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Explaining alienability contrasts in adpossession constructions: Predictability vs. iconicity

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Abstract: This paper argues that alienability contrasts in adnominal possessive constructions should not be explained by iconicity of distance, but by predictability due to the higher relative frequency of possessed occurrences of inalienable nouns. While it is true that when there is an alienability split, the alienable construction typically has an additional marker which often separates the possessor from the possessed noun, the broader generalization is that additional marking is found when the possessive relationship is less predictable. This generalization also extends to cases of antipossessive marking and impossibility. The diachronic mechanisms responsible for the development of alienability contrasts are differential reduction and differential inhibition of a new construction.

Keywords: inalienable possession, coding asymmetry, functional explanation, iconicity

1 The explanation in a nutshell

In this paper, I propose that the universals of form-function relationship in alienability contrasts should not be explained in terms of iconic motivation, as in Haiman's (1983, 1985) influential work, but by predictability due to the different usage frequencies of different constructions (what is called "economic motivation" by Haiman). Consider a typical alienability contrast in an adpossession (adnominal possessive) construction, from the West Papuan language Abun:

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- (1) Abun
- a. alienable possession
ji bi nggwe
 I GEN garden
 ‘my garden’
- b. inalienable possession
ji syim
 I arm
 ‘my arm’
 (Berry and Berry 1999: 77–82)

We see that in this language, an adpossession construction with an alienable noun (such as ‘garden’) requires a possessive (genitive) postposition, while a construction with an inalienable noun (a body-part term) expresses possession by mere juxtaposition. This pattern is common across languages (e.g. Nichols 1988; Chappell and McGregor 1996; Stolz et al. 2008).

According to Haiman’s (1983, 1985) explanation in terms of iconic motivation, the juxtaposition construction chosen for inalienable possession shows little “linguistic distance” between possessor and possessed noun, and this iconically reflects the greater CONCEPTUAL CLOSENESS between possessor and possessed item (supposedly arms are not conceived of independently of their owners). By contrast, the overt genitive marker *bi* between the possessor and the possessum in the alienable ‘my garden’ exhibits greater linguistic distance, and this reflects the greater conceptual distance between ‘garden’ and ‘I’.

My explanation is quite different from Haiman’s in that it makes no reference to iconicity, but only to frequency of use, hearer expectations (= predictability) and length of coding. It starts with the observation that nouns like ‘arm’ normally, or at least very frequently, occur as possessed nouns in possessive nominal phrases, whereas for nouns like ‘garden’, this is much less frequent: We often talk about gardens without mentioning or even thinking about their possessors. As a result of this difference, the overt expression of the possessive relationship is more expected or predictable with nouns like ‘arm’. Languages like Abun exploit this redundancy and use an overt possessive marker only with nouns like ‘garden’, while body-part terms occur in a shorter markerless construction. The contrast in (1) can thus be subsumed under the form-frequency correspondence principle, as this regularity is called in Haspelmath et al. (2014) and Haspelmath and Karjus (2017).

In this paper, I first define the comparative concepts required to compare languages in the relevant respects (Section 2), and then contrast the two explanations in Section 3, where I also justify the claim that there is a frequency

difference. The most salient phenomenon, the overt vs. zero alienability contrast as seen in (1), follows from both explanations, and in Section 4 I discuss a few further predictions that are made by both approaches. But then in Section 5 and Section 6 I show that there are further tendencies that either go against Haiman's iconicity explanation or are not predicted by it, while they follow from my predictability explanation. In Section 7, I formulate the observed generalizations in the most general terms, in the spirit of Greenbergian universals and making references to a novel possessibility scale. After a brief discussion of the difference between relative and absolute frequencies (Section 8), I end with some discussion of the diachronic pathways which give rise to the observed coding asymmetries.

It should be noted at the outset that the cross-linguistic generalizations formulated in this paper are not based on a systematic study of a sample of languages, but on a close reading of the rich typological literature (e.g. Ultan 1978; Nichols 1988; Chappell and McGregor 1996; Heine 1997; Koptjevskaja-Tamm 2003; Nichols and Bickel 2005a; Nichols and Bickel 2005b; Stolz et al. 2008; Dixon 2010; Aikhenvald 2013; van Rijn 2016a). It is thus a very plausible hypothesis that the generalizations are true and will be confirmed by additional data. Gathering such data systematically and publishing it in the form of a database is a desideratum for future research, and it is hoped that the present paper's hypotheses will serve as further inspiration for such research. Moreover, this paper should not be read as a critique of John Haiman's decades-old work, which I have long found very inspiring. I merely use Haiman's old proposal as a concrete representative of a kind of explanation that has been widely adopted and that I think can and should be improved upon.

2 Definition of key comparative concepts

To compare possessive constructions across languages, one first needs to carefully define a set of comparative concepts in terms of which the comparison is carried out (cf. Haspelmath 2010). In this paper, a POSSESSIVE RELATIONSHIP is defined as a relationship of ownership (e.g. 'my garden'), a kin relationship (e.g. 'my father'), or a part-whole relationship (e.g. 'my arm', 'the branch of the tree'). This follows previous work in typology, in particular Koptjevskaja-Tamm (2003).

This definition may raise some questions. It is not immediately evident that ownership, kinship and part-whole are a natural class of meanings, and it is not easy to formulate a common denominator for them. Moreover, in most or all languages, (some of) the constructions used to express ownership, kinship

and part-whole are also used for other relationships, such as ‘my school’ or ‘my report’. Clearly, any kind of concept that subsumes all of the relationships must be very abstract. According to Langacker (1993, 1995), possessors in possessive constructions provide REFERENCE POINTS by which the hearer can get mental access to the possessum. This seems like an insightful analysis, but it is not useful as a basis for cross-linguistic comparison, because the highly abstract concept of a reference point cannot be clearly delimited.

By contrast, kinship and part-whole relationships are easily identified, and ownership does not pose serious problems either. These three relationships seem to be a good basis for cross-linguistic comparison, as they allow us to state interesting cross-linguistic generalizations (see Sections 3–7).¹ The two entities in a possessive relationship are the POSSESSOR (the owner, the kinship ego, or the whole) and the POSSESSUM (the owned thing, the ego’s relative, or the part).

AN ADPOSSESSIVE CONSTRUCTION (short for *adnominal possessive construction*) is a construction in which a possessive relationship is expressed in a single nominal (or NP) consisting of (i) a noun expressing the possessum (the possessed noun) and (ii) a modifying possessor nominal or a possessive person index (i.e. a bound person form). Thus, while *possessive relationship* is a semantic notion, *adpossessive construction* is a syntactic notion, which presupposes that nominal phrases can be identified across languages. By extension, a construction that has the same form in a language as an adnominal construction expressing possession (in the narrow sense of the preceding paragraph) may also be called an adpossessive construction (e.g. *my school* or *my report* in English, which have the same form as *my garden*, *my father* or *my arm* but express relationships other than ownership, kinship or part-whole).

Adpossessive constructions contrast with predicative possessive (predpossession) constructions such as *I have a garden*, with belonging-constructions such as *This garden is mine*, and with external possessor constructions, such as (2).

(2) German

Die Mutter wusch dem Kind die Haare.
 the mother washed the.DAT child.DAT the.ACC hairs.ACC
 ‘The mother washed the child’s hair.’

¹ By starting out from the three semantic groups of noun meanings, I adopt an approach that is in a way the opposite from the following statement by Stolz et al. (2008: 31): “If a language is subject to a formal distinction of alienable and inalienable possession, then either kinship roles or body parts form part of the paradigm of inalienable possessives.” (Cf. also Nichols [1992: 572] for a similar statement.) The problem here is that there is no good definition of “alienable/inalienable” that does not make any reference to the three semantic groups.

