Ⓜ “*Self-awareness*” reading [Binding]= ok

Thus, these examples illustrate that, for the most part, ‘regular’ pronouns pattern like possessive pronouns. The null forms are interpreted locally, either semantically via binding or pragmatically by coreference with the local topic. The overt forms are interpreted non-locally, by semantic variable covaluation or pragmatic coreference with something other than the local topic.

In addition to ‘full’ pronouns and possessive/genitive pronouns, there exists a third related environment in which we can test the overt vs. null pronoun distinction. There exists in Finnish a construction where the embedded clause surfaces as a nominalized constituent, as illustrated below. Here, the verb of the predicate ‘is tired’ carries nominal case marking as well as a possessive suffix, and the possessive pronoun is null.

(18a) *Referential subject*

Pekka luulee, että vain hän huomaa olevansa väsynyt.

Pekka.n think-pres.3s, that only he.n notice-pres.3s be-g.Px3 tired.

‘Pekka thinks that only he notices that he is tired.’

Ⓜ “*Invisible tiredness*” reading [Covaluation]= ok

Ⓜ “*Self-awareness*” reading [Binding]= ok

(18b) *QuNO subject*

Jokainen poika luulee, että vain hän huomaa olevansa väsynyt.

Every boy thinks, that only he notices be-g.Px3 tired.

‘Every boy thinks that only he notices that he is tired.’

Ⓜ “*Invisible tiredness*” reading [Covaluation]= ???

Ⓜ “*Self-awareness*” reading [Binding]= ok

My analysis predicts that a sentence such as (18a), with a referential subject, should permit the binding interpretation (since the possessive pronoun is null) and also the covaluation interpretation (via pragmatic coreference with the topic). Furthermore, sentence (18b), with a nonreferential, QuNP subject, is predicted to have only the binding interpretation, since pragmatic

coreference cannot occur with QuNPs. As shown in (18), these predictions receive support from the judgements.⁶

5.3 Two types of possessive pronouns in Swedish

In this section, I present some evidence which suggests that the interpretative differences between the null and overt forms in Finnish may be related to the fact that the forms are null and overt, and is not just a consequence of their being morphologically distinct forms. The behavior of null pronouns vs. overt pronouns in pro-drop languages has already provided us with some evidence that suggests that there is, in some sense, an inherent link between locality and null forms, on the one hand, and non-locality and overt forms on the other hand. However, one might still hypothesize that, in some other language, two morphologically distinct pronominal forms could play the same roles that are played by null and overt forms in Finnish.

Swedish provides an interesting test case for this hypothesis. In Swedish, the so-called reflexive pronominal forms *sin*, *sitt*, *sina* ‘his/her’ (showing number and gender agreement with the possessed noun) are used when the possessor is the subject of the sentence, as shown in (19a), and the non-reflexive pronominal forms *hennes*, *hans*, *dess*, *deras* ‘her, his, its, their’ are used when the possessor is not the subject of the sentence (19b). Thus, where Finnish uses a null possessive pronoun (ex. (10a)), Swedish uses a reflexive pronominal, and where Finnish uses an overt possessive pronominal (ex. (10b)), Swedish uses the non-reflexive pronominals.

(19a) Eva_j älskar sin_j man.
 Eva.n love-pres her.refl husband.a
 ‘Eva_j loves her_j husband.’
 (adapted from Holmes & Hinchliffe 1994:153)

(19b) Ulla_j älskar hennes_k man.
 Ulla.n love-pres she.g husband.a
 ‘Ulla_j loves her_k husband.’
 (adapted from Holmes & Hinchliffe 1994:153)

However, if we test for the difference between binding and covaluation using these two forms, the results differ from the findings for Finnish. First, let us consider examples in Swedish with referential subjects, such as (20a) and (20b) below. Sentence (20a), with the non-reflexive pronoun *hennes*,

⁶ For some people, the ‘invisible tiredness’ interpretation seems to be very marginally available for this sentence. This might be due to the same telescoping-type mechanism that I suggested may be generating the weak ‘invisible tiredness’ reading for (16b).

can only mean that Lisa thinks she is the only one who respects some other woman's husband. In other words, *hennes* must be coreferential with something else in the discourse that is not the current topic. It cannot be (locally) bound or covalued (long-distance bound) by anything in the sentence. In contrast, (20b), with the reflexive form *sin*, is ambiguous and permits the binding and the covaluation interpretations. The same generalizations obtain for the examples with QuNP subjects (20c, 20d).

