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A typological study

van Rijn, M.A.

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Locus of marking typology in the possessive NP: A new approach¹

Abstract

This study takes a semantic approach to Nichols' influential locus of marking typology, as applied to the possessive noun phrase. In this approach, a careful distinction is made between two semantic types of dependency relations: those between inherently relational nouns and their argument possessors and those between inherently non-relational nouns and their modifier possessors. I furthermore propose an alternative analysis of possessive person markers in terms of locus, by distinguishing referential markers from agreement markers, depending on the distribution of grammatical feature information in the possessive NPs of individual languages. On the basis of a 37-language sample, I show that locus of marking follows two tendencies: marking the possessum in alienable possession implies marking the possessum in inalienable possession, and marking the possessor in inalienable possession implies marking the possessor in alienable possession. Moreover, I show that if inalienable person markers are referential, alienable person markers are referential as well. These tendencies reflect a greater need of alienable (modifier) possessors for expressive means of coding as compared to inalienable (argument) possessors. On a more general level, I argue against the traditional opposition between head-marking languages and dependent-marking languages, showing that, from a semantic perspective, dependent-marking may also occur on heads.

¹ This chapter appeared in *Folia Linguistica*. The full reference for the article is: Van Rijn, Marlou. 2016. Locus of marking typology in the possessive NP: A new approach. *Folia Linguistica* 50(1). 269–327. A number of modifications have been made to the chapter relative to the published article. First, some possessor-marking strategies in Table 4 were wrongfully given in dark shading and some non-possessor-marking strategies were wrongfully given in light shading; this has been fixed. Second, the data contains not 5 but 6 instances of flagging of the possessum noun in alienable possession. This raises the total number of alienable marking strategies from 43 to 44, as shown in Table 5 (Section 2.5.3) and Table 7 (Section 2.5.5). Third, the data contains 6 'flagging & agreement marking' strategies and 11 'flagging & referential marking' strategies, rather than 7 and 10, respectively (cf. Table 7 in Section 2.5.5). Finally, not 12 but 11 sample languages employ agreement markers in inalienable possession, as pointed out in footnote 31. None of these modifications affect the results of the study.

2.1 Introduction

This paper presents a new approach to the typology of *locus of marking*, also known as ‘head/dependent marking’, for the possessive noun phrase. Locus of marking is an influential typological parameter that is concerned with the location of morphosyntactic marking reflecting the syntactic relations that obtain inside a clause or phrase. Within possessive NPs, marking may be located on the possessed noun (the head of the phrase), on the possessor NP (the dependent), on both, or on neither. This typological parameter became widely known through work by Nichols (1986, 1988, 1992; but see also Lehmann 1983, 1985), who showed that locus of marking strongly correlates with a range of grammatical categories, among which the distinction between alienable and inalienable possession is the most relevant to the present study.

In this paper, I take a semantic approach to locus of marking which has two main features, to be discussed in turn below. First, I show that head-dependent relations come in two semantic types, depending on the meaning of the head noun. On the one hand, there are heads that are inherently relational: they require reference to a dependent and bear meaning only in relation to this dependent, which may therefore be considered the head’s *argument*. Typical examples of argument-taking heads are adpositions and verbs, but also nouns such as body part terms and kinship terms. On the other hand, there are heads that do not inherently require reference to a dependent, yet may be accompanied by one. The dependent here merely provides a further semantic characterization of the head and thus behaves as a functionally optional *modifier*. Clear examples of such relations are those between a noun and an attributive adjective or a relative clause, or between a verb and a (manner) adverb. Within possessive NPs, head-modifier relations involve inherently non-relational nouns such as ‘book’ or ‘pot’ and their possessors. Languages that make a formal distinction between the adnominal possession of relational nouns and that of non-relational nouns (traditionally referred to as a distinction between alienable and inalienable possession) are the focus of this study.

The second feature of my approach to locus of marking is a systematic distinction in the domain of possessive person marking between *referential markers* and *agreement markers*. In many of the world’s languages, possessive relations are expressed via markers of person (and often of number and gender, too) of the possessor on, or adjacent to, the possessed item (henceforth *the*

possessum).² Following work by Hengeveld (2012), I argue that while in some languages such markers are themselves expressions referring to the possessor, in other languages they mark agreement. In the former case, they behave like anaphoric pronouns (e.g. English *his*); markers of this type have alternatively been referred to in the literature as ‘cross-reference markers’ (Bloomfield 1933: 193), ‘anaphoric agreement markers’ (Siewierska 2004: 126) or ‘bound/incorporated pronouns’ (when cliticized or affixed to the possessum; see Mithun 1991b; Bresnan 2001: 144; and Kibrik 2011: 92–104). In the latter case, the marker simply copies the relevant features from the possessor noun onto the possessum; for such markers alternative labels such as ‘person agreement markers’ and ‘grammatical agreement markers’ (Siewierska 2004: 126) have been used. Importantly, while agreement markers merely signal the relationship between a possessor and a possessum, referential markers actually represent the possessor, and thus the dependent, themselves. As such, referential markers are possible loci of marking, in that they may carry the marker(s) of the possessive dependency relation in the same way as nouns taking genitive case markers or adpositions. Although the distinction between referential markers and agreement markers has been the subject of extensive debate in the literature (e.g. Jelinek 1984; Bresnan & Mchombo 1987; Mithun 1991b; Austin & Bresnan 1996; Evans 1999, 2002; Siewierska 1999, 2001, 2004: 120–127; Baker 2001; Corbett 2003: 184–192; LeSourd 2006; Schultze-Berndt 2011; Croft 2013; Haspelmath 2013a), its relevance for locus of marking typology has so far gone unnoticed. This is because person markers are almost univocally treated as agreement markers, and therefore as head-marking, in traditional head/dependent-marking grammar. By making a systematic distinction between referential markers and agreement markers, this paper aims to integrate two important domains of typological research that have so far developed separately: locus of marking and the referential potential of person marking. Not only will this allow the corroboration of earlier generalizations put forward in the literature (most prominently by Nichols), but it also permits the discovery of other cross-linguistic patterns of possessive marking, more specifically in the domain of person marking, as will be further discussed below.

² Person markers never show the inverse relation, i.e. indexing the possessum on or adjacent to the possessor. Moreover, markers expressing other features (such as number or gender) of the possessum on the possessor have not been found among languages with a formal alienability split (Lehmann 1983: 362; Evans & Fenwick 2013) and are therefore not relevant to this paper.

The aim of this paper is twofold. First, I investigate to what extent the semantic opposition between inherently relational nouns (and their argument possessors) and inherently non-relational nouns (and their modifier possessors) constrains cross-linguistic patterns of locus of marking. Using data from a worldwide sample of 37 languages, I identify two cross-linguistic tendencies: (i) if in a language possessive marking is located on non-relational nouns, it is also located on relational nouns, and (ii) if in a language possessive marking is located on argument possessors, it is also located on modifier possessors. These tendencies reflect a preference of relational nouns for possessum-marking, and a preference of non-relational nouns for possessor-marking. Both preferences can be explained by the opposition between arguments and modifiers: since the presence of a dependency relation is already built into the meaning of the relational noun, possessors of relational nouns are less in need of means of possessive marking than possessors of non-relational nouns. To put it the other way around, since modifier possessors are not inherently presupposed by their possessum noun and are thus functionally marked as optional enrichments of their heads, they call more strongly for a means of possessive marking than argument possessors. As a result, non-relational nouns exhibit possessor-marking more often than relational nouns, and relational nouns more often show marking of the possessum, or no marking at all, when compared to non-relational nouns.

The second aim of this study is to determine whether there is a relationship between the referential potential of possessive person markers, following the distinction between referential markers and agreement markers introduced above, and the semantic relationality vs. non-relationality of the possessum noun. This investigation yields a third cross-linguistic tendency: (iii) if relational nouns take referential markers, non-relational nouns take referential markers as well. This tendency demonstrates that person markers used in the possession of relational nouns are inherently less likely to be referential in nature (and thus more likely to be markers of agreement) than those used in the possession of non-relational nouns. This asymmetry can also be explained by the modifier/argument opposition: given that argument possessors are an automatic consequence of the semantics of a relational noun, these types of possessors are in less need of a referential expression than modifier possessors. In sum, modifier possessors thus demonstrate more expressive means of coding than argument possessors, both in terms of locus of marking and in terms of the referential potential of person marking.

The paper is structured as follows. Section 2.2 provides the necessary theoretical background for the study. First, I briefly discuss the notion of

dependency adopted in the present paper (Section 2.2.1). I then discuss the opposition drawn between modifiers and arguments in possessive NPs (Section 2.2.2). The distinction between referential markers and agreement markers is discussed in a third subsection (2.2.3). A final subsection (2.2.4) presents the locus of marking typology applied in this paper, which integrates the typology of referential/agreement markers discussed in the previous subsection. The three hypotheses investigated in this study are formulated in Section 2.3. Section 2.4 presents the language samples on which these hypotheses were tested, as well as some important methodological preliminaries. In Section 2.5, the results of the study are presented and discussed. Section 2.6 then compares these results to those obtained in earlier work, most prominently that by Nichols (1986, 1988, 1992). Finally, Section 2.7 rounds the paper off with some concluding remarks and directions for further research.

2.2 Theoretical background

2.2.1 The notion of dependency

According to the notion of *dependency* adopted in this paper, a head is a lexical item that determines the syntactic category (and distribution) of the word or phrase it is part of, while all other lexical and/or referential elements of that word or phrase are dependents.³ Under this view, possessive relationships are dependency relations, since the possessum noun determines the nominal category of the entire word or phrase. As this definition makes clear, dependency relations may be identified not only at the level of the phrase, but also at the level of the word. This means that possible heads not only include noun words, but also noun stems. When a noun word is accompanied by a lexical possessor or an independent pronoun, the resulting construction is a noun phrase. Similarly, the combination of a noun stem and a person affix results in a noun word, whereby the category of the noun stem thus determines the category of the noun word. Accordingly, the dependent need not be a noun or an independent pronoun, but may take the form of a person affix as well. The dependency relation may thus obtain between a noun stem and a (referential) person affix. (Person forms that represent the dependent are referred to using the neutral term ‘referential marker’ in this paper, and are further discussed in

³ A head may also determine the syntactic category and distribution of a clause, as in the case of verbal heads.

Section 2.2.3). This definition of dependency is more specific than Nichols', who applies the definition to phrases only when stating that "the head ... determines the category of its phrase" (Nichols 1986: 57). As a result, person affixes are not possible dependents in Nichols' locus of marking typology.

When taking a semantic approach to dependency, a careful distinction must be drawn between the two types of dependency relations defined above: those between a head and an argument, and those between a head and a modifier. Within possessive NPs, this involves inherently relational nouns and their (argument) possessors, and inherently non-relational nouns and their (modifier) possessors, respectively. This opposition is the topic of the next subsection. Section 2.2.3, in turn, will show how person markers representing the dependent (i.e. referential markers) can be distinguished from person markers that do not represent the dependent (i.e. agreement markers).

2.2.2 Modifiers vs. arguments in possessive NPs

It is widely known that nouns functioning as possessed items in possessive constructions encode concepts of two types: concepts that are inherently relational and concepts that are not (see, for instance, Seiler 1983a; Lehmann 1985; Partee 1997; and Partee & Borschev 2003). Nouns encoding concepts of the former type inherently presuppose a relationship to a possessor and are therefore often regarded as taking their possessor as an argument. Typical nouns fitting this semantic profile are kinship terms and body part terms. Part of the meaning of nouns such as 'father' or 'leg', for instance, is their relationship to another entity. Moreover, while a phrase such as *John's father* is normally interpreted as involving an inherent relationship between two individuals, a phrase such as *John's leg* is normally interpreted as denoting the inherent part of the possessor's body.⁴ Both the presence and the semantic interpretation of the possessive relationship are thus inherent to the meaning of the relational noun (see Barker 1995 and Taylor 1996).