External possessor constructions (cf. König and Haspelmath 1998; Payne and Barshi 1999) are constructions in which the possessor has the form of a clause-level argument but semantically modifies another argument in the same way as an adnominal possessor does. Neither predicative nor external possessor constructions are considered in this paper.²

An ADPOSSESSIVE SPLIT is a situation in which different classes of referential expressions require (or strongly favor) different adposessive constructions. In a POSSESSOR-DETERMINED SPLIT, different kinds of possessor occur in different constructions, as can be illustrated again from German in (3). In this language, personal pronouns require a construction with a prenominal possessor (3a), proper names favor it (3b), and full nominals (largely) exclude it (3c).

- (3) German
- a. (personal pronoun possessor)
**das Haus mein/ichs mein Haus*
 ‘my house’
 - b. (proper name possessor)
das Haus Alexanders Alexanders Haus
 ‘Alexander’s house’
 - c. (full nominal possessor)
*das Haus des Vaters ?*des Vaters Haus*
 ‘the father’s house’

But splits may also be DETERMINED BY THE POSSESSUM NOUN, and it turns out that in such cases, ownership vs. kinship and/or ownership vs. part-whole is typically a crucial contrast. An ALIENABILITY SPLIT is a possessum-determined split in which kinship terms and/or body-part terms behave differently from other kinds of possessed nouns occurring in an ownership relationship. We already saw an example in (1), and (4) gives another example of an alienability split.

- (4) Jeli (Mande)
- a. *Soma ra monbilo* (**Soma monbilo*)
 Soma of car
 ‘Soma’s car’

² The term *inalienable possession* has also sometimes been used for external possessor constructions, e.g. in Guéron (2006) and Stolz et al. (2008), because such constructions are very common with body-part terms (such as ‘hair’). However, this is a different phenomenon from the adposessive patterns that are studied in this paper.

- b. *Soma bulo-ni* (**Soma ra bulo-ni*)
 Soma arm-PL
 ‘Soma’s arms’
 (Tröbs 1998: 167–169)

When a language exhibits an alienability split, we say that a construction used characteristically with kinship and/or body-part possessed nouns is an *IN-ALIENABLE POSSESSIVE CONSTRUCTION*, while a construction that is characteristically NOT used with kinship and/or body-part possessed nouns is called an *ALIENABLE POSSESSIVE CONSTRUCTION*.³ Thus, in (1) and (4), the (a) examples are alienable constructions, while the (b) examples are inalienable constructions. When a language has two constructions of this kind, we can say that it makes an alienability contrast, and we can call the nouns occurring in the inalienable construction *inalienable nouns*, and those occurring in the alienable construction *alienable nouns*. In general contexts, not referring to particular languages, I will also use these terms as abbreviations for body-part/kinship terms and other nouns, respectively.

It should be noted that this definition of (*in*)*alienable construction*, which is based on that of an alienability split (and thus ultimately on different classes of possessed nouns), is quite different from another widespread understanding of the contrast in terms of different *SEMANTIC RELATIONS*, e.g.

Inalienable possession is generally seen as involving a fairly stable relation over which possessors have little or no control, alienable possession as comprising a variety of less permanent, more controlled relationships. (Hollmann and Siewierska 2007: 410)

The trouble with such semantic definitions is not only that they involve highly abstract relations that are difficult to verify cross-linguistically, but also that in the great majority of cases, differential coding of possessive constructions takes the form of splits, not of fluid alternations (cf. Nichols 1988: §5). The inalienable/alienable opposition is not at all like that between singular and plural, or between past and future tense, which are semantic feature values that (in principle) any noun or verb can take. But even though some languages show some flexibility (see also Section 6.3.1), in general the difference between alienable

3 Note the inclusion of “characteristically” in the definition: In some languages, constructions that are primarily used with kinship and/or body-part terms can also be used for a few other nouns. This does not seem to be systematic, however, so I will not say anything further about such atypical inalienably used nouns. I will also ignore cases where the semantic groups of nouns do not correspond to the semantic type of relationship, in particular where body parts are owned (e.g. ‘my tail’, when the speaker talks about a an animal tail she owns).

and inalienable possession is simply a constructional split, with no clear semantic implications, not unlike the split between pronouns in English (which make a nominative/accusative distinction) and nouns (which do not).⁴

Another common way of conceiving of the alienability distinction is in terms of inherent relationality, with possessors in inalienable constructions being arguments, and alienable possessors being modifiers (Lehmann 1983; van Rijn 2016a: § 2.2). Again, this conception is not wrong, but it is very difficult to pin it down. Artifact nouns like ‘chair’ and ‘school’ are like body-part terms in that they always belong to someone and would hardly exist without their users.

3 Overt vs. zero coding: Iconicity vs. predictability

3.1 The explanandum: Overt vs. zero alienability contrasts

On the basis of the comparative concepts of Section 2, we can formulate a universal generalization:

(5) **Universal 1:**

If a language has an adnominal alienability split, and one of the constructions is overtly coded while the other one is zero-coded, it is always the inalienable construction that is zero-coded, while the alienable construction is overtly coded.

That this generalization is well-supported has been known for some time (Ultan 1978: 26; Haiman 1983; Nichols 1992: 122; Heine 1997; more recently van Rijn 2016a). Some examples of languages with an alienability split that show a coding asymmetry (i.e. an overt vs. zero contrast) are given in (6)–(12).

(6) Kabba (Central Sudanic)

- a. *kùlà lè déné*
 work of woman
 ‘a woman’s work’

⁴ Nichols and Bickel (2005b) therefore use the term “possessive classification”, which is basically the same as my *possessive split*, but has the disadvantage of suggesting that possessive classifiers are involved.

- b. *màkàjà gòlé*
 knee his.leg
 ‘the knee of his leg’
 (Moser 2004: 120, 121)

(7) Lango (Nilotic)

- a. *gwòkk à lócà*
 dog of man
 ‘the man’s dog’
- b. *wì rwòt*
 head king
 ‘the king’s head’
 (Noonan 1992: 156, 157)

(8) Karo (Tupian)

- a. *maʔwìr at kaʔa*
 man of house
 ‘man’s house’
- b. *aaro cagá*
 parrot eye
 ‘parrot’s eye’
 (Gabas 1999: 148–150)

(9) Haida (isolate)

- a. *Bill gyaara daallraay*
 Bill of money
 ‘Bill’s money’
- b. *Joe ʔaww*
 Joe mother
 ‘Joe’s mother’
 (Enrico 2003: 678–680)

(10) Kayardild (Tangkic)

- a. *dìbirdibi-karran(-ju) dulk(-u)*
 Rock.Cod-GEN(-CASE) place(-CASE)
 ‘Rock Cod’s place’
- b. *dangkaa thukanda*
 man chin’
 ‘man’s chin’
 (Evans 1995: 143, 248)

(11) Mandarin (Sinitic)

a. *tā-de chènshān*
 he-GEN shirt
 ‘his shirt’

b. *tā(-de) māmā*
 he(-GEN) mother
 ‘his mother’

(Li and Thompson 1981: 113, 115)

(12) Tommo So Dogon

a. *tigε wo mɔ*
 name he GEN
 ‘his name’

b. *u ba*
 you father
 ‘your father’

(Plungian 1995: 35)

Not all cases of alienability splits show a coding asymmetry, as can be seen in example (13), where both possessive constructions use an overt marker, *a* for alienable and *o* for inalienable possession. However, such cases are not counterexamples to Universal 1, because this makes claims only about alienability splits with a coding asymmetry.