(20a) *Non-reflexive pronoun*

Lisa tycker att bara hon respekterar **hennes** make
 Lisa.n think-pres that only she.n respect-pres she.g husband.a
 'Lisa thinks that only she respects her husband.'
 → Lisa thinks that she is the only one who respects some other woman's husband

(20b) *Reflexive pronoun*

Lisa tycker att bara hon respekterar **sin** make.
 Lisa.n think-pres that only she.n respects her.refl husband.a
 'Lisa thinks that only she respects her husband.'
 → both binding and covaluation interpretations possible

(20c) *QuNP and non-reflexive pronoun*

Varje fru tycker att bara hon respekterar **hennes** make.
 Every.n wife.n think-pres that only she.n respect-pres she.g husband.a
 'Every wife thinks that only she respects her husband.'
 → Every wife thinks she is the only one who respects some other woman's husband

(20d) *QuNP and reflexive pronoun*

Varje fru tycker att bara hon respekterar **sin** make.
 Every.n wife.n think-pres that only she.n respect-pres her.refl husband.a
 'Every wife thinks that only she respects her husband.'
 → both binding and covaluation interpretations possible

These data show that the Swedish reflexive pronouns (in (20b) and (20d)) can be bound or covalued (long-distance bound). In other words, they can be bound locally *or* non-locally. In contrast, the non-reflexive forms (shown in (20a) and (20c)) cannot be bound, and must be interpreted as being coreferential with some other entity in the discourse. Thus, the locality/non-locality distinction observed for Finnish does not map directly onto the two forms in Swedish. In Swedish, the reflexive vs. non-reflexive pronoun distinction corresponds to binding vs. non-local coreference, whereas in Finnish the null vs. overt possessive pronoun distinction corre-

sponds to local vs. non-local interpretation (in both the pragmatic and semantic domains). These data suggest that it might be the null vs. overt difference – and not simply the existence of two morphologically different forms – that is crucially linked to the local/non-local distinction. Thus, there seems to be an inherent link between locality and null forms, on the one hand, and non-locality and overt forms on the other hand, as can also be seen in the behavior of null pronouns vs. overt pronouns in prodrop languages.

6 Conclusion

In this paper I have presented an analysis of the Finnish possessive construction, which can occur both with and without a possessive pronoun. On the basis of previously unnoticed asymmetries between the behavior of QuNPs and referential NPs, I argue that the null possessive pronoun is subject to locality constraints and the overt possessive pronoun *hänen* ‘his/her’ to non-locality constraints. These constraints show up in the pragmatic, referential interpretation of the two forms as well as in their use as bound variables.

More specifically, I claim that the distinction between variable binding (local binding) and variable covaluation (non-local binding) (Reinhart 1983, 1997, Heim 1993) is visibly encoded in Finnish. When no overt possessive pronoun is used, the variable is interpreted by binding. When the overt possessive pronoun *hänen* ‘his/her’ is used, the variable is preferably interpreted by covaluation (non-local binding). Moreover, I argue that the distinction between coreference with the local topic and other discourse entities is also overtly encoded in Finnish; the null pronoun refers to the local topic, and the overt pronominal form *hänen* ‘his/her’ preferably refers to something else.

In addition, I presented corroborating evidence from ellipsis and pronoun resolution in embedded contexts, as well as evidence from Swedish which suggests that the null vs. overt distinction (and not just the existence of two morphologically distinct forms) might be crucial to the local vs. non-local distinction.

References

- Arnold, J. E., J. G. Eisenband, S. Brown-Schmidt and J. C. Trueswell. 2000. The rapid use of gender information: Evidence of the time course of pronoun resolution from eyetracking. *Cognition* 76:B13-B26.