Given their inherent relationality, nouns denoting kinship terms and body parts are often likened to verbs and adpositions as items with an argument structure (or valency): each may be conceived of as opening up a semantic

⁴ In principle, a phrase such as *John's leg* could alternatively be interpreted as referring to somebody else's leg, e.g. that of an animal that John is eating or of one that John has caught. In practice, however, such interpretations are constrained to pragmatically special contexts and arise rather infrequently (see the discussion of the study by Lichtenberk et al. 2011 below).

argument position and determining the semantic (and syntactic) relationship with the items filling this position (e.g. Seiler 1983a: 11–13). In many languages, this semantic parallel between nouns, verbs, and adpositions is reflected morphosyntactically. Cross-linguistically common are formal correspondences between bound person markers (Siewierska 1998). A case in point is Katukina-Kanamari (Katukinan, Brazil), in which relational items receive a single set of person prefixes, be they nominal (1a), verbal (1b), or adpositional (1c):

- (3) a. *ha-tyo* *Tikon*.
 3SG-daughter *Tikon*
 ‘Tikon is his daughter.’
- b. *ha-ti:* *pi:da*.
 3SG-kill *jaguar*
 ‘He killed the jaguar.’
- c. *ha-katu* *Tirin*.
 3SG-with *Tirin*
 ‘Tirin is with him/her.’ (Dos Anjos 2011: 224–225)

Interestingly, the language also employs an ergative/genitive case marker that is used on nominal arguments (2a), verbal arguments (2b), and postpositional arguments (2c):

- (2) a. *Pityira-na* *tyo* *Tikon*.
 Pityira-GEN daughter *Tikon*
 ‘Tikon is Pityira’s daughter.’
- b. *Kopa-na* *ti:* *pi:da*.
 Kopa-ERG killed *jaguar*
 ‘Kopa killed a jaguar.’
- c. *Pioru-na* *katu* *Tirin*.
 Pioru-OPOSTP COM *Tirin*
 ‘Tirin is with Pioru.’ (Dos Anjos 2011: 221–222)

These examples show that in Katukina-Kanamari not only person marking but also case marking is formally sensitive to the similarities in the semantic relationality of nouns, verbs, and adpositions.

Nouns encoding non-relational concepts do not semantically entail the presence of a possessor and therefore lack an inherently relational meaning; in such nouns, the possessive relationship must be established via the presence of a possessor (Seiler 1983a: 62). This possessor merely provides an additional

characterization of the possessum, restricting the reference of the possessum to a specific (subset of) item(s). Clear examples of inherently non-relational concepts are concrete (inanimate), countable objects, such as ‘book’, ‘chair’, ‘basket’ and ‘pot’. Unlike relational nouns, nouns denoting non-relational concepts do not provide a determinate specification of the relationship to their possessor, which, as a result, admits a range of freely available interpretations. Examples include legal ownership (*John’s car*, the car that John owns), but also control (*Mary’s employees*, the employees Mary is responsible for) and location (*the house’s garden*, the garden near the house) (see Seiler 1983a: 40–41 and Koptjevskaja-Tamm 2004). This semantic behavior parallels that of attributive adjectives, relative clauses, and other noun modifiers. Possessors of inherently non-relational nouns may therefore also be regarded as modifiers.

In many languages, the functional similarity between various types of modifiers is formally reflected in their identical encoding (Gil 2013; Nikolaeva & Spencer 2013). This is, for instance, the case in Lango (Eastern Sudanic, Uganda), where the marker *à* is used with modifiers of three types: possessors (3a), attributive adjectives (4b), and relative clauses (4c):

- (3) a. *gwôkk à lócà*
 dog ATTR man
 ‘the man’s dog’
- b. *rwòtt à ràc*
 king ATTR bad
 ‘the bad king’
- c. *lócà à=mê rwòt òmìò lyèc*
 man ATTR=REL king 3SG.give.PFV elephant
 ‘the man that the king gave the elephant to’
 (Noonan 1992: 154, 218, 215)

Modifier marking of this kind often involves *flagging*, a term coined by Haspelmath (2013a: 217) for case/adpositional marking of dependent nouns. In this paper, I also use this label for other invariant markers, such as the Lango attributive marker in (3), which signal the dependency relation on or adjacent to the possessor or the possessum. Hence, in using ‘flagging’ for invariant markers

of a dependency relation, irrespective of their locus, I use the term in a broader sense than Haspelmath.⁵

Languages that differentiate formally between head-argument relations and head-modifier relations in possessive NPs are traditionally referred to as implementing a distinction between alienable and inalienable possession. Importantly, however, the modifier/argument opposition is logically independent of whether or not a language employs a formal alienability split. Cognitive evidence in support of this point is provided by Lichtenberk et al. (2011); this study shows that the interpretation of possessive NPs by speakers of English – a language without a formal alienability split – strongly depends on whether or not the possessum noun encodes an inherently relational concept. Phrases headed by inherently relational nouns, such as ‘my child’, tend to yield the interpretation inherent to the meaning of the noun, i.e. the possessor’s own child, not someone else’s child. Phrases headed by non-relational nouns, however, are open to various interpretations, including legal ownership, location, and control, as exemplified above. These findings clearly demonstrate the cognitive reality of the modifier/argument opposition and its cross-linguistic relevance, even in languages where the opposition is not formally reflected in the domain of adnominal possession.

This paper focuses on languages with a formal alienability split in possessive NPs with a nominal possessor. Two languages that meet this requirement are exemplified below. In Amele (Trans-New Guinea, Papua New Guinea), inalienable possession is marked by means of a person marker on the possessum noun, as shown in (4a), while alienable possession is marked by means of flagging, more specifically by a possessive postposition, as shown in (4b):

- (4) a. *Naus mela-h-ul*
 Naus son-3SG-PL
 ‘Naus’s sons’

⁵ This approach is supported by the fact that in clausal dependency relations, invariant means of coding may also be located on the head, i.e. the verbal predicate, rather than on the dependent. In Chickasaw, for instance, the presence of a comitative or locative argument is expressed by corresponding markers on the verb that do not inflect for person (or number/gender) (Munro & Gordon 1982: 110; see also Hengeveld 2012: 476). Means of flagging (under the broader definition applied in this paper) may thus take dependents as well as heads as their locus, not only in phrases but also in clauses.

- b. *Naus na joo*
 Naus POSS house
 'Naus's house' (Roberts 1987: 139)

In Nyangumarda (Pama-Nyungan, Australia), inalienable possession remains unmarked, as shown in (5a), while alienable possession is marked by flagging the possessor noun with a genitive case suffix, as shown in (5b):

- (5) a. *muruntu jina*
 goanna foot
 'a goanna track'
 b. *mirtawa-mili yukurru*
 girl-GEN dog
 the girl's dog' (Sharp 2004: 312, 313)

As is widely known, languages vary extensively in the types of nouns that participate in alienable and inalienable possession (Chappell & McGregor 1996: 9; Heine 1997: 174; Stolz et al. 2008: 38–40). Inalienable nouns typically form a closed class, which consists not only of kinship and/or body part terms but additionally often includes spatial terms, other parts of wholes, culturally basic items, and property nouns such as 'beauty' or 'strength' (see Nichols 1988: 572; Nichols & Bickel 2013b). Moreover, languages vary as to which items of a given semantic type are treated as alienable or inalienable.⁶ As a result, there is no one-to-one relationship between the semantic opposition between relational and non-relational nouns described above, and the alienable or inalienable treatment of such nouns in possessive NPs in individual languages. In order to control for this asymmetry, I will focus on two sets of nouns in this paper: kinship terms and/or body part terms, which are taken to be representative of relational nouns, and concrete, inanimate, countable items, which are taken to be representative of non-relational nouns. Not only are such nouns the clearest instances of relational and non-relational nouns with regard to their inherent semantic properties, they are the most likely to receive inalienable and alienable coding respectively in individual languages; in fact, a set of kinship and/or body part terms is always part of any inalienable class, while a set of concrete, inanimate, and countable items is always part of any alienable class (see Haiman 1985: 136; Chappell & McGregor 1989: 26). Focusing on these two sets of nouns thus maximizes the

⁶ Examples of such languages and their methodological treatment in this paper are discussed in Section 2.4.2.

likelihood of finding nouns that universally take the inalienable and alienable marking strategy, respectively. The relationship between kinship/body part nouns and their argument possessors is henceforth to be referred to as *inalienable (possession)*, and the relationship between concrete, inanimate, count nouns and their modifier possessors as *alienable (possession)*. Not only are these labels in keeping with traditional terminology, they avoid the difficulty that the terms ‘modifier’ and ‘argument’ have connotations that do not relate to the topic of this paper. Both labels are thus used in a purely semantic sense, independent of the formal expression of the relationship in individual languages.

2.2.3 Referential markers and agreement markers

In this section, I discuss the second feature of the locus of marking typology applied in this paper, namely the distinction in the domain of person marking between referential markers and agreement markers. In order to establish the locus of marking in a possessive NP, we first need to consider which unit(s) may function as the possessor, i.e. as the dependent. This is a straightforward matter in languages where the possessive relationship remains unmarked or is marked by means of flagging, as in Nyangumarda, illustrated in (5a) and (5b); in such languages, there is only one available candidate for the possessor role: the possessor nominal itself. In languages where the possessive relationship is marked by means of person marking, however, the issue is not so straightforward, as demonstrated below with respect to Nyulnyul (Australian, Australia). In Nyulnyul, as in many of the world’s languages, a possessor nominal is indexed by a person marker on the possessum noun, as shown in (6a). However, as shown in (6b), the possessor nominal may be dropped if retrievable from the preceding discourse, and then the prefix occurs on its own:⁷

- (6) a. *bin wamb ni-mal*
 this man 3MIN.POSS-hand
 ‘this man’s hand’
 b. *ni-mal*
 3MIN.POSS-hand
 ‘his hand’ (McGregor 2012: 422, 116)

⁷ The construction may be additionally accompanied by an oblique pronoun, which is optional in inalienable possession (but obligatory in alienable possession; McGregor 2012: 422, p.c.). Since the focus here is on the possessive prefix, this pronoun is not given in the examples below. Note that only body part nouns are prefixed in Nyulnyul.

Person markers of the type exemplified here for Nyulnyul have received a number of different labels in the literature, including that of ‘pronominal affix’ (e.g. Corbett 2003, 2006), ‘ambiguous agreement marker’ (Siewierska 2004: 126), and ‘cross-index’ (Haspelmath 2013a: 207). The problem with such markers is that it is not immediately clear how they should be analyzed, i.e. as markers of agreement, in which case they simply copy the relevant features from the possessor noun onto the possessum, or as referential expressions in their own right, in which case the possessor is referred to twice in the same NP. Example (6a) suggests the former analysis, as the marker here behaves like a canonical agreement marker – much like the English suffix *-s* on verbal predicates – in being accompanied by a corresponding nominal inside the same possessive NP.⁸ Example (6b), however, argues for the latter analysis, since here the marker functions like an anaphoric pronoun – though, unlike English *his*, a bound rather than a free one – since it expresses the possessor on its own, without a corresponding nominal.⁹

Because of their dual nature, a question that has led to extensive debate in the literature is how person markers that optionally co-occur with a nominal, as in Nyulnyul, should be analyzed. The answer to this question is crucial to the analysis of person markers in terms of locus, since only referential markers – but not agreement markers – instantiate the dependent possessor and are therefore possible loci of marking. In other words, while agreement markers merely signal the dependency relation between head and dependent, referential markers represent the dependent themselves. As such, they may carry the marker(s) of the possessive dependency relation in a manner similar to the flagging of other dependents, namely, the possessor noun. Three types of approaches to person markers as in (6) have been provided in the literature, each of which will be briefly discussed below. After this brief discussion, I will present the approach to be taken to such markers in the present paper.

First, in much generative work (e.g. Jelinek 1984; Baker 1996), the person marker is considered to be an agreement marker, irrespective of whether the corresponding nominal is expressed or not. When the nominal is not expressed, as in (6b), the marker is considered to agree with an underspecified possessor,

⁸ Person markers that co-occur obligatorily with a corresponding NP are not attested in possessive NPs; the few attested cases are found for subjects in main clauses, and are largely restricted to Western Europe (Siewierska 1999: 238, 2004: 268–273).

⁹ Clear instances of referential markers, like the English pronouns *he* or *his*, may only combine with a possessor referent outside the phrase boundaries, for instance as a left-dislocated topic (as in *John, his suitcase got stolen*) or in the preceding discourse.

called ‘pro’. This analysis is also adopted for bound person forms in traditional head/dependent marking grammar (Nichols 1992: 59). In many functional frameworks (e.g. Dik 1997; Hengeveld & Mackenzie 2008), however, the marker is considered to be a referential marker, irrespective of whether the nominal is expressed or not. When the nominal is expressed, the marker and the nominal are in an appositional relation, such that the possessor is referred to twice.¹⁰ Finally, a third analysis is defended by Siewierska (1999, 2004: 120–127), who simply regards the marker as a case of agreement when the nominal is expressed, but as referential when the nominal is dropped. Nichols (1992: 79–80) adopts this analysis for freestanding person markers (examples of such markers will be provided below).

In this paper, an alternative approach is adopted for person markers that optionally co-occur with a possessor nominal, following recent work by Hengeveld (2012). This approach combines the generative and functional approaches given above, but does not assume that both apply in parallel, as in the third approach by Siewierska. Rather, the claim is that in some languages the marker is referential in nature while in others it is a marker of agreement. Moreover, even in one and the same language, some markers may be referential, while others may express agreement. The referential potential of a possessive person marker is thus determined on a language-specific as well as a construction-specific basis. A referential marker represents the possessor on its own and may have a nominal expression of the possessor in apposition. An agreement marker, by contrast, is merely the outcome of a copying procedure, and agrees with a possessor nominal that is overtly expressed or that is present only in the discourse context. By adopting such a language-specific and construction-specific approach to cross-reference/agreement, we can investigate the referential potential of person markers in different grammatical constructions, such as alienable and inalienable possessive constructions, which is one of the goals of this paper (see Section 2.3).