(13) Samoan (Oceanic)

a. *le naifi a le fafine*
 the knife of the woman
 ‘the woman’s knife’

b. *le uso o le fafine*
 the sister of the woman
 ‘the woman’s sister’

(Mosel and Hovdhaugen 1992: 282–290)

I am not aware of exceptions to Universal 1, so this appears to be a very strong cross-linguistic generalization. Of course, it makes a claim only about alienability splits, and many (perhaps most) languages do not show alienability splits. But alienability splits are widespread, occurring in all continents and in many different language families, so an explanation of Universal 1 would be quite significant for our understanding of language. The next two subsections discuss

two explanations that have been proposed, and in the remainder of the paper I will argue for the second explanation.

3.2 The iconicity explanation

As was briefly summarized in the introductory section, Haiman (1983) advanced an explanation in terms of iconicity of distance. He proposed a general iconic principle which says that “[t]he linguistic distance between expressions corresponds to the conceptual distance between them” (Haiman 1983: 782). One instantiation of this is the alienability contrasts seen in (1), (4), and (6)–(12) above. Haiman writes that “... two concepts are close to the extent that they are perceived as inseparable (e.g. there is a closer conceptual link between a possessor and an inalienably possessed object than between a possessor and an alienably possessed object)” (Haiman 1983: 783).

This explanation was repeated later by Haiman (e.g. Haiman 1985: 130–136), and it became very influential. It was adopted (or at least mentioned without any criticism) by many other linguists, e.g. Chappell and McGregor (1989: 24, 34), Croft (1990: 175–176), Tai (1993: 163), Greenberg (1995), Koptjevskaja-Tamm (1996), Payne (1997: 105), Newmeyer (2001), Itkonen (2004), Lazard (2005: 18), Stolz et al. (2008: 33, 502), Marcus and Calude (2010), Dixon (2010: 286), Downing and Stiebels (2012: § 11.6.1), Aikhenvald (2013: 8–9), Ortmann and Gerland (2014: 274) and Rainer et al. (2014: 17). Thus, the fact that a better explanation is now available is quite significant.

3.3 The predictability explanation

The competing explanation in terms of predictability which I propose in this paper is not based on the conceptual or semantic difference between the two construction types, but on the difference in terms of usage. A fact that has not often been noted is that there is a significant DIFFERENCE IN FREQUENCY of occurrence in the two types of possessive construction: Inalienable nouns (= bodypart/kinship terms) very often occur as possessed nouns, whereas alienable nouns occur as possessed nouns much more rarely. This is not a surprising claim – no linguist would be astonished to hear that nouns like ‘foot’ and ‘sister’ occur more frequently in possessive nominals (e.g. *your foot*, *Lee’s sister*) than nouns like ‘tree’ or ‘knife’. But interestingly, few linguists have made reference to frequency of use in explaining the contrast, and few have even commented on the difference (though Nichols [1988: 579] notes that inalienable

nouns are “those nouns which are most often possessed”; cf. also Nichols [1992: 121]).

The explanatory principle here is Zipfian economy (Zipf 1935; Haspelmath 2008a). It has been shown to account for a wide variety of form asymmetries which correspond to frequency asymmetries (e.g. Greenberg 1966; Croft 2003: Chapter 4; Hawkins 2014: § 2.2). Following Haspelmath et al. (2014: 592), the specific principle as applied to grammar can be formulated as in (14).

(14) *The grammatical form-frequency correspondence principle*

When two minimally different grammatical patterns (i.e. patterns that form an opposition) occur with significantly different frequencies, the less frequent pattern tends to be overtly coded (or coded with more coding material), while the more frequent pattern tends to be zero-coded (or coded with less coding material).

Some further grammatical oppositions for which this principle has been shown to make correct predictions are listed in (15) (for the last three, see Croft 1991). This is thus a very broadly applicable principle with great explanatory power.

- (15) present/future, 3rd person/2nd person, nominative/accusative, active/passive, affirmative/negative, masculine/feminine, positive/comparative, attributive adjective/predicative adjective (including copula), predicative verb/nominalized verb, action word/agent noun

The causal chain that I hypothesize is responsible for the systematic coding asymmetry is schematized in (16). The idea is that, upon hearing an inalienable noun, hearers can predict that it will occur as possessed noun in a possessive construction, and overt marking of the possessive relationship is relatively redundant. This redundancy is exploited in some languages by using less explicit coding for possessive constructions with inalienable possessed nouns.

- (16) frequent → predictable → less need for coding

Since the coding asymmetry is universal (as a tendency), the explanation only works if the frequency asymmetry is also a universal tendency. Conclusively demonstrating that this is the case would require corpus data from a large number of languages, which would be a very expensive enterprise. In this paper, I limit myself to a few manually coded examples, 20 occurrences of 12 nouns (six inalienable, six alienable) from three fairly different languages, Biblical Hebrew, Ancient Greek, and English, shown in Table 1 (see also

Table 1: Some frequency figures from Hebrew, Greek and English.

word	meaning	possessed	non-possessed	percentage of possessed nouns
Biblical Hebrew^a				
<i>âḥ</i>	brother	20	0	
<i>ʔem</i>	mother	19	1	
<i>ben</i>	son	12	8	
<i>ʕejnajim</i>	eyes	18	2	
<i>roʔš</i>	head	18	2	
<i>regel</i>	foot	18	2	
inalienable nouns		105	15	88 %
<i>śâde^h</i>	field	4	16	
<i>ʕoʔn</i>	flock	8	12	
<i>ʕir</i>	city	1	19	
<i>ʕâm</i>	people	8	12	
<i>ʔohel</i>	tent	11	9	
<i>ʔeš</i>	fire	0	20	
alienable nouns		32	88	27 %
Ancient Greek^b				
<i>adelphós</i>	brother	16	4	
<i>méeteer</i>	mother	14	6	
<i>thugatéer</i>	daughter	12	8	
<i>ophthalmós</i>	eye	17	3	
<i>kephalée</i>	head	16	4	
<i>stóma</i>	mouth	15	5	
inalienable nouns		90	30	75 %
<i>heeméra</i>	day	6	14	
<i>oikía</i>	house	6	14	
<i>didáskalos</i>	teacher	4	16	
<i>hodós</i>	path	5	15	
<i>mákhaira</i>	sword	3	17	
<i>biblíon</i>	book	4	16	
alienable nouns		28	92	23 %
Modern English^c				
<i>father</i>		19	1	
<i>sister</i>		11	9	
<i>niece</i>		18	2	
<i>nose</i>		13	7	
<i>fingers</i>		13	7	
<i>stomach</i>		14	6	

Table 1 (continued)

word	meaning	possessed	non-possessed	percentage of possessed nouns
inalienable nouns		88	32	73 %
<i>car</i>		3	17	
<i>letter</i>		3	17	
<i>money</i>		3	17	
<i>shirt</i>		4	16	
<i>tree</i>		0	20	
<i>bird</i>		2	18	
alienable nouns		15	105	12 %

^a the first 20 examples from the Tanakh (Hebrew Bible).

^b the first 20 examples from the New Testament (leaving out the gospel according to Mark).

^c the first 20 examples from the British National Corpus (spoken).

Haspelmath [2008a: 19], and Haspelmath [2014: 206], for some preliminary data). The purpose of this table is merely to give initial plausibility to the claim.

Like the grammatical universals, the claim that the frequency asymmetry is universal thus has the status of a very plausible hypothesis that would ideally be confirmed with a more complete and more carefully selected dataset. As a reviewer noted, the languages used to illustrate the frequency asymmetry do not have an alienability contrast in their grammar. This is actually good, because it means that a conceivable alternative explanation can be ruled out, namely that the direction of causation would be the reverse, with the higher frequency of possessed occurrences of inalienable nouns being due to the shorter coding.