- Brennan, S.E., Friedman, M.A. and Pollard, C.J. 1987. A Centering approach to pronouns. *Proceedings of the 25th Annual Meeting of the Association for Computational Linguistics*, 155-162. Stanford, CA.
- Crawley, R.J. and Stevenson, R.J. 1990. Reference in single sentences and in texts. *Journal of Psycholinguistic Research* 19(3):191-210.
- Dimitriadis, A. 1996. When Pro-Drop Languages Don't: Overt Pronominal Subjects and Pragmatic Inference. *Proceedings of the Thirty-second Annual Meeting of the Chicago Linguistics Society*. Chicago: Chicago Linguistic Society.
- Fox, D. 1998. Locality in Variable Binding. *Is the Best Good Enough? Optimality and Competition in Syntax*, ed. P. Barbosa, D. Fox, P. Hagstrom, M. McGinnis and D. Pesetsky, 129-156. Cambridge, Mass: MIT Press.
- Grosz, B. J., A. K. Joshi, and S. Weinstein. 1995. Centering: a framework for modelling the local coherence of discourse. *Computational Linguistics* 21(2):203-25.
- Hakulinen, A. and F. Karlsson. 1988. *Nykysuomen lauseoppia*. Helsinki: Suomalaisen Kirjallisuuden Seura.
- Heim, I. 1993. *Anaphora and Semantic Interpretation: A Reinterpretation of Reinhart's approach*. Ms., MIT.
- Heim, I. and A. Kratzer. 1998. *Semantics in Generative Grammar*. Oxford: Blackwell.
- Holmes, P. and I. Hinchliffe. 1994. *Swedish. A Comprehensive Grammar*. New York: Routledge.
- Hudson-D'Zmura, S. and M. K. Tanenhaus. 1998. Assigning Antecedents to Ambiguous Pronouns: The Role of the Center of Attention as the Default Assignment. *Centering Theory in Discourse*, ed. M. A. Walker, A. K. Joshi and E. F. Prince, 199-226. Oxford: Clarendon Press.
- Ikola, O. 1986. *Nykysuomen käsikirja*. Espoo: Weilin+Göös.
- Nelson, D. 1998. *Grammatical Case Assignment in Finnish*. New York: Garland.
- Niendorf, M. and E. Peterson. 1999. *Variation in the Finnish Possessive: a new written standard?* Talk given at N.WAVE 28, Toronto, 1999.
- Paunonen, H. 1995. Puhesuomen muuttuva omistusjärjestelmä. *Virittäjä* 4/1995: 501-531.
- Reinhart, T. 1997. *Strategies of Anaphora Resolution*. Paper delivered at "Interface Strategies" conference, Amsterdam, 9/97. OTS Working Paper, TL97-007.
- Reinhart, T. 1983. *Anaphora and semantic interpretation*. Chicago: The University of Chicago Press.
- Reinhart, T. 1982. *Pragmatics and linguistics: an analysis of sentence topics*. University of Indiana Linguistics Club. (also *Philosophica* 27:53-94).
- Rooth, M. 1985. *Association with Focus*. Doctoral dissertation, University of Massachusetts.
- Samek-Lodovici, V. 1996. *Constraints on Subjects: An Optimality Theoretic Analysis*. Ph.D. dissertation, Rutgers University.

- van Steenberghe, M. 1991. Long-distance binding in Finnish. *Long-distance anaphora*, ed. J. Koster and E. J. Reuland, 231-244. Cambridge: Cambridge University Press.
- Strawson, P. F. 1964. Identifying reference and truth-values. *Theoria* 30:96-118. Reprinted in *Semantics: An Interdisciplinary Reader in Linguistics, Philosophy and Psychology* 1972), ed. D. Steinberg and L.A. Jakobovits. Cambridge: Cambridge University Press.
- Toivonen, I. 2000. The Morphosyntax of Finnish Possessives. *Natural Language and Linguistic Theory* 18(3):579-609.
- Trosterud, T. 1993. Anaphors and Binding Domains in Finnish. *Case and Other Functional Categories in Finnish Syntax*, ed. A. Holmberg and U. Nikanne, 225-244. Berlin: Mouton de Gruyter.
- Turan, Ü. D. 1998. Ranking Forward-Looking Centers in Turkish. *Centering Theory in Discourse*, ed. M. A. Walker, A. K. Joshi and E. F. Prince, 139-160. Oxford: Clarendon Press.
- Vainikka, A. 1989. *Deriving Syntactic Representations in Finnish*. Doctoral dissertation, University of Massachusetts.
- Vainikka, A. & Y. Levy. 1999. Empty Subjects in Finnish and Hebrew. *Natural Language and Linguistic Theory* 17:613-671.
- Vilkuna, M. 1996. *Suomen Lauseopin Perusteet*. Helsinki: Edita.
- Walker, M. A., A. K. Joshi, and E. F. Prince. 1998. Centering in Naturally Occurring Discourse: An Overview. *Centering Theory in Discourse*, ed. M. A. Walker, A. K. Joshi and E. F. Prince, 1-30. Oxford: Clarendon Press.