The approach to possessive person markers set out in the preceding paragraph is warranted by the fact that languages may allow the possessor nominal to remain unexpressed for two different reasons. On the one hand, it

¹⁰ A possible objection to this analysis is the fact that the possessor is referred to twice, which violates a theoretical principle known as the bi-uniqueness constraint (Bresnan 2001: 145, 158) or the theta-criterion (Jelinek 1984; Speas 1990). However, as pointed out by Haspelmath (2013a: 212, p.c.) and Croft (2013: 96), combinations of referential markers and (possessor) nominals do not express two distinct referents, but a single referent that is distributed over two formal entities. Such distributed expression of meaning is not uncommon cross-linguistically.

may remain unexpressed because the marker itself provides sufficient reference to the possessor. This is the case in English, where the anaphoric pronoun *his* is referential on its own and therefore need not be expressed lexically. On the other hand, languages may leave the possessor nominal unexpressed because it is retrievable from the discourse context. A case in point is Tidore (West Papuan, Indonesia), where possessors (as well as verbal arguments¹¹) tend to remain unexpressed when the context provides sufficient information. As a result, possessive NPs (as well as entire clauses) often lack any overt specification of the possessor, as illustrated in (7):

- (7) *Dadi towaro papa la ngone fo-wako*
 So take.leave father so 1PL.INCL 1PL.INCL.A-return
 'So take leave of (your) father so that we go home.' (Van Staden 2000: 404)

From facts like these we may conclude, as mentioned above, that a distinction has to be made between possessor nominals that are not expressed because the person marker is referential on its own and those that are not expressed because the language concerned has a low referential density. In the latter case, the person marker is an agreement marker, despite the absence of the possessor nominal, and agreement occurs with the possessor in the discourse context.

In order to determine whether a possessive person marker is referential on its own or agrees with a possessor in the discourse context, a simple test may be applied. As mentioned above, I here assume an analysis in which agreement is a matter of copying grammatical feature information from the possessor nominal to the possessum (following Corbett's 2006 notion of canonical agreement; see also Lehmann 1982a: 203 and Bickel & Nichols 2007: 229). In such an analysis, only those features can be copied that can be retrieved from the possessor nominal. This means that if a person marker is richer in terms of grammatical features than the possessor nominal itself, it cannot be an agreement marker but must be a referential marker instead. This is illustrated by the examples in (8) from Nyulnyul (Australian, Australia), partially repeated from (6) above, and the isolate Burushaski (Pakistan) in (9). In these examples, the optionality of the possessor nominal is indicated by means of parentheses, and the expression of possessor role information by the possessive person marker is abbreviated as 'POSS' in the gloss:

¹¹ The degree to which arguments of verbs are actually expressed has been typologized by Bickel (2003) under the name of *referential density*. Interestingly, this typological parameter also applies to possessive NPs.

- (8) a. (*bin wamb ni-mal*)
 this man 3MIN.POSS-hand
 ‘this man’s hand’
- b. (*wamb-in i-n-dam-Ø yiil jan*)
 man-ERG 3.NOM-CM-hit-3MIN.ACC dog 1MIN.OBL
 ‘The man hit my dog.’ (McGregor 2012: 585)
- (9) a. (*hir-e í-yas*)
 man-GEN 3SG.HUM.M-sister
 ‘the man’s sister’
- b. (*hir í-phús-im-i*)
 man.ABS 3SG.HUM.M-bound-AOR-3SG.HUM.M.A
 ‘He tied the man up.’ (Berger 1998: 117; Grune 1998, p.c.)

Example (8a) shows that the possessive person marker *ni-* expresses person and possessor role information (and number, but as I will explain below, number could not be taken into account in this study), while only the person information can be copied from the possessor nominal, which lacks possessor role information. The person marker is thus richer in terms of the grammatical features expressed than the possessor nominal and for that reason must be referential in nature. Example (8b) shows that the person marker in (8a) indeed carries possessor role information, since subjects, such as *wamb* ‘man’ in (8b), require a different person marker, *i-* in this example. The marker *ni-* in (8a) is thus unique to possessive constructions and as such overtly marks its possessor role.

Example (9a) shows that the possessive person marker *í-* expresses person, number, and (human male) gender, grammatical features that are also encoded by the possessor nominal, which furthermore encodes possessor role information by means of a genitive case affix. In this case, an agreement analysis is warranted, as the relevant features to be copied to the person marker are indeed available from the possessor nominal. The fact that the marker *í-* in (9a) does not carry possessor role information is demonstrated in example (9b), which shows that the marker is used for non-actors, such as *hir* ‘man’, in general.¹² Hence, the possessive person marker is not unique to possessive constructions and as such does not uniquely identify its possessor role.

¹² Suffixes such as *-i* in (9b) index the actor.

Another possibility is for the possessive person marker and the possessor nominal to express the same amount of feature information. In this case, an agreement analysis of the person marker is also warranted, since the marker can copy all of the relevant information from the possessor nominal. A case in point is Koasati (Muskogean, United States), exemplified in (10):

- (10) a. (*jhociím*) *im-laykí*
 star 3-dung
 ‘a meteor’ (lit. ‘star’s dung’)
- b. (*nitá*) *im-wali:ka-t*
 bear 3-run-PST
 ‘(He) ran away from the bear.’ (Kimball 1991: 433, 131)

Example (10a) shows that the possessive person marker *im-* expresses the same person information as provided by the possessor nominal. Like the possessor nominal, the marker does not carry role information, since it also marks a range of other roles in main clauses, including malefactive, such as *nitá* ‘bear’ in (10b). This means that the relevant information, in this case just person information, can be readily copied from the possessor nominal and the marker is correspondingly analyzed as an agreement marker.¹³

To sum up, agreement and reference are two different strategies of person marking, which can be distinguished by considering the distribution of grammatical feature information between the possessor nominal on the one hand and the possessive person marker on the other.¹⁴ While referential markers expand on the feature information provided by the possessor nominal, agreement markers can only express those features provided by the possessor nominal, as they are mere copies of this nominal and have no independent

¹³ This analysis also applies to languages in which both the possessor nominal and the possessive person marker carry role information. For instance, if the person marker were to provide role information in Burushaski (9a), this would still warrant an agreement analysis, since this information can be readily copied from the possessor nominal. In Nyulnyul (8a), by contrast, the possessor nominal does not carry role information, and thus cannot be the source of this information on the possessive person marker. Therefore, the marker must be analyzed as referential instead.

¹⁴ Another diagnostic to determine whether indexes are referential or not that has been proposed in the literature (Austin & Bresnan 1996; Evans 1999, 2002) can only be applied at the clausal level and is not well suitable for possessive NPs, as it relies on differences in the specificity and definiteness of the co-occurring nominal. Since possessors are typically definite and specific, this diagnostic is hard to apply within the possessive NP.

semantic contribution to make to the utterance. It is important to point out that in this paper I focus solely on the distribution of (possessor) role information, not on that of other features such as number or gender. This has two main reasons. The first is that such features are absent from many of the world's languages.¹⁵ The second is that the comparison of nouns and person forms in terms of the distribution of these features is less than straightforward. As noted above, set nouns and person forms express two different types of features (nominal aspect vs. number), which significantly complicates their comparison in terms of the distribution of information. Gender is a problematic feature in that the gender of a noun usually depends on (person) forms occurring outside the NP itself and thus cannot be determined independently.

Importantly, the functions carried out by the bound possessive person forms in examples (8) to (10) above could just as well have been carried out by free possessive person forms. This is demonstrated in example (11) from Ungarinyin (Australian, Australia) and example (12) from Tiwi (Australian, Australia):

- (11) a. (*Gádbuŋu*) *anàŋga* *dámbun*
 Gadbuŋu 3SG.M.POSS country
 'Gadbungu's country'
- b. *ada* *ŋima* *djiri-guḍe*
 sit I.will.do 3SG.M-COM
 'I will sit down with him.' (Rumsey 1982: 70, 74)

¹⁵ With respect to number, Haspelmath (2013b) for instance demonstrates that over 30% of the 291 languages in his sample completely lack plural marking for (a set of) nouns. Moreover, as demonstrated by Rijkhoff (2002: 38–41, 104–117), many languages, including Nyulnyul and Koasati exemplified above, lack a nominal number feature due to the presence of so-called 'set nouns' (i.e. nouns that do not inherently refer to a single item, like regular count nouns in English, but rather denote a set of items, which may be a singleton set or a collective set). Such nouns do not express number but may express a feature Rijkhoff refers to as 'nominal aspect', i.e. the kind of set involved. This appeals to markers that express plural (or, less commonly, singular) number in other languages. The absence of a nominal gender feature is cross-linguistically also common: more than half of the 257 languages in Corbett's (2013) sample have no nominal gender, and almost 70% of the 378 languages in Siewierska's (2013a) sample do not distinguish gender in independent person forms.

- (12) a. (*Purukuparli*) *ηara mɔani*
 Purukuparli 3SG.M son
 ‘Purukuparli’s son’
 b. *ηara jiiɔimi jikwani*
 3SG.M he.made fire
 ‘He made fire.’ (Osborne 1974: 74, 61)

The examples in (11) and (12) are functionally completely parallel to (8) and (10). In (11a), it is shown that the free possessive person marker *anàŋga* carries possessor role information while the nominal does not. The fact that the possessive person marker carries possessor role information is demonstrated in example (11b), where another set of free person forms is used outside the domain of possessive constructions, for instance for comitatives in main clauses. The possessive person marker thus expands on the role information provided by the possessor nominal and must therefore be referential in nature, just like the bound person marker in Nyulnyul (8a). In (12a), by contrast, neither the free person marker *ηara* nor the possessor nominal carries role information. As shown in (12b), the marker is not unique to possessive constructions, since it also marks actors in main clauses, among other roles. Hence, the marker does not expand on the role information provided by the possessor nominal, in which case an agreement analysis is warranted, just as with the bound person form in Koasati (10a).

Importantly, the examples above demonstrate that possessor role information is not only conveyed by independent person markers, as in Ungarinyin (11a), it can also be conveyed by person markers that are cliticized or affixed to the possessum, as in Nyulnyul (8a). Both free and bound person markers resemble nominals in that they have a unique form when used in possessive constructions, as in Nyulnyul (8a) and Ungarinyin (11a), or a form that is also used in other constructions, e.g. for various types of verbal arguments, as in Burushaski (9a), Koasati (10a), and Tiwi (12a).¹⁶ The capacity of independent referential expressions, i.e. pronouns (in traditional terminology) and nouns, to have a unique possessive form is generally referred to as ‘the genitive case’ or, more generally, as ‘flagging’ (which includes the use of

¹⁶ I consider a set of possessive person markers to be dedicated to the possessive NP when it differs in at least one form from another set. Partial correspondences between sets of person markers are common cross-linguistically, but not easily classified in a systematic way (see Siewierska 1998 for an attempt regarding verbal person markers). As a result, these have not been taken into consideration in this study.

adpositions, see Haspelmath 2013a). Strikingly, however, no accepted terminology exists for the same function of bound person forms; this shows that the phenomenon has long gone unnoticed, not least in traditional head/dependent-marking grammar, where, as mentioned previously, all bound person forms are considered to be agreement markers, irrespective of the distribution of role information in the phrase. In the absence of an established term, I refer to the expression of possessor role information by bound referential markers as ‘flagging’, on a par with the same function of independent referential markers (i.e. pronouns) and nouns.

In sum, this section has introduced a novel typology of person markers, distinguishing referential markers and agreement markers for possessive NPs with a nominal possessor. In this typology, person markers are given a unified analysis as referential markers or as markers of agreement, depending on the distribution of possessor role information in the language and the (possessive) construction in question. Importantly, only referential markers (but not agreement markers) instantiate the dependent possessor and are therefore possible loci of marking or, more specifically, of flagging. As a result, referential markers and agreement markers differ in locus; this is further discussed in the next subsection, where I present the locus of marking typology applied to the data.

2.2.4 A semantic locus of marking typology

The locus of marking typology applied in this paper considers the location of morphosyntactic marking of dependency relations in possessive NPs. In any NP, marking may have four different locations, or *loci*: the possessor (which may take the form of a referential person marker or a nominal), the possessum, both, or neither. These four loci may take the following types of marking strategy: flagging, referential marking, and agreement marking. As in traditional head/dependent-marking grammar, I will not consider other NP-internal marking strategies, such as constituent order. Referential markers occupy a special position in the typology: not only do they mark the relationship between possessor and possessum, but they themselves instantiate the dependent possessor (see the previous subsection). As such, they are both possible loci of marking and a possible marking strategy. This dual functioning is reflected in locus of marking, as further discussed below.