As can be seen in Table 1, the general trend is very strong, but there are also notable individual differences between different nouns. The fact that in general, all kinship terms and all part-whole terms in a language behave in the same way grammatically must be due to some kind of (presently not well-understood) system pressure, as discussed in Haspelmath (2014). Clearly, grammatical systems of languages do not reflect frequency differences very closely, but tend to work in terms of broad discrete classes which are defined semantically.

3.4 Distinguishing between the iconicity explanation and the predictability explanation

For the data that we have seen so far, the iconicity and the predictability explanation make the same predictions, so either of them (or indeed both) could be

correct. In the next three sections, I will make a number of additional observations concerning the form of adpossession constructions in the world's languages. We will see that there are some phenomena where both types of explanation make the same or similar predictions (Section 4), but also one phenomenon where the iconicity explanation makes a wrong prediction (Section 5), and some phenomena that follow from the predictability explanation but not from iconicity (Section 6). The generalizations seen in Sections 5–6 thus crucially favor the predictability explanation over the iconicity explanation, and we can abandon the concept of iconicity in explaining alienability splits.

4 Further predictions made by both approaches

4.1 The cohesion scale

Haiman (1983) proposes a “scale of linguistic distance”, shown in (17), consisting of four kinds of constructions representing four types of linguistic distance (or cohesion) between parts of the construction, which according to him correspond to different degrees of conceptual distance.

- (17) Haiman's (1983: 782) cohesion scale
- (i) X *word* Y (function-word expression)
 - (ii) X Y (juxtaposition)
 - (iii) X-Y (bound expression)
 - (iv) Z (portmanteau expression)

I call this scale *cohesion scale* rather than “distance scale”, because (ii) and (iii) do not differ in distance in the sense of something intervening between X and Y. While we often write a space between two elements which are not “bound”, there is not actually a pause between them, and the notions of free vs. bound expression, or single-word vs. multiple-word expression, are poorly understood (Haspelmath 2011a). But intuitively, “bound expression” is more cohesive than “juxtaposition”. The notion of distance is not really applicable to (iv) (where there is no X and Y whose distance could be measured), but again, expression by Z is intuitively more cohesive than expression by X-Y.

Haiman (1983) applies this scale to a number of grammatical contrasts, among them alienability contrasts. He makes the claim in (18), which he attributes to “Joseph Greenberg (p.c.)”.

(18) The Haiman-Greenberg Alienability Universal

In no language will the linguistic distance between X and Y be greater in signaling inalienable possession, in expressions like ‘X’s Y’, than it is in signaling alienable possession. (Haiman 1983: 793)

This universal is stronger than my Universal 1 in (5) above, in that it not only concerns zero vs. overt expression ([i] vs. [ii–iv] on the cohesion scale), but also makes claims about bound vs. free expression and ([i–ii] vs. [iii–iv], see Section 4.2), and separative vs. cumulative expression ([i–iii] vs. [iv], see Section 4.3).

4.2 Bound vs. free expression

The first prediction of (18) does indeed seem to be correct. It can be formulated as in (19) (cf. Ultan 1978: 26).

(19) **Universal 2:**

If a language has an adnominal alienability split, and in one of the constructions the possessor is bound to the possessed noun while in the other it is free, it is always the inalienable construction that shows bound coding, while the alienable construction shows free coding.

Some examples that illustrate this regularity are given in (20).

(20)	alienable construction	inalienable construction
a. Nakanai (Oceanic)	<i>luma taku</i> house I ‘my house’	<i>lima-gu</i> hand-1SG ‘my hand’ (Johnston 1981: 217)
b. Hua (Kainantu- Goroka)	<i>dgai? fu</i> I pig ‘my pig’	<i>d-za?</i> 1SG-arm ‘my arm’ (Haiman 1983: 793)
c. Ndjebbana (Maningrida)	<i>budmánda ngáyabba</i> suitcase I ‘my suitcase’	<i>nga-ngardabbámba</i> 1SG-liver ‘my liver’ (McKay 1996: 302–306)

- | | | |
|-----------------------------|--|--|
| d. Kpelle
(Mande) | <i>ŋa pɛɛi</i>
I house
'my house' | <i>m-pôlu</i>
1SG-back
'my back'
(Welmers 1973: 279) |
| e. Georgian
(Kartvelian) | <i>čem-i c'ign-i</i>
my-NOM book-NOM
'my book' | <i>deda-čem-i</i>
mother-my-NOM
'my mother'
(Khizanishvili 2006: 12–13) |

Universal 2 is predicted by Haiman's iconicity explanation, but it is also expected from the predictability explanation. More predictable forms are shorter (see Section 6.1 below), and shorter forms have a greater tendency to coalesce with a host, apparently for phonological reasons (though the details are not fully clear; see Haspelmath [2011b] for some discussion). Thus, Universal 2 cannot be taken to favor the iconicity explanation over the predictability hypothesis.⁵

4.3 Separative vs. cumulative expression

The universal in (18) also makes a prediction that Haiman does not mention: Inalienable nouns should show a tendency to fuse with their possessors into a single unanalyzable (i.e. cumulative) form. And indeed, with kinship terms we occasionally find suppletive cumulative forms such as Lakota *ina* 'my mother' (instead of the expected **mi-hu*), Juhoan *áíá* 'my mother', and Daai Chin *nääi* 'my mother' (a further example from Ungarinyin is cited by van Rijn [2016b: 7]; see also Vafaeian [2013] for more discussion).

- | | | |
|-----------------|---------------------------------------|---|
| (21) | ordinary adpossession
construction | inalienable construction |
| Juhoan
(Kxa) | <i>mí útò</i> 'my car' | <i>taqè</i> 'mother' vs.
<i>áíá</i> 'my mother'
(* <i>mi taqè</i>)
(Dickens 2005: 35) |

⁵ Note that the bound forms in (20a–d) are all short person forms consisting maximally of a CV syllable. If there were a free/bound contrast involving longer forms and full nouns (e.g. 'woman house' vs. 'woman-hand'), this would argue for Haiman's approach, but such contrasts do not seem to exist.

dle between the possessor and the possessed noun. This is indeed what we find in many cases, e.g. in the canonical examples from Abun in (1) and Jeli in (4), and also in most of the examples in (6)–(12). By contrast, the predictability explanation says nothing about linear order, as it only concerns the presence or absence of additional coding material that signals the possessive relationship.

When we look at a wider range of languages with an alienability split, it turns out that the possessive marker is not constrained with respect to its position. It may occur to the left of both the possessor and the possessed noun, as seen in (24), or to the right of both the possessor and the possessed noun, as seen in (25). (See also the Tommo So Dogon example in [12] above.)

(24)	alienable construction	inalienable construction
Puluwat (Oceanic)	<i>nay-iy hamwol</i> POSS-1SG chief 'my chief'	<i>pay-iy</i> hand-1SG 'my hand' (Elbert 1974: 55, 61)
(25)	alienable construction	inalienable construction
a. O'odham (Uto-Aztecan)	<i>ñ-mi:stol-ga</i> 1SG-cat-POSSD 'my cat'	<i>ñ-je'e</i> 1SG-mother 'my mother' (Zepeda 1983: 76, 78)
b. Koyukon (Athabaskan)	<i>se-tel-e'</i> 1SG-socks-POSSD 'my socks'	<i>se-tlee'</i> 1SG-head 'my head' (Thompson 1996: 654, 667)
c. Achagua (Arawakan)	<i>nu-caarru-ni</i> 1SG-car-POSSD 'my car'	<i>nu-wita</i> 1SG-head 'my head' (Wilson 1992: 21, 65)

Thus, these data are consistent with the predictability explanation, but they are not expected on the iconicity explanation.