The locus of marking typology applied to the data is presented in Table 1 below. The table presents the four different loci (in the first column), the item(s) that represent(s) each locus (in the second column), the type of marking strategy

of each locus (in the third column), and the languages exemplifying the respective patterns discussed in this and previous sections (in the fourth column).

Table 1: A semantic typology of locus of marking

Locus	Representation	Marking strategy	Exemplar language
Possessor	Noun	Flagging	Amele (4b), Nyangumarda (5b)
	Referential marker	Flagging	Ungarinyin (11a/13)
Possessum	Noun	Flagging	Macushi (14)
		Agreement marker	Amele (4a), Koasati (10a), Tiwi (12a/16)
Possessor & possessum	Noun _(psr) & Noun _(psm)	Flagging _(psr) & agreement marker _(psm)	Burushaski (9a)
	Referential marker _(psr) & noun _(psm)	Flagging _(psr) & referential marker _(psm)	Nyulnyul (8a/16)
	–	irrelevant	Nyangumarda (5a)

Notes: The locus type ‘possessor & possessum’ specifies – between brackets – the items representing each locus (in the second column) and the marking strategy that each item takes between brackets (in the third column). The abbreviations ‘psr’ and ‘psm’ refer to the possessor and the possessum, respectively.

The table requires some clarification. First, the possessum is never instantiated by a referential marker (e.g. [man its dog] ‘the man its dog’ in pseudo-English), since there is no language in which person markers index features of the possessum on the possessor (instead, person markers may index the possessor on the possessum; see also footnote 2). Second, the table only presents those locus of marking types that are attested in the languages studied for this paper (see Section 2.4). The fact that person markers never index the possessum excludes the use of person markers on or adjacent to possessors. A number of additional types are rarely (if ever) attested among the world’s languages, such as the marking of both the possessor noun and the possessum by means of flagging (e.g. [man-POSS dog-POSS] ‘the man’s dog’s’ in pseudo-English) or the use of an independent person marker in combination with flagging of the possessum (e.g. [man his dog-POSS] ‘the man his dog’s’ in pseudo-English). Each locus of marking type in the table is briefly illustrated and discussed below.

As pointed out in the previous subsection, the possessor in any possessive NP can be instantiated by two types of items: by a nominal, or by a referential marker that may occur in apposition to the nominal in the NP. Both types of referential expressions may carry the marker(s) of the possessive dependency relation, a property referred to as ‘flagging’ in the present study. For possessor nouns, flagging usually takes the form of an adposition, as in Amele (4b), or of a genitive case marker, as in Nyangumarda (5b), each exemplified in Section 2.2.2. A language in which flagging takes the form of role marking on the referential marker is Ungarinyin (11a), repeated as (13) for convenience:

- (13) (*Gádbuŋu*) *anàŋga* *dámbun*
 Gadbuŋu 3SG.M.POSS country
 ‘Gadbungu’s country’

As discussed in Section 2.2.3, referential markers like *anàŋga* are referential expressions of the possessor that overtly encode the possessor role. The marker in (13) is unique to possessive constructions, and thus carries such role information. Hence, the information on the possessive nature of the dependency relation is on the possessor – by virtue of the referential marker – and the NP in (13) is correspondingly analyzed as possessor-marked.

The dependency relationship may alternatively be marked on the possessum. Possessum-marking comes in two types. On the one hand, it may involve flagging, whereby markers of the possessive dependency relation are located on or adjacent to the possessum noun. In Macushi, for instance, the possessum noun takes the suffix *-ri* (Cariban; Brazil, Guyana, Venezuela), given in (14):

- (14) *Leandro wa’ka-ri*
 Leandro axe-POSS
 ‘Leandro’s axe’ (Abbott 1991: 62)

Other well-known cases of possessum-marking via flagging are so-called ‘ezafe’ markers, known mainly from Iranian languages, and possessums taking the ‘construct’ form, which typically involves phonological shortening and is characteristic of Semitic and other Afro-Asiatic languages.

Possessum-marking may alternatively take the form of person marking expressing agreement of the possessor nominal with the possessum. Agreement markers are often affixes or clitics, as in Amele, exemplified in (4a) in Section 2.2.2, but they may also be free forms, as in Tiwi (12), repeated as (15):

- (15) (*Purukupali*) *ɲara mɔɔani*
 Purukupali 3SG.M son
 ‘Purukuparli’s son’

Since agreement is a matter of ‘displaced’ information, in that one entity (the possessor nominal in this case) determines the grammatical features of another entity (the possessum in this case), agreement markers are by definition syntactically associated with the possessum, irrespective of their formal realization (see Corbett 2006: 20). In Tiwi, the locus of the agreement marker is, furthermore, apparent from its positioning within the NP: the marker always precedes the possessum, even when the order of possessor nominal and possessum is reversed (Osborne 1974: 74–75). Note that, in addition to their formal status, the locus of agreement markers is also insensitive to whether or not they express role information. Agreement markers may copy such information from the possessor nominal, but since they are themselves not referential expressions of the possessor, they are not possible loci of marking.

A third option is the marking of both possessor and possessum. In languages where the possessor is solely expressed by a nominal, this involves flagging (typically case marking) of the nominal as well as the use of an agreement marker (typically a bound one) on the possessum. This locus of marking type was exemplified for Burushaski in (9a). In other languages, the possessor is expressed by a referential marker on the possessum, as exemplified for Nyulnyul in (8a), and repeated here as (16):

- (16) (*bin wamb*) *ni-mal*
 this man 3MIN.POSS-hand
 ‘this man’s hand’

Like the person marker in Ungarinyin (13), the marker in Nyulnyul is a referential expression of the possessor carrying the (possessor) role information. As such, the NP is possessor-marking. However, unlike the marker in Ungarinyin, the marker in Nyulnyul is affixed to the possessum, which means that it is also possessum-marking. Hence, as noted above, referential markers have a dual status, which is reflected in their locus of marking: semantically, the marker in Nyulnyul is possessor-marking, as the information on the possessive nature of the relation is on the referential marker, but syntactically the marker is possessum-marking, since it is affixed to the head. In this sense, bound referential markers perform the same two functions as the combination of the

flagging of nouns and the agreement marking of possessums in languages such as Burushaski: they express the possessive relationship in the NP (as does the flagging of possessor nominals) but also take the possessum as their (syntactic) locus (like agreement markers).

The fourth and last locus in Table 1 is the total absence of possessive marking. This involves possessors and possessums that are juxtaposed or compounded. An example of the former was given for Nyangumarda in (5a) in Section 2.2.2.¹⁷

Finally, in about one third of the languages studied, more than one marking strategy is used for alienable possession, inalienable possession, or for both. Each strategy is taken into account in this study in order to display the full range of cross-linguistic variation in (in)alienable possessive marking. In most sample languages, the same locus is marked twice, as in Slave (Na-Dene, Canada), where possessums in inalienable possession take a tonal and/or suffixal possessive marker as well as a prefix that agrees with the possessor in person and number. This is exemplified in (17):

- (17) (*chia*) *be-kw'en-é*
 bird 3SG-leg-POSS
 'the bird's wing' (Rice 1989: 228)

In other sample languages, however, the different marking options are in complementary distribution, their use being governed by a number of factors. One such factor is the opposition between proper nouns and common nouns, which plays a role in Ungarinyin (Rumsey 1982: 70–71): only proper noun possessors are marked by means of a free referential marker, as shown in (12) above, while common noun possessors take a genitive case marker. Another factor that involves properties of the possessor nominal is number. In Dogon (Niger-Congo, Mali; Heath 2008: 234–235), for instance, singular (alienable) possessors take the possessive marker *mà*, which is absent with possessors

¹⁷ Nichols additionally identifies a fifth locus type, called 'floating (or free/detached) marking', involving means of flagging that do not belong to the possessor nominal or to the possessum but are positioned relative to the phrase boundaries (Nichols 1992: 55–56; Nichols & Bickel 2013a). The only language in the sample with such a marker is Lango (Noonan 1992: 154; Bickel p.c.).

ending in a plural morpheme.¹⁸ Interestingly, the same types of factors play an important role in the morphosyntactic coding of other types of dependents, with the arguments of verbal predicates having received the most attention to date (see, e.g., Siewierska 2004: 149–162; Bickel 2010; Witzlack-Makarevich 2011; Van Lier & Van Rijn 2013 for an investigation of nominalizations).

Another source of differential patterns of possessive marking concerns properties of the possessum. A common factor is the division of possessums into lexical subclasses. Diegueño (Hokan; Mexico, United States; Miller 2001: 146), for instance, employs two sets of referential markers: one for kinship nouns, and one for all other types of inalienable nouns, including body parts. In Paumari (Arauan, Brazil; Chapman and Derbyshire 1991: 254), a small class of alienable nouns (without a common semantic denominator) selects a possessive prefix *ka-* instead of the set of person markers reserved for most other alienable nouns. Finally, in addition to a set of agreement markers, Slave uses different means of flagging the inalienable possessum in the form of a tonal marker, a suffixal marker, or both. An example of the latter was provided in (17). Only possessive marking that differs in declension class is treated as a single marking strategy.

To summarize, this paper applies a semantic typology of locus of marking which makes a clear distinction between the locus of referential markers and that of agreement markers. Nouns and referential markers are possible loci of marking – more specifically, of flagging; agreement markers, on the other hand, are not. In light of this new locus of marking typology, as well as the semantic opposition in dependency relations discussed in Section 2.2.2, I will now turn to the three hypotheses which are presented in the following section.

2.3 Hypotheses

The aim of this paper is to determine to what extent the semantic opposition between inalienable possession (the relation between inherently relational nouns and their argument possessors) and alienable possession (the relation between inherently non-relational nouns and their modifier possessors) constrains cross-linguistic patterns of locus of marking, on the one hand, and the referential potential of possessive person markers, on the other. As discussed in Section

¹⁸ Other relevant factors are anaphoricity, i.e. the nominal or pronominal character of the possessor, and person (cf. Siewierska 1998: 145, 152–153 and Chapters 3 and 4 of this thesis). Since I focus solely on nominal possessors, these factors are not relevant to the marking patterns in the languages investigated.

2.2.2, the two types of relations can be distinguished on the basis of the inherent semantic properties of the possessum noun: while possessums in inalienable possession presuppose a relationship to a possessor, which therefore behaves as an argument, possessums in alienable possession do not presuppose a relationship to a possessor, which therefore behaves as a modifier. In other words, while the relationship between a possessor and a possessum in inalienable possession is inherent to the latter, that between a possessor and a possessum in alienable possession is external to both. I expect this semantic asymmetry to be reflected both in the locus of possessive marking as well as in the type of possessive marking, i.e. the use of referential markers vs. that of agreement markers in the languages of the sample.

Focusing first on locus of marking, I test two predictions. On the one hand, possessors in alienable possession are expected to be in greater need of possessive marking than possessors in inalienable possession. This prediction is motivated by the fact that the presence of a possessor in alienable possession is less predictable to the language user than that of a possessor in inalienable possession, given that a possessor in alienable possession is not inherently presupposed by its possessum noun and is thus a functionally marked optional enrichment of its head. As a result, I expect that in alienable possession the possessor is more likely to be the locus of possessive marking than in inalienable possession. On the other hand, since possessors in inalienable possession are expected to be less in need of possessive marking than possessors in alienable possession, I expect that in inalienable possession the possessum is more likely to be the locus of possessive marking, or that it more often lacks possessive marking, when compared to alienable possession. Together, these predictions yield the following set of hypotheses, formulated in (i) and (ii) below:

- (i) If in a language the possessum in alienable possession is marked, the possessum in inalienable possession is marked as well.
- (ii) If in a language the possessor in inalienable possession is marked, the possessor in alienable possession is marked as well.

Note that languages marking both the possessor and the possessum participate in both hypotheses.

The third hypothesis tested in this study investigates the relationship between the referential potential of possessive person markers, i.e. the use of referential markers vs. that of agreement markers, and the type of possession in which they are used, i.e. alienable vs. inalienable possession. I predict that, since

possessors in alienable possession are not inherent to their possessum noun, and thus function as mere optional enrichments of their head, person markers in this type of possession are inherently more likely to be referential in nature than person markers in inalienable possession. To put it the other way around, since possessors in inalienable possession are inherent to the semantics of their possessum noun, and thus behave as arguments, they are expected to be in far less need of a referential expression than possessors in alienable possession. As a result, I expect that markers of inalienable possession are inherently less likely to be referential in nature (and thus inherently more likely to be markers of agreement) than markers of alienable possession. This prediction is further motivated by the fact that, as demonstrated in Section 2.2.3, referential markers are by definition always semantically richer than the possessor nominal in expressing possessor role information, while agreement markers often do not express role information, or, if they do, copy this information from the possessor nominal. Crucially, the need for marking role information is expected to be greater in alienable possession than in inalienable possession, as pointed out above. The corresponding hypothesis is formulated in (iii) below:

- (iii) If in a language person markers of inalienable possession are referential markers, person markers of alienable possession are referential markers as well.

The next section presents the language samples used to test the three hypotheses (Section 2.4.1), and delimits the set of possessive NPs investigated (Section 2.4.2). Each hypothesis will be addressed in turn in Section 2.5.

2.4 Methodological preliminaries

2.4.1 The language sample

The sample used in this study has been created in such a way that it reflects the highest possible degree of genetic and geographical diversity. The genetic criterion is met by adopting the sampling method of Rijkhoff et al. (1993) and Rijkhoff and Bakker (1998), which is applied to Ruhlen's classification of the

world's languages.¹⁹ This sampling technique makes use of so-called 'Diversity Values' (henceforth DV). These values determine the number of languages to be selected from each family and subfamily in a language family tree based on the internal complexity of that (sub)family, given a particular sample size. More internally complex (sub)families have a higher DV than less internally complex (sub)families, and are therefore represented by a higher number of languages in the sample. Isolates are, by definition, part of any sample. The genetic criterion is furthermore combined with a geographical one: where possible, the languages selected on the basis of the genetic criterion are spoken in non-contiguous areas.

For this study, I used as a starting point an initial sample of 62 languages.²⁰ Twenty-two (sub)families, including six isolates, were removed from this sample, since they do not contain languages with an adnominal alienability split. These (sub)families are mostly situated in Eurasia and South-East Asia. Within the restrictions of the genetic and geographical criteria, the sample thus satisfies a third, typological criterion set by the hypotheses tested in this study: it consists solely of languages with an adnominal alienability split. Furthermore, the languages Etruscan, Hurrian, and Meroitic selected by the sampling method were removed from the sample due to insufficient data. The result of this procedure is a sample with an actual number of 37 languages, which is presented in Table 2 below.

¹⁹ Note that I am not in any sense committed to Ruhlen's classification, which is controversial, mainly because it posits some large, poorly supported language families, such as the Amerindian and Australian families (e.g. Kaufman 1990; Nichols 1990; Campbell & Poser 2008). However, Rijkhoff et al. (1993) use this classification in their sampling technique, which is one of the few formalized methods of creating representative samples and which I therefore prefer to use. In any case, note that the sampling technique compensates for the use of Ruhlen's classification by requiring the selection of a larger number of languages from the postulated language families that are more internally complex. The classification of the sample languages according to the WALS, which follows the 14th edition of the Ethnologue (Grimes 2000), is much more accurate and widely accepted, and is therefore also provided in Table 2 below.

²⁰ The number of languages to be selected from each (sub)family in a sample counting 60 languages is specified in Rijkhoff et al. (1993: 186). However, Rijkhoff et al. (1993) make use of the first edition of Ruhlen's classification (Ruhlen 1987); in the second edition (Ruhlen 1991), which I use in this study, two additional first-order language families are distinguished: Korean-Japanese-Ainu and Kartvelian. Each requires representation by a single language. This brings the initial sample size to 62 languages.

Table 2: The 37-language sample

Language family (Ruhlen 1991)	Subfamilies	Language selected	Language family (WALS)	
Afro-Asiatic (3/3)	Chadic (1/1)	Gude	Afro-Asiatic	
	Berber (1/1)	Tamashek	Afro-Asiatic	
	Semitic (1/1)	Maltese	Afro-Asiatic	
Altaic (1/1)		Udihe	Altaic	
Amerind (8/9)	Northern Penutian (1/1)	Koasati	Muskogean	
	Hokan (1/1)	Diegueño	Hokan	
	Andean (1/1)	Urarina	isolate	
	Eq.-Tucanoan (2/2)	Paumarí	Arauan	
	M.-Tucanoan (1/1)	Hup	Nadahup	
	Ge-Pano-Carib (2/2)	Macushi	Cariban	
	Ge-Pano (1/1)	Bororo	Bororoan	
	Centr. Amerind (0/1)	–	–	
	Chib.-Paezan (1/1)	Sanuma	Yanomam	
Australian (4/4)	Nyulnyulan (1/1)	Nyulnyul	Nyulnyulan	
	Worrorran (1/1)	Ungarinyin	Worrorran	
	Pama-Nyungan (1/1)	Nyangu-marda	Pama-Nyungan	
	Other (1/1)	Mangarayi	Mangarrayi-Maran	
Austic (3/7)	Austro-Tai (2/5)	Daic (0/1)	–	
		Austro-Malayo-Pol. (1/1)	Drehu	
		Atayalic (0/1)	–	–
		Paiwanic (1/1)	Puyuma	Austronesian
	Tsouic (0/1)	–	–	

Table 2: The 37-language sample

Language family (Ruhlen 1991)	Subfamilies					Language selected	Language family (WALS)
	Austroasiatic (1/1)					Kharia	Austro-Asiatic
	Miao-Yao (0/1)					–	–
Basque (LI)						–	isolate
Burushaski (LI)						Burushaski	isolate
	Caucasian (0/1)					–	–
	Chukchi-Kamchatkan (0/1)					–	–
	Elamo-Dravidian (0/1)					–	–
	Eskimo-Aleut (1/1)					West Greenlandic	Eskimo-Aleut
Etruscan (LI)						–	–
Hurrian (LI)						–	–
Indo-Hittite (2/2)	Indo-European (1/1)					Icelandic	Indo-European
	Anatolian (1/1)					Hittite	–
Indo-Pacific (4/7)	Trans New Guinea (1/1)					Inanwatan	Marind
	Sko (1/1)					Skou	Skou
	E. Papuan (1/1)					Nasioi	East Bougainville
	W. Papuan (1/1)					Tidore	West Papuan
	Other subfamilies (0/3)					–	–
	Kartvelian (0/1)					–	–
Ket (LI)						–	isolate
	Khoisan (0/1)					–	–
	Korean-Japanese-Ainu (0/1)					–	–
	Meroitic (LI)					–	–
	Na-Dene (1/1)					Slave	Na-Dene
	Nahali (LI)					–	isolate
Niger-Kordofanian (5/5)	Niger-Congo (4/4)	N.-C. Proper (3/3)	Central N.-C. (2/2)	North Centr. N.-C. (1/1)	Dogon	Dogon	
				South	Ewe	Niger-Congo	

Table 2: The 37-language sample

Language family (Ruhlen 1991)	Subfamilies	Language selected	Language family (WALS)
		Centr. N.-C. (1/1)	
	West Atlantic (1/1)	Nigerian Fula	Niger-Congo
	Mande (1/1)	Bambara	Mande
	Kordofanian (1/1)	Krongo	Kadu
Nilo-Saharan (3/3)	East Sudanic (1/1)	Lango	Eastern Sudanic
	Centr. Sudanic (1/1)	Ngiti	Central Sudanic
	Kunama (1/1)	Kunama	isolate
Nivkh (LI)		–	isolate
Pidgins and Creoles (0/1)		–	–
Sino-Tibetan (1/2)	Sinitic (1/1)	Mandarin Chinese	Sino-Tibetan
	Tibeto-Karen (0/1)	–	–
Sumerian (LI)		–	isolate
Uralic-Yukaghir (0/1)		–	–

Notes: The first five columns contain the classification of the sample languages according to Ruhlen (1991); the final column contains their highest-order family in the WALS (2013). The language (sub)families excluded from the sample appear in dark shading; the absence of languages sampled is indicated with a dash. The number of languages selected from each (sub)family is given between brackets before the slash, followed by the number of languages originally required by the sampling method. For instance, only three of the seven Austric language groups contain a language that displays an adnominal alienability split. Therefore, only three Austric languages are part of the sample. Language isolates are abbreviated as ‘LI’; Burushaski is the only isolate included in this study. The languages used to test hypothesis (iii) are given in bold.

The 37-language sample in Table 2 has been used to test hypotheses (i) and (ii), formulated in the previous section. Only a subset of these 37 languages uses person markers in both alienable and inalienable possession in NPs with a possessor nominal and can therefore be used to test hypothesis (iii). This

subsample comprises 13 languages, marked in bold in the table. Interestingly, this subsample contains languages from only a few major areas (and language families): the Americas (the Amerind and Eskimo-Aleut family), the Pacific (the Austric and Indo-Pacific families), and Australia (the Australian family). The use of possessive person markers with nominal possessors and for both ends of the alienability split is especially rare in Africa (the Afro-Asiatic family, and presumably non-existent in the Niger-Kongo and Nilo-Saharan families) as well as in Eurasia (Indo-Hittite and Sino-Tibetan). Languages spoken in these areas tend to mark the distinction between alienable and inalienable possession, if at all, by flagging the possessor nominal – that is, by dependent-marking in Nichols' terms. This is demonstrated by Nichols & Bickel (2013a), as well as by the results of this study.

2.4.2 Delineating the constructions investigated

This study solely investigates possessive NPs that consist of a nominal possessor and a non-derived possessum. This means that deverbal nouns, although clearly relational, are not part of this study, nor are NPs that are morphosyntactically complex (e.g. NPs containing additional attributive modifiers or possessums embedded in possessor chains).

As pointed out in Section 2.2.2, languages vary extensively in the types of nouns that receive alienable or inalienable coding in possessive NPs. As a result, there is no one-to-one relationship between the inherent relationality or non-relationality of a noun and its formal treatment in possessive NPs in individual languages. I accommodate this discrepancy by focusing only on those nouns that are the most prototypical instances of relational and non-relational nouns, both in terms of their lexical semantics and in terms of their formal treatment in possessive NPs in individual languages. As discussed in Section 2.2.2, these are kinship and/or body part terms on the one hand, and concrete, inanimate and countable items on the other. The adnominal possession of such nouns is referred to as inalienable possession and alienable possession, respectively; the formal expression of the two types of possession in the languages of the sample is the focus of the present study, and is discussed in the next subsection. Note that none of the marking possibilities for other nouns that often participate in the alienable construction, such as 'house' and 'dog', or in the inalienable construction, such as parts of wholes and spatial terms, contradict the findings of this study. Such nouns are nevertheless used incidentally in the examples in the text (see Krongo (21b) and Mangarayi (25b) in the next section) when examples containing the nouns investigated were not available.

In a number of sample languages, only a subset of kinship terms and/or body part terms are treated as inalienable items. In Puyuma (Austronesian, Taiwan), for instance, only older generation kinship terms, such as ‘mother’, ‘father’, and ‘grandparent’, participate in the inalienable construction, while younger generation kinship terms, as well as body parts, are found only in the alienable construction (Teng 2008: 97). Similarly, in Nyulnyul only a small proportion of body part nouns, such as *-mal* ‘arm/hand’ exemplified in (8a) (as well as some personal attributes, such as ‘shadow’ and ‘name’, and some items of clothing), take the inalienable prefix-set (McGregor 1996: 257–263 and McGregor 2012: 117–122). In such cases, I focus solely on those items that take inalienable coding in the language in question, since these are generally also the items that are conceived of in that language as the most prototypically relational – and thus as inherently and inseparably related to the possessor (see Chappell & McGregor 1996; Heine 1997: 174; Stolz et al. 2008: 38–40).²¹ In Nyulnyul, for instance, only those body part nouns are prefixed that are conceived of as most important, most visible, and most central to the possessor, which include external body parts like *-mal* ‘arm/hand’. In contrast, those body parts considered more peripheral to the possessor, such as internal organs and bodily products, are formally treated as alienable nouns (McGregor 1996: 257–264). This means that only body part nouns from the former class are taken as being representative of inalienable nouns for Nyulnyul. Conversely, the same approach is adopted for concrete (inanimate), countable objects: when treated as inalienable rather than as alienable nouns in a given language, I have focused solely on those nouns that receive alienable coding – and that are thus conceived of as possessed in a temporary, non-inherent manner – in that language. With respect to Nyulnyul, this means that personal attributes and the items of clothing in the inalienable class are not taken as representative of alienable nouns in this language.

²¹ This observation is supported by Bally (1996), who points out that only those items are generally treated inalienably in a given language that are conceived of as belonging to a human being’s personal sphere, which means that they are viewed as “associated with a person in an habitual, intimate or organic way” (Bally 1996: 33).

2.5 Results

This section presents the findings of this study. In the first subsection, I discuss the relationship between alienable and inalienable possession in terms of possessum-marking, as addressed in hypothesis (i). The second subsection focuses on the relationship between alienable and inalienable possession in terms of possessor-marking, as addressed in hypothesis (ii). In the third subsection, I present the overall preferences for locus of marking in alienable and inalienable possession in the sample, combining the results from the previous two subsections. The relationship between referential marking and agreement marking in languages with a formal alienability split, as addressed in hypothesis (iii), is discussed in the fourth subsection. A final subsection focuses on the relationship between the locus of possessive marking and the type of marking strategy used by presenting the distribution of the different types of marking strategies in terms of locus in the sample. An overview of the data can be found in Appendix I.