Haiman (1983) himself cites the Puluwat example (24) and recognizes that it is a problem for his explanation in terms of iconicity:

Clearly, the classifier is not interposed between possessor and possessum. It is possible that, at some earlier stage of the language, the possessive affixes also followed alienably possessed nouns ... Word order could change in defiance of iconicity. Perhaps, then, it will be necessary to revise [my earlier statement in terms of distance] ..., by claiming the following:

(37) In no language will the phonological expression of inalienable possession be bulkier than that of alienable possession.

Whether this revision is necessary depends on the frequency of the pattern exemplified by Puluwat. (Haiman 1983: 795)

Even thirty years after Haiman's paper, there are no systematic cross-linguistic data on the cross-linguistic frequencies of the various patterns. However, it is clear that the patterns in (24) and (25) are consistent with Universal 1 and the predictability explanation, but do not follow from the iconicity explanation.

6 Predictions not made by the iconicity explanation

In addition to phenomena where both the iconicity and the predictability explanations make predictions about the form of adpossession constructions with possessed-noun splits, there are also phenomena where the iconicity-of-distance explanation makes no predictions but the predictability explanation leads us to certain expectations. These concern the length of the possessive marker (Section 6.1), as well as situations in which an adpossession construction is obligatory (Section 6.3) or is not possible at all with certain kinds of nouns (Section 6.2).

6.1 Length of the possessive person forms

In addition to the observation that inalienable constructions tend to be zero-coded, we can also observe that the possessive person forms tend to be shorter in the inalienable construction (cf. Nichols 1988: 564).⁶

(26) **Universal 3:**

If a language has an adnominal alienability split, and one of the constructions is coded with shorter person forms while the other is coded with

⁶ Nichols (1988: 564) makes the following statement: "In most languages in my corpus ..., the possessive affix used with the closed set of nouns is shorter or morphologically simpler than that used with the open set of nouns. There were some languages for which there was no apparent difference ... but there were no languages which reversed this tendency and used a longer or more complex marker for 'inalienably' possessed nouns." (Cf. also Nichols 1988: 575.)

longer person forms, it is always the inalienable construction that has the shorter person forms, while the alienable construction has the longer person forms.

This universal is similar Haiman's (1983) statement in his (37) (as just seen in the quotation in Section 5). In the examples in (20a–d), the possessive person forms are shorter in the inalienable construction.⁷ We saw that the length of the forms seems to be a factor in their bound vs. free status.

But length distinctions also occur when both types of person forms are free (judging by the orthography), or both are bound:

- | | | | |
|---------|---------------------|---|--|
| (27) a. | Juhoan
(Khoisan) | <i>mì tjà</i>
I house
'my house' | <i>m bá</i>
my father
'my father'
(Dickens 2005: 35) |
| b. | Crow
(Siouan) | <i>bas-ílaalee</i>
1SG.AL-car
'my car' | <i>b-apé</i>
1SG.INAL-nose
'my nose'
(Graczyk 2007: 52–53) |
| c. | Hungarian | <i>bőr-je</i>
skin-3SG.AL
'his/her leather' | <i>bőr-e</i>
skin-3SG.INAL
'his/her skin'
(Elekfi 2000: 159) ⁸ |

Just as the zero vs. overt contrasts are predicted by the predictability explanation, the short vs. long contrast is also predicted by it. By contrast, there is no difference in distance here, so the iconicity explanation makes no prediction.

6.2 Impossessible nouns

Some languages have some nouns that cannot occur as possessed nouns in a possessive construction, e.g. in Yucatec Maya (Lehmann 1998: 57–58), where the nouns in (28) are among those that cannot occur with prefixed possessive person forms.

⁷ The length distinction is only found with person forms, not with full nominals. I am not aware of any language which shortens its full-nominal adpossessor (something like 'father's house' vs. 'fa's brother'). This is probably because person forms tend to be short and idiosyncratic anyway, with a lot of cumulative and suppletive forms.

⁸ The Hungarian facts are discussed in a typological context by Ortmann and Gerland (2014).

(28) <i>máak</i>	‘person’
<i>xch’up</i>	‘woman’
<i>suhuy</i>	‘virgin’
<i>ïik</i>	‘air, wind’
<i>ka’n</i>	‘sky’
<i>yóok’olkab</i>	‘world’

Such nouns are called **IMPOSSESSIBLE NOUNS** (“not possessable”) by Lehmann. The phenomenon was also noted by Nichols and Bickel (2005a).

That these nouns cannot occur in a possessive construction finds a natural account in my predictability-based explanation. Natural phenomena like ‘sky’ or ‘world’, and non-relational person nouns such as ‘woman’ occur very rarely as possessed nouns in languages that allow such constructions. Thus, while English allows *your woman* or *Kim’s sky*, such expressions are rare because they need a very special construal. As Lehmann (1998) puts it, person nouns and environmental nouns are “highly unfit as possessa”, and it can easily be seen in any corpus (e.g. of English) that nouns such as ‘sky’ or ‘woman’ occur very rarely as possessed nouns.

Thus, in order to convey the idea that a ‘woman’ or a ‘wind’ is possessed, speakers of some languages need to make a greater coding effort. In Yucatec Maya, the ordinary prefixing construction does not allow such nouns, but this does not necessarily mean that an English phrase such as *your woman* cannot be translated into Yucatec. What speakers of this language probably have to do is resort to a more complex paraphrase, perhaps a relative clause construction (‘the woman that belongs to you’), or an appositive noun that can be possessed (‘the woman your-possession’).⁹ The relationship between ordinary possessive constructions and such roundabout expressions would not normally be called a “coding split”, because only one of the two expression types is a special grammatical construction. But in terms of coding length, there is no difference: the relationship between ‘woman that belongs to you’ and ‘your house’ in Yucatec Maya is analogous to the relationship between ‘my garden’ and ‘my arm’ in Abun. There is no need in this approach to make a strict distinction between grammatical constructions and “roundabout expressions”.

To make the parallel between the alienability split and the split as discussed here even clearer, we might set up an implicational scale as in (29), where the term **SUPER-ALIENABLE** refers to the semantic group of nouns (environmental phenomena, wild animals, nonrelational person nouns) which very

⁹ Nichols and Bickel (2005a) call such appositive nouns “possessive nouns”.

rarely occur in a possessive construction, and which correspond to a language-specific class of impossible nouns in some languages.

(29) inalienable nouns – alienable nouns – super-alienable nouns

Universals 1–3 could be reformulated in such a way as to cover not only the two noun types on the left-hand side, but all three types. It appears that in this stronger formulation, they would still be valid (see Section 7 below).

Thus, while rare occurrence in texts generally leads to a requirement of greater length of coding, it may also sometimes result in complete lack of grammatical coding (cf. Haspelmath 2008b: 189–190).

6.3 Possidend nouns (= obligatorily possessed nouns)

In a fair number of languages in different parts of the world, some nouns *must* occur as possessed nouns in possessive constructions. They cannot (normally) occur in an unpossessed, absolute way. For example, in Koyukon (an Athabascan language of Alaska), the word for ‘my head’ is *se-tlee*, but one cannot simply say **tlee* for ‘head’ (Thompson 1996). Such nouns are thus the opposite of the impossible type of Section 6.2, and I call them POSSIDEND NOUNS.¹⁰ These nouns are typically body-part terms or kinship terms, i.e. inalienable nouns in the sense of Section 2.¹¹

Even though this phenomenon is quite well-known, and not unexpected on the traditional view that the alienable/inalienable distinction is primarily due to the fact that some nouns are inherently relational, the question to what extent a possessive construction obligatorily requires a possessor is rarely studied thoroughly.