2.5.1 Hypothesis (i): possessum-marking in alienable and inalienable possession

Table 3 below presents the distribution of the different loci of marking over alienable and inalienable possession (in the columns) in possessive NPs of the 37 sample languages (in the rows). Note that this table does not specify which item(s) represent(s) each locus (i.e. a noun or a referential marker) nor the type of marking strategy of each locus (flagging, referential marking, or agreement marking); this is discussed in Section 2.5.5.

Table 3: The locus of alienable and inalienable possessive marking for hypothesis (i)

Language	Alienable possession	Inalienable possession
Bororo	PSM+PSR	PSM
Diegueño	PSM / PSM+PSR	PSM+PSR / PSM+PSR
Koasati	PSM	PSM
Mangarayi	PSM+PSR	PSM+PSR
Paumari	PSM / PSM+PSR	PSM
Puyuma	PSM+PSR	PSM+PSR
Skou	PSM+PSR	PSM / PSM+PSR / PSM+PSR
Slave	PSM / Ø	PSM / PSM / PSM / PSM

Table 3: The locus of alienable and inalienable possessive marking for hypothesis (i)

Language	Alienable possession	Inalienable possession
Tidore	PSM+PSR	PSM+PSR / PSM
Udihe	PSM / PSM	PSM
West Greenlandic	PSM / PSM+PSR	PSM+PSR
Burushaski	PSR	PSM+PSR
Dogon	PSR / Ø	PSM
Gude	PSR	PSM
Hittite	PSR	PSM+PSR
Inanwatan	PSR	PSM+PSR
Kharia	PSR	PSM+PSR / PSM+PSR
Maltese	PSR	PSM
Nasioi	PSR	PSM+PSR
Nigerian Fula	Ø	PSM / Ø
Nyulnyul	PSR	PSM+PSR / PSR
Tamashek	PSR	PSM+PSR
Ungarinyin	PSR / PSR	PSM / PSM+PSR
Bambara	PSR	Ø
Drehu	PSR	Ø
Ewe	PSR	Ø
Hup	PSR	Ø
Icelandic	PSR	PSR
Krongo	PSR	PSR
Kunama	PSR	Ø
Lango	FLT	Ø
Mandarin Chinese ²²	PSR	Ø

²² The presence of a formal alienability split in Mandarin Chinese is a debated issue, since the particle *de* (located with the possessor) can in principle be used for both alienable and inalienable possession. Following many other scholars (e.g. Dragunov 1960; Li & Thompson 1981; Egerod 1985; Tjee 1986), I have nevertheless treated Mandarin as a language with a formal distinction between alienable and inalienable possession, since the use of *de* correlates strongly with the lexical semantics of the possessum: while kinship terms, among other relational nouns, tend to occur without *de*, and almost never occur with *de* in combination with a first- or second- person possessor, concrete inanimate nouns such as *bèi* 'blanket' or *jìsuànjī* 'computer' clearly prefer the use of *de* (Chappell & Thompson 1992).

Table 3: The locus of alienable and inalienable possessive marking for hypothesis (i)

Language	Alienable possession	Inalienable possession
Ngiti	PSR	∅
Nyangumarda	PSR	∅
Sanuma	PSR / ∅	–
Urarina	PSR	∅
Macushi	PSM	∅

Notes: PSR = possessor-marking, PSM = possessum-marking, PSM+PSR = marking of both possessum and possessor, ∅ = no possessive marking, and FLT = a floating marker. A slash separates the use of multiple marking strategies and a dash indicates that sufficient data is lacking. Strategies that are (minimally) possessum-marking are given in light shading, while strategies that are not (minimally) possessum-marking are given in darker shading. A double line separates the lighter and darker shaded strategies.

The table confirms hypothesis (i): languages in which alienable possession (minimally) marks the possessum ('PSM' or 'PSM+PSR'), inalienable possession (minimally) marks the possessum as well.²³ This finding is represented in the table by means of the thick double line separating the lightly shaded loci of marking, which contain markers that (minimally) mark the possessum, from the darkly shaded types, which contain markers of other loci.

Macushi, given in the bottom row of Table 3, provides the sole counterexample to the generalization in (i). Alienable possession, as in (18a) (repeated from (14)), is marked by means of flagging the possessum, whereas inalienable possession, as in (18b), remains unmarked:

- (18) a. *Leandro wa'ka-ri*
 Leandro axe-POSS
 'Leandro's axe'

²³ Distributional patterns have been tested for statistical significance using Fisher's Exact test ($p < 0.05$). In order to control for the relatively small sample size, a Contingency Coefficient (CC) was also computed, which indicates the strength of a statistically significant correlation irrespective of sample size. The coefficient ranges from 0 to 1, with 0.10 indicating a weak correlation and $0.45 \leq$ indicating a strong correlation (Everitt 1977). The relationship between possessum-marking in alienable and in inalienable possession is statistically significant ($p = 0.013$) and moderately strong ($CC = 0.388$).

- b. *kaikusi no'pî*
 jaguar wife
 'the jaguar's wife' (Abbott 1991: 62)

Note, however, that this pattern only applies to contexts where the possessum is possessed at the moment of speaking (so-called 'present possession', see Aikhenvald 2012: 162). Expressions which convey termination of possession as in 'Leandro's former axe', do not constitute a counterexample, as possessums here are univocally marked with the 'past possession' marker *-rî'pî* (Abbott 1991: 85). Moreover, note that, despite being a counterexample to the generalization in (i), the marking pattern demonstrated by Macushi conforms to the well-known cross-linguistic generalization that languages tend to use overt coding for alienable possession and zero-coding for inalienable possession, but usually not the other way around (see, e.g., Haiman 1983; Haiman 1985: 130–136; Haspelmath 2006, 2008a).

An additional observation with respect to the pattern demonstrated by Macushi (18) is that the possessum is marked by means of flagging rather than by means of person marking. Interestingly, the use of flagging rather than of person marking also characterizes the only other known exception to the generalization in (i), the Omotic language Dizi (Nichols 1992: 119). In this language, alienable possession is signaled by tone sandhi that affects both the possessor noun and the possessum, while inalienable possession is marked by an invariant possessive suffix *-kî* on the possessor noun (Allan 1976: 382). I know of no language that poses a counterexample to (i) by using person markers in alienable possession, but not in inalienable possession. This interesting observation is supported by work by Lehmann (1983: 365) and Siewierska (2004: 138), who show that if a language uses bound person markers on alienable nouns, it also uses bound person markers on inalienable nouns, but not vice versa. Crucially, these findings suggest that there is a more specific version of the generalization in (i) which has no known counterexamples: if in a language alienable possession is marked by means of person markers, inalienable possession is marked by means of person markers as well. My data additionally shows that this generalization not only applies to bound person forms but to free person forms as well. In Ungarinyin, for instance, a free (referential) marker is used in alienable possession, as shown in (19a), repeated from (13) above, while a bound (agreement) marker is used in inalienable possession, as shown in (19b). The inverse is not attested among the languages in my sample.

- (19) a. (*Gádbuŋu*) *anàŋga* *dámbun*
 Gadbuŋu 3SG.M.POSS country
 ‘Gadbungu’s country’
 b. (*ari*) *amarlarr*
 (man) 3SG.M.forehead
 ‘the man’s forehead’ (Rumsey 1982: 70, 43)

2.5.2 Hypothesis (ii): possessor-marking in alienable and inalienable possession

This section discusses the relationship between alienable and inalienable possession in terms of possessor-marking. Like Table 3, Table 4 below shows how the different loci of marking, following the typology presented in Section 2.2.4, are distributed among the sample languages. Since hypothesis (ii) predicts that the marking of inalienable possession has a bearing on that of alienable possession (rather than the inverse, as in hypothesis (i)), the column with the loci of marking in inalienable possession is given first, followed by the column with the loci of marking in alienable possession. Other notational conventions are given in the legend below the table.

Table 4: The locus of alienable and inalienable possessive marking for hypothesis (ii)

Language	Inalienable possession	Alienable possession
Burushaski	PSR+PSM	PSR
Diegueño	PSR+PSM / PSR+PSM	PSR+PSM / PSM
Hittite	PSR+PSM	PSR
Icelandic	PSR	PSR
Inanwatan	PSR+PSM	PSR
Kharia	PSR+PSM / PSR+PSM	PSR
Krongo	PSR	PSR
Mangarayi	PSR+PSM	PSR+PSM
Nasioi	PSR+PSM	PSR
Nyulnyul	PSR+PSM / PSR	PSR
Puyuma	PSR+PSM	PSR+PSM
Skou	PSR+PSM / PSR+PSM / PSM	PSR+PSM
Tamashek	PSR+PSM	PSR
Tidore	PSR+PSM / PSM	PSR+PSM
Ungarinyin	PSR+PSM / PSM	PSR / PSR

Table 4: The locus of alienable and inalienable possessive marking for hypothesis (ii)

Language	Inalienable possession	Alienable possession
West Greenlandic	PSR+PSM	PSR+PSM / PSM
Bambara	∅	PSR
Bororo	PSM	PSR+PSM
Dogon	PSM	PSR / ∅
Drehu	∅	PSR
Ewe	∅	PSR
Gude	PSM	PSR
Hup	∅	PSR
Kunama	∅	PSR
Maltese	PSM	PSR
Mandarin Chinese ²⁴	∅	PSR
Ngiti	∅	PSR
Nyangumarda	∅	PSR
Paumarí	PSM	PSR+PSM / PSM
Sanuma	–	PSR / ∅
Urarina	∅	PSR
Koasati	PSM	PSM
Lango	∅	FLT
Macushi	∅	PSM
Nigerian Fula	PSM / ∅	∅
Slave	PSM / PSM / PSM / PSM	PSM / ∅
Udihe	PSM	PSM / PSM

Notes: PSR = possessor-marking, PSM = possessum-marking, PSR+PSM = marking of both possessor and possessum (in order to visually enhance the identifiability of possessor-marking, the order of possessor and possessum is also reversed), ∅ = no

²⁴ The presence of a formal alienability split in Mandarin Chinese is a debated issue, since the particle *de* (located with the possessor) can in principle be used for both alienable and inalienable possession. Following many other scholars (e.g. Dragunov 1960; Li & Thompson 1981; Egerod 1985; Tjee 1986), I have nevertheless treated Mandarin as a language with a formal distinction between alienable and inalienable possession, since the use of *de* correlates strongly with the lexical semantics of the possessum: while kinship terms, among other relational nouns, tend to occur without *de*, and almost never occur with *de* in combination with a first- or second- person possessor, concrete inanimate nouns such as *bèi* 'blanket' or *jìsuànjī* 'computer' clearly prefer the use of *de* (Chappell & Thompson 1992).

possessive marking, and FLT = floating-marking. A slash separates the use of multiple marking strategies and a dash indicates that sufficient data is lacking. Strategies that are (minimally) possessor-marking are given in light shading, while the strategies that are not (minimally) possessor-marking are given in darker shading. A double line separates the lighter and darker shaded strategies.

As can be seen from Table 4, my data confirms hypothesis (ii): languages that (minimally) mark the possessor in inalienable possession ('PSR' or 'PSR+PSM'), also (minimally) mark the possessor in alienable possession.²⁵ This outcome is visualized in Table 4 in the same manner as in Table 3: a thick double line separates the lightly shaded locus types, involving marking of the possessor, from the darkly shaded types, involving other loci of marking. Note that there are two languages, Diegueño and West Greenlandic, which mark the possessor in inalienable possession, but the possessum in alienable possession. These two languages could therefore be taken as counterexamples to the generalization in (ii): however, as Table 4 demonstrates, they additionally mark the possessor in alienable possession and thus confirm the generalization that if inalienable possession marks the possessor, alienable possession never marks only the possessum but always marks the possessor as well.

Interestingly, like the generalization in (i) (see Section 2.5.1), the generalization in (ii) also has a more specific counterpart: if in a language the possessor nominal in inalienable possession is marked by flagging (such as case markers or adpositions), the possessor nominal in alienable possession is marked by flagging as well. No language I know of uses, for instance, a genitive case marker on the possessor noun in inalienable possession, but not on the possessor noun in alienable possession. The inverse, however, happens quite commonly, as demonstrated by Amele (4) and Nyangumarda (5) in Section 2.2.2. Note, however, that most of the languages supporting this generalization additionally use an agreement marker (typically a bound one) on the inalienable possessum; as a result, both the possessor and the possessum are marked (Burushaski, Hittite, Kharia, Tamashek, Ungarinyin, and West Greenlandic in my sample). An example from Burushaski is provided in (23) in the next subsection. The flagging of an inalienable possessor nominal in the absence of person marking is cross-linguistically very rare. In addition to the sample languages Icelandic and Krongo, the few other languages with this type of marking outside the sample are Old French, spoken Faroese, Khinalug, Northern

²⁵ This relation is statistically significant ($p=0.027$) and moderately strong ($CC=0.358$).

Pomo, and Polynesian languages such as Maori and Hawaiian (Nichols 1988: 577; Koptjevskaja-Tamm 2003; Stolz et al. 2008: 501–508).²⁶

The marking of alienable and inalienable possession in Icelandic and Krongo is exemplified below. Icelandic (Indo-European, Iceland) employs a genitive case marker for alienable possession, as in (20a), but uses a preposition *á* plus a dative case marker for inalienable possession, as in (20b):

- (20) a. *álit barn-a-nn-a*
 opinion child-GEN.PL-DEF-GEN.PL
 ‘the children’s opinion’
 b. *andlit-ið á Jón-i Bjarn-a*
 face-DEF.N on Jón-DAT Bjarni-DAT
 ‘Jón Bjarni’s face’ (Stolz et al. 2008: 145, 143)

Krongo (Kadugli, Sudan) uses two distinct possessive prefixes, the ‘possessive’ case marker *kà-* for alienable possession, as shown in (21a), and the ‘genitive’ case marker *mó-* for inalienable possession, as shown in (21b):

- (21) a. *còrì kà-káaw y-óǒǒŋ*
 house POSS-person M-this
 ‘this man’s house’
 b. *nìinò mó-còrì*
 mouth GEN-house
 ‘the door/opening of the house’ (Reh 1985: 154, 315)

2.5.3. Locus of marking preferences in alienable and inalienable possession

The present section combines the results from Sections 2.5.1 and 2.5.2 in order to determine the overall locus of marking preferences in alienable and inalienable

²⁶ Apart from Krongo and Icelandic, Nyulnyul is the only other sample language with possessor-marking in inalienable possession. However, in Nyulnyul, it involves the use of a free referential marker, i.e. an oblique pronoun (see footnote 7). Interestingly, Nyulnyul is the only sample language with a free person form in inalienable possession; most sample languages employ person markers that are bound to the inalienable possessum (see Section 2.5.5). A likely motivation for the absence of such markers in inalienable possession is the grammaticalization of free person forms into bound forms, a diachronic process termed ‘headward migration’ in Nichols (1986: 84–86; see also the next chapter of this thesis).

possession. The data presented in Tables 3 and 4 exhibit a number of common patterns in the locus of possessive marking. The first pattern involves the marking of (minimally) the possessor in alienable possession but of only the possessum in inalienable possession. Consider example (22) from Bororo (Bororoan, Brazil), where alienable possession (22a) is marked by a referential marker that cliticizes to the possessum, while inalienable possession (22b) is marked by an agreement marker affixed to the possessum:

- (22) a. (*Barae*) *eno=moto*
 Brazilians 3PL.POSS=land
 ‘Brazil’ (lit. ‘Brazilians’ land’)
- b. (*Kuruiedi*) *u-mana*
 Kurueidi 3SG-older.brother
 ‘Kurueidi’s older brother’ (Crowell 1979: 197, 215)

A second frequent pattern marks only the possessor in alienable possession but both the possessor and the possessum in inalienable possession. In Burushaski, for instance, possessors receive a genitive case suffix in alienable possession, as in (23a), while an additional agreement prefix appears in inalienable possession, as in (23b), repeated from (9a):

- (23) a. *Habaš-e* *padša*
 Abyssinia-GEN king
 ‘the king of Abyssinia’
- b. (*hir-e*) *í-yas*
 man-GEN 3SG.HUM.M-sister
 ‘the man’s sister’ (Lorimer 1935: 69; Grune 1998: 5, p.c.)

Third, alienable possession may mark only the possessor while inalienable possession receives no possessive marking. For example, in Bambara (Western Mande, Mali) alienable possessors take a possessive postposition, as in (24a), which is absent in inalienable possession, as in (24b):

- (24) a. *mùso* *ká* *liburu*
 woman POSS book
 ‘the woman’s book’
- b. *mùso* *fâ*
 woman father
 ‘the woman’s father’ (Hewson 2014: 6)

Together, these patterns confirm the predictions, formulated in Section 2.3, that in alienable possession the possessor is more likely to be the locus of possessive marking than in inalienable possession, while in inalienable possession the possessum is more likely to be the locus of possessive marking, and that it more often lacks possessive marking when compared to alienable possession. This can be more clearly demonstrated on the basis of Table 5 below, which presents the distribution of the different locus of marking types (in the rows) over alienable and inalienable possession (in the columns) in the 37-language sample.

Table 5: Counts of locus of marking types in the 37-language sample

Locus	Alienable possession	Inalienable possession
Possessor	24	3
Possessum	8	15
Possessor & possessum	8	17
Neither psr nor psm	4	12
Total	44	47

Notes: The abbreviations ‘psr’ and ‘psm’ refer to the possessor and the possessum, respectively. The totals are greater than 37 because some languages use more than one marking strategy for alienable and/or inalienable possession. This table thus presents counts of locus types in languages, not counts of languages per se. The floating marker in Lango is not taken into account in this table.

As Table 5 shows, the possessor in alienable possession is inherently more likely to be marked than the possessor in inalienable possession (32 of the 44 instances, i.e. 73%, and 20 of the 47 instances, i.e. 43%, respectively). Conversely, the possessum in inalienable possession is inherently more likely to be marked than the possessum in alienable possession (32 of the 47 instances, i.e. 68%, and 16 of the 44 instances, i.e. 36%, respectively).²⁷ Moreover, inalienable possession is more likely to lack possessive marking altogether when compared to alienable possession (12 of the 47 instances, i.e. 26%, and 4 of the 44 instances, i.e. 9%, respectively).²⁸ These asymmetries follow from the fact that possessors in alienable possession are not inherently presupposed by their possessum noun

²⁷ Both distributional patterns are statistically significant ($p=0.006$ and $p=0.003$, respectively) and moderately strong ($CC=0.291$ and $CC=0.303$, respectively).

²⁸ This pattern is not statistically significant, due to the fact that the absence of possessive marking is relatively uncommon in both types of possession compared to the use of overt means of possessive marking.

and, being functionally marked optional enrichments of their heads, are in greater need of possessive marking than inalienable possessors.

A closer look at the distribution of locus of marking types in Table 5 reveals an even stronger asymmetry between alienable and inalienable possession. Within the category of alienable possession, the preferred locus of marking is minimally the possessor. In fact, marking of the possessor only is by far the most common locus of marking strategy in alienable possession (24 instances). This is in line with the fact that alienable possessors are functionally marked optional additions to their head, which need to be identified as such and therefore attract possessive marking. By contrast, within the category of inalienable possession the preferred locus of marking is minimally the possessum. In this case, we do not find a clear preference for marking the possessum only: in fact, marking both the possessor and the possessum is slightly more common than marking the possessum only (17 vs. 15 instances, respectively). The fact that marking of possessor and possessum is commonly attested in inalienable possession is most notably due to the frequent use of a specific type of marking strategy, namely person markers that are referential on their own and are cliticized or affixed to the possessum noun. As demonstrated in Section 2.2.4, markers of this type index the possessum – and are therefore possessum-marking – but are also referential expressions of the possessor that carry the possessor role information – and are therefore possessor-marking.

2.5.4 Hypothesis (iii): the referential potential of (in)alienable possessive person marking

In this section, I investigate the relationship between the referential potential of possessive person markers and the opposition between alienable and inalienable possession. Table 6 below presents the 13 languages of the sample (in the rows) that use referential markers and/or agreement markers for both inalienable possession and alienable possession (in the columns).

The thick double line in Table 6 shows that my data confirm hypothesis (iii): if in a language person markers of inalienable possession are referential in nature, person markers of alienable possession are also referential in nature.²⁹ These data in turn demonstrate that markers of alienable possession are

²⁹ This relationship is not statistically significant, due to the small sample size (N=13). When tested on a larger sample of languages, as in Chapter 3, the data do reveal a statistically significant correlation.

Table 6: Referential marking and agreement marking in 13 languages of the sample

Language	Inalienable possession	Alienable possession
Diegueño	REF / REF	REF
Nasioi	REF	REF
Nyulnyul	REF / REF	REF
Puyuma	REF	REF
Skou	REF / REF	REF
Tidore	REF	REF
Ungarinyin	REF / AGR	REF
Bororo	AGR	REF
Paumarí	AGR	REF
Koasati	AGR	AGR
Udihe	AGR	AGR
West Greenlandic	AGR	AGR
Mangarayi	REF	AGR

Notes: REF = referential marker and AGR = agreement marker. Referential markers are given in light shading and agreement markers are given in darker shading. A double line separates the lighter and darker shaded strategies.

inherently more likely to be referential in nature than markers of inalienable possession in individual languages. Like the generalizations in (i) and (ii) above, this finding can be attributed to the fact that possessors in alienable possession are mere optional additions to their head and therefore in greater need of a referential expression than possessors in inalienable possession.³⁰ This finding is also in keeping with the greater need for possessor-marking in alienable possession compared to inalienable possession (as discussed in the previous

³⁰ An additional motivation for the weaker referential status of inalienable than alienable person markers is the higher contextual salience of inalienable possessors compared to alienable possessors. As demonstrated by Dahl and Koptjevskaja-Tamm (1998: 43–44), inalienable possessors are usually highly predictable from the discourse context, which reduces the need for a referential marker. Diachronically, the weaker referential status of inalienable person markers can be attributed to their high degree of grammaticalization; as demonstrated in Chapter 3, the grammaticalization of possessive person markers involves not only a formal development from free to bound, but also a functional development from more to less referential.

subsection), since referential markers are possessor-marking; they are referential instantiations of the possessor carrying the (possessor) role information.³¹

One counterexample to the generalization in (iii) is Mangarayi (Australian, Australia) (bottom row of Table 6). This language uses one set of prefixes in both alienable and inalienable possession that is referential in the former, but expresses agreement in the latter; see (25a) and (25b), respectively:

- (25) a. (*ŋa-buɓuŋ-gu*) *ø-baŋam-ŋawu*
 GEN.M-old.person-GEN.M ABS.N-camp-3SG.NF.POSS
 ‘the old man’s camp’
- b. (*landi*) *jurgjurg-ŋawu*
 tree leaf-3SG.NF.POSS
 ‘the leaves of a tree’ (Merlan 1982: 66, 74)

In Mangarayi, alienable possession (25a) and inalienable possession (25b) each receive the same possessive suffix, which expresses possessor role information in both NPs. However, only possessors in alienable possession additionally take a genitive case affix. As a result, only the marker in (25a) warrants an agreement analysis, since it can copy the relevant information – more specifically possessor role information – from the possessor nominal. In (25b), however, the possessor nominal does not provide role information, and therefore cannot be the source of this information on the possessive person marker. The marker is correspondingly analyzed as a referential marker. Note, however, that despite being a counterexample to the generalization in (iii), Mangarayi behaves as expected in terms of locus of marking: both alienable and inalienable possession mark both the possessor and the possessum, and are thus covered by the generalizations in (i) and (ii).

³¹ Interestingly, the possessive person markers investigated in this study show a greater preference for the expression of possessor role information in alienable possession than in inalienable possession, independently of the referential/agreement opposition. In fact, there is no language in my sample in which the inalienable person forms carry role information while the alienable person forms do not, while the inverse is attested quite frequently. This observation yields an interesting generalization open to further study: if inalienable possessive person markers carry possessor role information, alienable possessive person markers carry such information as well. Like the findings of this study, this generalization can be explained in terms of the inherent relationality of inalienable possessum nouns, which nullifies the need for possessor role marking as compared to alienable possessum nouns.

The data in Table 6 points to an additional interesting observation. Although markers of inalienable possession are inherently less likely to be referential in nature than markers of alienable possession, inalienable possession shows a preference for the use of referential markers when considered in its own right (8 languages with referential markers vs. 6 languages with agreement markers).³² A possible explanation for the fact that inalienable possession prefers referential markers may be sought in the low contextual salience of possessors in comparison to other dependents, such as verbal arguments. Following Keenan and Comrie's (1977) accessibility hierarchy and subsequent work by Givón (1983) and Ariel (1990), possessors can be said to be less contextually salient and therefore less accessible in the mind of the hearer than (subject and object) arguments of verbs. This may trigger the need for a more salient means of referent tracking in the form of a referential marker, a person marker that instantiates the possessor dependent and overtly marks its possessor role. The use of referential markers in inalienable possession may thus serve a pragmatic function, although in semantic terms there is little need for their use in inalienable possession.

2.5.5 Locus and type of marking in alienable and inalienable possession

In this final subsection, I compare locus of marking (as discussed in Sections 2.5.1. to 2.5.3) to type of marking by presenting the distribution of the different types of marking strategies (flagging, referential marking, and agreement marking) in terms of their locus in the 37 languages of the sample. Table 7 presents this distribution. It partly repeats Table 5 of Section 2.5.3, but additionally presents the item(s) representing each locus (in the second column) and the type of marking strategy of each locus (in the third column).

³² This only applies to the 13 languages in the sample with person marking of both alienable and inalienable possession, as given in Table 6. When additionally taking into account the 6 sample languages that only use person markers in inalienable possession, the data reveal that 11 of the 19 sample languages (i.e. 58%) employ agreement markers, which demonstrates a general preference for the use of agreement markers in inalienable possession.