The most extensive study of phenomena of this kind is Nichols and Bickel (2005a), who examine languages with “obligatory possessive inflection”. The phenomenon of a possidend class of nouns is discussed in the literature almost exclusively for nouns in which the possessor occurs as a bound person index on the noun, so Nichols and Bickel do not distinguish between nouns with obligatory possessive inflection and nouns with an obligatory free possessor.¹²

¹⁰ Latin *nomina possidenda* ‘nouns that must be possessed’ (using the Latin gerundive form ending in *-end-* of the verb *possideo* ‘possess’).

¹¹ Nichols (1988: 564) and Nichols and Bickel (2005a: 238) call these nouns “bound nouns”.

¹² We rarely read about cases like Old Georgian, where possessors are said to be required for kinship terms even though they are not bound person markers (Khizanishvili 2006). However, there is no reason to think that such languages are rare (Dahl and Koptjevskaja-Tamm [2001] also mention Sirionó and Guarani).

d. Cahuilla	<i>puč-</i>	<i>hé-puš</i>	<i>púč-il</i>
(Uto-Aztecan)		3SG.POSS-eye	eye-APOSS
	‘eye’	‘his eye’	‘eye’
			(Seiler 1983: 25)

We can thus say that there is a general tendency for inalienable nouns (kinship terms and body-part terms) to require a special marker in non-possessed contexts. This is formulated as Universal 4, which is very similar to Universal 1 but concerns coding in non-possessed contexts.

(31) **Universal 4:**

If a language treats alienable and inalienable nouns differently in non-possessed contexts, and one of the constructions is overtly coded while the other one is zero-coded, it is always the alienable nouns that show zero-coding, while the inalienable nouns show overt coding (by an anti-possessive marker).

6.3.2 Inabsoluble possidend nouns

In addition to absoluble possidend nouns, there are also what Lehmann (1998: 52) calls *INABSOLUBLE* nouns, i.e. nouns which cannot be used outside of a possessive construction at all, not even with an antipossessive marker. Lehmann’s discussion concerns Yucatec Maya, which has both kinds of nouns among its class of inalienables. Some examples of inabsoluble nouns are given in (32).

(32) Yucatec	<i>ich</i>	‘face’
	<i>mòots</i>	‘root’
	<i>ti’a’l</i>	‘property’

Here we have the opposite of the impossible nouns of Section 6.2: Nouns that must be possessed, and where there is no grammatical construction that allows speakers to use them in an absolute sense.¹⁴

14 On the analogy of the “super-alienable” noun meanings of Section 6.2, one might expect that there is also a group of “super-inalienable” noun meanings which tend to be possidend and inabsoluble. I am not aware of evidence that there is any semantic coherence to the inabsoluble nouns, so it is unclear whether this expectation is borne out.

However, again there are ways in which speakers could get around this grammatical restriction. Thus, Yucatec Maya speakers could presumably say ‘someone’s face’ or ‘the root of something’ in order to talk about a face or a root without mentioning a specific possessor. This would not normally be called an antipossessive construction, because it is not a special grammatical construction at all. But fundamentally, there is again no difference: the relationship between ‘someone’s face’ and ‘my face’ in Yucatec Maya is analogous to the relationship between *k’e-tlee* ‘head’ and *se-tlee* ‘my head’ in Koyukon.

6.3.3 Explanation

Iconicity of distance does not make any predictions about unpossessed constructions, but the predictability-based perspective again provides an explanation: When a noun occurs in a possessive construction very frequently, it may end up occurring obligatorily in this construction, and when it is to be used in an absolute way, without a possessor, it may be necessary to add special antipossessive marking to counter the strong expectation that a possessor will be found.

It is true that the phenomenon of possidend nouns is also expected on the view that grammars tend to exhibit form-meaning correspondences. Since the possessor seems to be notionally necessary with inalienable nouns,¹⁵ it is not surprising that it should be syntactically obligatory in some languages, any more than it is surprising that subjects and objects are syntactically obligatory with transitive verbs in many languages (cf. Lehmann 1983: § 3.2–3.3) for a particularly clear statement of the relation between coding and semantic relationality, both in verbs and in nouns; Stiebels (2006) is a more recent paper in the same spirit). But the phenomenon of antipossessive markers (Section 6.3.1) is not expected on semantic grounds, because no meaning is added by these markers.¹⁶

15 The claim that kinship terms and body-part nouns are necessarily possessed sounds plausible and is often made, but in fact, artifact nouns such as ‘house’ or ‘knife’ are difficult to imagine without a human possessor as well. Nevertheless, languages typically treat artifact nouns just as they treat nouns such as ‘cat’ or ‘nut’. Thus, to what extent the meaning of possession is really “inherent” in kinship and body-part term is still open to discussion.

16 In a few languages, nouns with antipossessive markers can take possessive indexes in addition, resulting in a semantic contrast, as reported for Navajo by Young and Morgan (1987: 3) and cited by Nichols and Bickel (2005a: 238): *bi-be* ‘her milk (from her own breasts)’, *’a-be* ‘something’s milk’, *be-’a-be* ‘her (store-bought) milk’. For the contrast between *bi-be*’ and *be-’a-be*’ one could invoke Haiman’s iconicity of distance, because there is a formal distance in the second form that can be seen as corresponding to a semantic distance. But on Haiman’s account, it is puzzling that there also exists a form *’a-be*’, without the possessive prefix.

Creissels (2006: 157–158) says that “one can speak of iconicity, because the longer form of the noun is also more complex semantically in the sense that it implies the cancellation of a feature inherent to the noun’s meaning”.¹⁷ Whether meanings that lack a feature can be regarded as “more complex” is a matter that I would like to leave to semanticists, but I fear that if one is too liberal in one’s definition of semantic complexity, one might end up saying that any meaning that is (rare and hence) unexpected is semantically complex.

7 Summary of proposed universals

We can summarize the universal trends that we have hypothesized so far as in Universal 5 (for adpossession constructions) and Universal 6 (for nonpossessed occurrences of nouns).

(33) **Universal 5:**

Possessive constructions with inalienable nouns tend to show zero coding (Section 3.1), short coding (Section 6.1), bound coding (Section 4.2), and/or obligatoriness (Section 6.3), while possessive constructions with alienable nouns tend to show overt coding, long coding, free coding, and/or impossibility (Section 6.2).

(34) **Universal 6:**

In a nonpossessed occurrence, alienable nouns tend to show zero coding and/or obligatoriness (Section 6.2), while inalienable nouns tend to show overt coding (Section 6.3.1) and/or impossibility (Section 6.3.2).

Inalienable nouns (kinship terms and body-part terms) and alienable nouns thus behave in a mirror-image way. This cannot be easily seen in individual languages, and some of the relevant patterns are not very frequent, but they nevertheless seem to be robust cross-linguistic trends. Note that Universals 5–6 are formulated as tendencies rather than absolute universals, because they generalize over the various subtypes. The difference between absolute universals and universal tendencies is not really relevant in the current context, because my explanation does not predict absolute impossibility of the dispreferred patterns (however, I have encountered very few counterexamples).

¹⁷ “On peut parler d’iconicité, puisque la forme la plus longue du nom est aussi plus complexe sémantiquement au sens où elle implique l’annulation d’un trait inhérent au signifié du nom.” (Creissels 2006: 157–158).

A still more general formulation of the trends is possible if we return to the scale in (28) above (repeated here in [35]), which distinguishes three broad semantic groups: inalienable, alienable and super-alienable nouns. We can call this scale the **POSSESSOR-PROMINENCE SCALE**.

(35) The possessor-prominence scale:

inalienable nouns – alienable nouns – super-alienable nouns

On the basis of this scale, we can formulate the hypothetical generalization in (36), which subsumes all the other universals seen so far:

(36) **Universal 7:**

The further to the left on the possessor-prominence scale a noun is located, the shorter (and hence more bound) is the marking of the possessive construction, and the longer (and hence less bound) is the marking of the nonpossessed occurrence. Conversely, the further to the right on the possessor-prominence scale a noun is located, the longer is the marking of the possessive construction, and the shorter the marking of the nonpossessed occurrence.

Here zero coding, short coding, bound coding and obligatoriness are subsumed under “shortness (and hence boundness)”, because zero coding is simply the extreme case of shortness, and obligatoriness simply means that a longer (and more roundabout) expression has to be used if the relevant meaning is to be conveyed (assuming that if given enough time, speakers can express every meaning in every language).¹⁸

As noted in Haspelmath (2008b), such mirror-image generalizations are characteristic of a wide range of oppositions in grammar, and they all seem to be due to frequency-induced predictability, following the causal chain in (16).

8 Relative and absolute frequencies

We saw above (Section 3.3) that inalienable nouns occur more often as possessed nouns in possessive constructions than alienable nouns. This was the basis for my explanation of the coding differences: The percentage of possessed

¹⁸ A reviewer notes that an even shorter version of Universal 7 would be: “The marking length of an adpossessive construction used with a type of noun correlates inversely with the likelihood of the presence of a possessor on this type of noun.”

occurrences is significantly higher in one group than in the other, i.e. the relative frequencies of possessed occurrences differ in the two groups.

However, some authors have related formal properties of grammatical constructions to absolute frequencies rather than relative frequencies, so the differences between these two kinds of frequency needs to be discussed briefly here.

Perhaps most notably, Croft (2008) argues that coding asymmetries should be explained in terms of absolute frequency:

[A]n economy explanation only works if one uses relative frequency of unpossessed vs. possessed inalienable nouns compared to the relative frequency of unpossessed vs. possessed alienable nouns. But all other examples of typological markedness – frequency-based differences in the structural expression of concepts – are of absolute frequency, not relative frequency. Many such examples are given in Greenberg (1966) and Bybee (1985); see also Croft (2003: 151, 154). (Croft 2008: 51)

This is a surprising statement, because all the examples of frequency differences between contrasting categories in Greenberg (1966) (the seminal study that inspired my research on form–frequency correspondences) consider relative frequency, not absolute frequency. For example, Greenberg observes that in general, singulars are more frequent than plurals, and plurals in turn are more frequent than duals. But this is true only in relative terms: For example, the dual of a high-frequency word such as ‘friend’ (‘two friends’) will be more frequent than the plural of a lower-frequency word such as ‘witch’ (‘witches’), and it will even be more frequent than the singular of a lowest-frequency word such as ‘nonagenarian’. In all these words, the relative frequencies are in accordance with the general trends, and the differences in absolute frequencies are irrelevant for the coding of singular, plural and dual. Croft’s statement thus seems to be based on a confusion, but he gives a reason for the expectation that absolute frequency rather than relative frequency should be the relevant type of frequency to explain “economic coding”:¹⁹

It is not an accident that absolute frequency has been found to be the causal factor for economically motivated linguistic patterns. The theoretical explanation for economy (e.g. Bybee 1985) requires absolute frequency. Economy effects are due to degree of entrenchment of linguistic forms (morphological forms or constructions such as the possessive) in the mental representation of linguistic knowledge. Entrenchment leads to routinization of the production of the form by a speaker, which in turn brings about reduction of that form. But entrenchment is a result of exposure to the number of tokens of the linguistic

19 Note that Haspelmath (2008a) used the term “economic motivation”, based on Haiman (1983), for what is called “predictability explanation” in this paper. Thus, Croft’s “economy effects” are what are called “predictability effects” here.

form; that is, entrenchment is a function of the absolute frequencies of forms, not relative frequencies. (Croft 2008: 52)

It is true that Bybee's work on degree of entrenchment has been influential and is certainly important in many areas of grammar (see also Diessel and Hilpert 2015), but it is a misunderstanding to try to reduce form–frequency correspondences to entrenchment and absolute frequency. Entrenchment or absolute frequency is responsible for a variety of effects, most notably the preservation of irregularities and suppletion (as already noted above in Section 4.3).²⁰ However, form-frequency correspondences of the type described in Section 3.3 result from the higher predictability of the more frequent forms, and it is relative frequency that is relevant here. Reduction of form is not due to routinization, but to the possibility of giving less information to the hearer due to the higher predictability. (See also Hollmann and Siewierska [2007: §4] for fairly detailed discussion of relative and absolute frequencies in adpossession constructions in English.)

9 The diachronic creation of alienability contrasts

As noted by Bybee (1988), functional-adaptive explanations need a diachronic component: Since the current language system is rigidly conventional, the adaptive forces must have been active in earlier diachronic change. Thus, to complete the picture, I will make a few remarks on ways in which alienability splits arise diachronically, and on how the different frequencies and thus the different predictability leads to the coding differences. (See now also van Rijn [2016b] for a more detailed study of some of the relevant developments.)

In general, there are at least two ways in which the higher frequency and greater predictability of one pattern leads to shorter coding (cf. also Haspelmath 2008b): (i) differential phonological reduction in the more frequent pattern (due to the *Reducing Effect* of frequency, cf. Bybee [2007]), and (ii) differential inhibition of a novel construction type (due to what I call the *Expectation-generating Effect*).

²⁰ Croft (2008: 51) cites Corbett et al. (2001), noting that in their study of Russian morphology, “absolute frequency was a strongly significant factor”. This is not surprising, because Corbett et al. (2001) did not look at asymmetries of coding, but at irregularities of inflection, which are generally due to absolute frequency and entrenchment (see also Hippisley 2001).

9.1 Differential phonological reduction

Reduction is the mechanism that Zipf (1935) proposed to explain the frequency effects in lexical items that he observed. There seem to be widely available processes of shortening when an expression becomes more frequent. Zipf mentioned clipping (e.g. German *Auto* from *Automobil*), but there is also differential sound change, leading to greater reduction in frequent forms (e.g. Mańczak 1980). In (37)–(39), we see three examples of cases where a shorter inalienable pattern arose by phonological reduction from a fuller pattern, while the corresponding alienable pattern does not show the same reduction.