Table 7: Counts of loci of marking and their marking strategies in the sample

Locus	Representation	Marking strategy	Alienable possession	Inalienable possession
Possessor	Noun	Flagging	21	2
	Referential marker	Flagging	3	1
Possessum	Noun	Flagging	6	9
		Agreement marker	2	6
Possessor & possessum	Noun ^(psr) & Noun ^(psm)	Flagging ^(psr) & agreement marker ^(psm)	2	6
	Referential marker ^(psr) & noun ^(psm)	Flagging ^(psr) & referential marker ^(psm)	6	11
Neither psr nor psm	–	irrelevant	4	12
Total			44	47

Notes: The locus type ‘possessor & possessum’ specifies – between brackets – the items representing each locus (in the second column) and the marking strategy that each item takes (in the third column). The abbreviations ‘psr’ and ‘psm’ refer to the possessor and the possessum, respectively. The totals are greater than 37 because some languages use more than one marking strategy for alienable and/or inalienable possession. This table thus presents counts of locus types in languages, not counts of languages per se. The floating marker in Lango is not taken into account in this table.

Table 7 points to the following preferences of locus of marking, repeated from Table 5 above: a predominance for marking (minimally) the possessor in alienable possession (32 of 44 instances, i.e. 73%) and for marking (minimally) the possessum in inalienable possession (32 of 47 instances, i.e. 68%). More specifically, alienable possession shows a clear preference for possessor-marking only (24 of 44 instances, i.e. 55%). Inalienable possession does not show a preference for possessum-marking only; the marking of both possessor and possessum is most common (17 of 47 instances, i.e. 36%) though the difference with possessum-marking only is minimal (15 of 47 instances, i.e. 32%). As can be seen as well, the fact that both the possessor and the possessum are frequently marked in inalienable possession is above all due to the common use of referential markers on the inalienable possessum (10 instances).

As the data in Table 7 reveals, the locus of marking preferences in the languages of the sample correlate strongly with a preference for a particular marking strategy. Marking the possessor in alienable possession typically involves flagging, i.e. the use of case markers, adpositions or other invariant markers, of the possessor nominal (21 instances). Only three sample languages

mark the possessor through flagging, i.e. by role marking, on the referential marker; an example is Ungarinyin (see (19a) in Section 2.5.1). Interestingly, the inverse asymmetry is attested for languages that mark the possessum in inalienable possession; this typically involves the use of (referential/agreement) markers (23 instances), rather than the use of flagging (9 instances). Different marking strategies thus prefer different loci and the type of loci they prefer depends on the type of dependency relation in the possessive NP: those containing argument possessors (inalienable possession) or those containing modifier possessors (alienable possession).

In sum, the data presented in this section show a preference for alienable possession to mark the possessor and to do so by means of flagging the possessor nominal, while inalienable possession prefers the marking of the possessum and does so by means of person marking. These preferences yield two generalizations for locus of marking in possessive NPs: (i) languages that mark the possessum in alienable possession also mark the possessum in inalienable possession, and (ii) languages that mark the possessor in inalienable possession also mark the possessor in alienable possession. Both findings follow from a need to mark the possessor in alienable possession: these possessors are not inherent in the semantics of their possessum noun and are thus in need of marking as functionally optional modifiers (unlike inalienable possessors, which are inherent to the meaning of the possessum and thus behave as arguments). In addition, it was shown that there is a relationship between the referential potential of possessive person markers and the opposition between alienable and inalienable possession: (iii) if in a language person markers in inalienable possession are referential in nature, person markers in alienable possession are referential in nature as well. This tendency demonstrates a greater need for alienable possessors to receive a referential expression than inalienable possessors, which follows from the fact that the former are not inherent to their possessum noun, unlike the latter. The next section discusses how these findings relate to previous work on possessive marking and its locus.

2.6 Comparison with previous work on possessive marking

The two generalizations (i) and (ii) identified in Section 2.5.1 and 2.5.2 support earlier generalizations most prominently put forward by Nichols (1986, 1988, 1992; see also already Lehmann 1983: 362–365). As Nichols (1992: 122) notes, “zero-marking is normally restricted to inalienable possession, whereas alienable possession requires overt marking” and “inalienables take marking that is more

nearly head-marking or less dependent-marking than the marking of alienables” (Nichols 1992: 117). Nevertheless, the findings of this study go beyond those of previous work in two important respects.

In the first place, I have shown that patterns of locus of marking are constrained by an opposition between two types of possessive dependency relations: inalienable possessive relations involving argument possessors and alienable possessive relations involving modifier possessors.³³ Nichols does not recognize this semantic opposition, nor its relevance with respect to locus of marking. In fact, she argues that (in)alienable possession is “not primarily a semantic distinction, but the automatic consequence of the closer formal bonding [between possessor and possessum] that results in head-marked possession: inalienables ... are most likely to occur possessed in discourse, and the formal marking of inalienability simply grammaticalizes that possession” (Nichols 1992: 121).

Other authors do not so much look at locus as they do, more generally, at the differences between the expression of alienable and inalienable possession. Their work nevertheless has a bearing on the results presented in this paper. Haspelmath (2008a: 19–22) adopts a view similar to Nichols’, arguing that, across languages, kinship terms and body part terms tend to occur with a possessor significantly more often than non-relational nouns. This makes the former type of possessive relationship more predictable to the hearer and therefore less susceptible to possessive marking. This frequency-based explanation of (in)alienable marking patterns contrasts with an earlier explanation proposed by Haiman (1983: 793–795, 1985: 130–136), which relies on principles of iconicity. According to Haiman (see also Croft 2008), kinship terms and body part terms are conceptualized as being in a closer relationship with their possessors than other types of nouns, due to their inherent relationality. This, in turn, allows the speaker to reduce possessive marking of relationships

³³ Note, however, that I do not claim this opposition in dependency relations to be the sole motivation of the locus of marking patterns identified in this study. Since kinship and body part terms need not all be treated as inalienable nouns and concrete inanimate countable items need not all be treated as alienable nouns in individual languages (see Section 2.4.2), other factors are expected to play a role in the distribution of alienable/inalienable possessive coding as well. This paper nevertheless demonstrates that a universal semantic opposition between modifiers and arguments is an important motivating factor in the locus of possessive marking across individual languages.

involving such inherently relational items.³⁴ The view put forward in this paper combines both explanations. Like Haspelmath (but unlike Haiman), I argue that patterns of possessive marking are to a high degree motivated by economy, resulting from the predictability of possessors in inalienable possession for the hearer (see Haspelmath 2008b: 60). However, like Haiman (but unlike Haspelmath), I recognize that this predictability follows directly from the semantic properties of the relational noun rather than from the relative frequency with which such nouns occur possessed in discourse. As demonstrated in Section 2.2.3 for Tidore (7), the extent to which (contextually given) possessors are overtly expressed varies greatly per language. In fact, it may well be that argument possessors are more likely to undergo such context-induced omission than modifier possessors, since they are highly salient from the discourse context (cf. footnote 29). The type of frequency asymmetry argued for by Haspelmath is highly sensitive to such language-specific factors. The fact that an argument possessor needs to be (contextually) specified is nevertheless inherent to the semantics of the possessum and thus applies cross-linguistically. Moreover, this study recognizes that the modifier/argument opposition, as reflected by splits in alienable and inalienable possession, not only pertains to the possessive NP but also to many other types of dependency relations, such as NPs containing attributive adjectives, adpositional phrases, and grammatical relations in clauses.

Second, this study shows that possessor-marking cannot be collapsed with case marking or other means of flagging and that possessum-marking cannot be collapsed with agreement marking; these are parallels drawn in traditional head/dependent-marking grammar that have been frequently criticized (e.g. Haspelmath 1993: 496; Siewierska 1994: 149). By making a systematic distinction between referential markers and agreement markers, it has been demonstrated that possessor-marking can also occur in the form of person markers, namely in languages where the marker is a referential expression of the possessor itself and carries the (possessor) role information. Similarly, it has been shown that

³⁴ Haiman and Haspelmath originally used iconicity and economy, respectively, not so much to predict locus of marking but to account for the decreasing 'linguistic distance' between relational nouns and their possessors, as compared to non-relational nouns and their possessors. The notion of linguistic distance refers to the presence versus absence, and the free versus bound status, of possessive markers. These contrasts nevertheless strongly correlate with the locus of marking patterns identified in this paper: the marking of inalienable possession typically involves either a bound person marker on the possessum or is zero, while alienable possession typically receives overt marking of the possessor.

possessum-marking need not involve agreement marking but may also involve referential marking. In fact, many sample languages employ referential markers that are cliticized or affixed to the possessum noun. Moreover, the opposition between referential marking and agreement marking has been shown to correlate with the distinction between alienable and inalienable possession (Section 2.5.4).

Importantly, the common use of referential clitics or affixes on the possessum noun across the languages of the sample demonstrates that in many of Nichols' head-marking languages, possessive person markers do not in fact express agreement but represent the possessor, i.e. the dependent, themselves. As demonstrated in this paper, referential markers are possible loci of marking in that they carry the marker(s) expressing the possessive dependency relation in the same way as (pro)nouns carrying genitive case markers or adpositions in traditional dependent-marking languages. Thus, from a semantic perspective, dependent-marking may also occur on heads. Although similar observations have been made with respect to verbal indexing (Kibrik 2012; Haspelmath 2013a), this study is the first to systematically investigate the issue in a worldwide sample of languages, focusing on possessive NPs.

2.7 Conclusions

This paper takes a semantic approach to the typological parameter of locus of marking, applying it to (in)alienable possessive NPs in a worldwide sample of 37 languages. The approach has two main features. On the one hand, it recognizes that cross-linguistic patterns of locus of marking reflect a basic split between two semantic types of possessive dependency relations: inherently relational nouns that take possessors behaving as arguments versus inherently non-relational nouns that take possessors behaving as modifiers. On the other hand, it integrates a novel typology of possessive person markers in terms of reference and agreement, proposed by Hengeveld (2012) for the verbal domain and here applied to the possessive NP. This typology provides a refinement of Nichols' analysis of possessive person markers as well as of other models of person marking, such as Siewierska's (1999, 2001, 2004), by drawing a distinction between referential markers and agreement markers on the basis of the distribution of grammatical feature information in the language and the construction in question. This approach is supported by recent work (Fedden et al. 2013; Witzlack-Makarevich & Iemmolo 2013), which demonstrates that

person markers show highly language-specific and construction-specific behavior.

This study specifically identified three cross-linguistic tendencies in (in)alienable possessive marking. The first two are patterns of locus of marking, and are given in (i) and (ii):

- (i) If a language marks the possessum in alienable possession, it also marks the possessum in inalienable possession.
- (ii) If a language marks the possessor in inalienable possession, it also marks the possessor in alienable possession.

Both tendencies reflect a strong preference for languages to mark the possessor in alienable possession and to mark the possessum in inalienable possession. Both preferences can be explained by the opposition between argument possessors and modifier possessors, which follows from the semantics of their respective possessum nouns: while argument possessors fill the argument slot provided by the relational noun, modifier possessors merely provide a further semantic characterization of the non-relational noun, and are thus functionally marked optional enrichments of their heads. As a result, modifier possessors are less predictable to the language user than argument possessors, which is in turn reflected in a greater need of modifier possessors for possessive marking as compared to argument possessors.

The third tendency identified in this study demonstrates a relationship between alienable and inalienable possession in terms of the referential potential of possessive person markers. As the typology of referential/agreement markers in this paper reveals, possessive dependency relations are marked with person forms of varying degrees of referential potential, and the referential potential of a person marker constitutes an independent typological parameter that interacts with the parameter of locus of marking. The following tendency in referential potential has been identified in this study:

- (iii) If in a language person markers of inalienable possession are referential in nature, person markers of alienable possession are referential in nature as well.

This tendency captures the fact that person markers used in alienable possession are inherently more likely to be referential in nature than those used in inalienable possession. This finding follows from the fact that since modifier

possessors are functionally optional modifiers, they are in greater need of a referential expression that identifies their possessor role than argument possessors. Referential markers fulfill exactly this function.

Finally, it has been demonstrated that there is an interesting relationship between locus of marking and the type of marking strategy that languages use: whereas possessor-marking typically is achieved by flagging the possessor nominal, usually by means of case markers or adpositions, possessum-marking typically occurs on the basis of person marking, i.e. (referential/agreement) markers that express the person (and often number/gender) of the possessor nominal with the possessum.

An interesting matter for future research is to examine how possessors relate to other arguments and modifiers, such as verbal arguments, adpositional arguments, and attributive adjectives, in terms of flagging versus indexing, and referential marking versus agreement marking. Another promising future enterprise is to uncover and compare the range of factors determining differential patterns of marking in these different grammatical domains. The typology presented in this paper provides a suitable framework for pursuing these aims.