- (37) Old Italian < Latin
- | | | | | |
|----|---------------------------|---|------------------------------|------------------------------|
| a. | <i>mogli</i> - <i>ma</i> | < | <i>mulier</i> <i>mea</i> | ‘my wife’ (inalienable) |
| | <i>fratel</i> - <i>to</i> | < | <i>fratellus</i> <i>tuus</i> | ‘your brother’ (inalienable) |
| b. | <i>terra</i> <i>mia</i> | < | <i>terra</i> <i>mea</i> | ‘my land’ (alienable) |
- (Rohlf 1949–1954)

- (38) Nyulnyul (Nyulnyulan; northern Australia)

- | | | |
|----|--------------------------|-----------------------|
| a. | <i>nga-lirr</i> | (< <i>ngay lirr</i>) |
| | 1SG-mouth | I mouth |
| | ‘my mouth’ (inalienable) | |
| b. | <i>jan yil</i> | |
| | I.OBL | dog |
| | ‘my dog’ (alienable) | |
- (McGregor 1996: 252, 258)

- (39) Lancashire English

- | | | |
|----|-------------------------------------|---------------|
| a. | <i>m</i> [ɪ] <i>brother</i> | (inalienable) |
| b. | <i>m</i> [aɪ] <i>football shoes</i> | (alienable) |
- (Hollmann and Siewierska 2007: 407)

A change similar to the change from Latin to Old Italian seems to have occurred in Georgian. While Old Georgian had variable position of case-agreeing possessive pronouns (e.g. *čem-i c’ign-i* [my-NOM book-NOM] or *c’ign-i čem-i* [book-NOM my-NOM]), Modern Georgian has grammaticalized the possessive marking in the case of kinship terms, by restricting the positional freedom of the possessive pronoun (*deda-čem-i* [mother-my-NOM], cf. [20e] above), and at the same time limiting the inflection to final position (dative case *deda-čem-s* [mother-my-DAT], contrasting with alienable *čem-s c’ign-s* [my-DAT book-DAT]; see Khizanishvili [2006] for discussion). It is true that the possessive pronoun itself was

not reduced, and the loss of the internal inflection (*deda-s čem-s* [mother-DAT my-DAT] > *deda-čem-s*) may not have been purely phonetic, but this is a case of differential reduction, not inhibition as in the cases cited in the next subsection.

9.2 Differential inhibition of an expanding construction

Even though Zipf's (1935) explanation of form-frequency correspondence phenomena would lead us to expect otherwise, most cases of asymmetric coding are clearly not due to differential phonological reduction, but to differential inhibition of a new, more complex construction. Such novel constructions typically make an existing meaning more transparent or salient by including a special additional morpheme, and they are introduced when speakers want to call special attention to the relevant meaning ("extravagance", Haspelmath 1999). The novel construction may then expand and become more frequent in an increasing number of new contexts, but it will be prevented from spreading to the contexts in which the relevant meanings occur most often.²¹

Consider the example of Maltese possessive constructions (cf. Koptjevskaja-Tamm 1996). Like many other modern Arabic vernaculars, Maltese has an alienability split (described in detail in Stolz et al. 2008: § 4.1), but in Classical Arabic (attested since the first millennium CE), there was no such split. In Classical Arabic, all nouns can take possessive affixes:

- (40) *yad* 'hand' *yad-ii* [hand-1SG.POSS] 'my hand'
kitaab 'book' *kitaab-ii* [book-1SG.POSS] 'my book'
 etc.

In Maltese, by contrast, only inalienable nouns (body-part terms and kinship terms) take possessive affixes; others occur in a periphrastic construction with *tiegħ-* 'of':

²¹ Cf. also the discussion in Creissels (2006: § 9.7.2): "Les langues tendent de manière générale à utiliser moins de matériau morphologique pour exprimer des relations plus ou moins suggérées par les sens lexical des mots participant à une construction, ce qui explique qu'initialement, la variante de la construction génitive morphologiquement la plus marquée est aussi sémantiquement marquée, son emploi se limitant à une variété particulière de relations typiquement aliénables ..." [In general, languages tend to use less morphological material to express relations that are more or less suggested by the lexical meaning of the words occurring in a construction, which explains that initially, the morphologically most marked variant of the genitive construction is also semantically marked, limited to a special kind of typically alienable construction ...].

- (41) *id* ‘hand’ *id-i* [hand-1SG.POSS] ‘my hand’
ktieb ‘book’ **ktieb-i* [book-1SG.POSS]
il-ktieb tiegħ-i [ART-book of-1SG] ‘my book’

The novel construction arose from an appositive construction of the type *al-kitaab mataaġ-ii*, literally ‘the-book my-possession’, which is a typical grammaticalization of a content word that makes an existing meaning more transparent, or expresses it more “extravagantly”. But this novel construction did not expand to inalienable nouns: Maltese does not allow **l-id tiegħ-i* ‘my hand’ (Koptjevskaja-Tamm 1996). Inalienable nouns still use the old pattern with a person suffix and with no special possessive morpheme. Synchronically, Maltese is thus just like the languages in (6)–(12), and it is quite possible that some of these have the same kind of diachronic origin.²²

The same kind of development can be observed in the history of Egyptian-Coptic, as described in detail in Kammerzell (2000) and Haspelmath (2015). The oldest attested stage of Egyptian had a productive pattern of direct possessive marking, by postposed possessive person forms or juxtaposed possessors. This pattern survived into Coptic only with a few body-part terms, e.g. *rô-f* ‘his mouth’, or *hêt-s* ‘her womb’. With alienable nouns, the language resorts to a new possessive construction, involving a preceding definite article, e.g. *pe-f-êi* [ART-3SG.M-house] ‘his house’, *pe-s-čoeis* [ART-3SG.F-lord] ‘her lord’ (this interesting change was also noted by Creissels [2006: 155]).

A third example is the Old French contrast between the old Inflected Genitive construction (e.g. *li filz Deu* ‘God’s son’) and the new Prepositional Genitive with *de* (e.g. *le duch de Bretagne* ‘the Duke of Brittany’) (see Herslund 1980, among many others). While there are a number of factors that determine the choice between the old and the new construction, kinship and body-part terms are particularly prominent determinants of the old construction in Old French.

I hypothesize that the expansion of the new (and typically longer) construction is inhibited by the Expectation-generating effect of usage frequency: the expression of the possessive meaning is redundant when it is highly expected on the basis of learned frequency distributions that there will be a possessor.

Dahl and Koptjevskaja-Tamm (1998) make the strong claim that differential expansion is the only way in which an inalienability split can arise:

We suggest the generalization that an expanding possessive construction must encroach on the territory of pronominal possession for an alienability split to arise. (Dahl and Koptjevskaja-Tamm 1998: 48)

²² Nichols (1988: 579, 582) already noted that the inalienable construction is usually “etymologically older”, or “more archaic”.

However, the examples in (37)–(39) show attested cases of differential phonological reduction, so this statement seems to be too strong.

10 Conclusion

I conclude that a range of cross-linguistically recurring properties of inalienable and alienable adnominal possessive constructions can be explained by the fact that inalienable nouns occur more frequently as possessed nouns than alienable nouns. Alienability splits in adpossession constructions can thus be subsumed under the highly general form-frequency correspondence principle of Haspelmath et al. (2014).

Haiman's (1983) well-known iconicity explanation is less general than my explanation and makes some wrong predictions, so it should be abandoned.

More generally, it seems that the explanatory power of iconicity has been overestimated. For instance, all “iconicity of markedness matching” effects can be explained by frequency asymmetries as well (Haspelmath 2006: 40, Haspelmath 2008a). Linguists have a natural tendency to explain formal patterns semantically, but this is not the only explanation. Language structure not only reflects meaning, but also the pragmatic use that speakers make of language. Countering the hearers' expectations is a major pragmatic function of language, so it is not surprising that it should be reflected in grammatical structure as well. A cognitive-functional approach that is not usage-based and corpus-based (such as much of the classical functionalist work of the 1970s and 1980s) may go seriously wrong.

Of course, for a complete understanding of the coding asymmetries that we observe in grammar, we will ultimately need an understanding of the frequency asymmetries, not just of their effects. But it is not true that “frequency distributions ... do not provide an explanation because the frequency distributions themselves need to be explained” (Downing and Stiebels 2012: 425; see also Rainer et al. 2014: 17). Even if we had no explanation of the frequency distributions, they would still account for predictability and thus for shorter coding. However, in the case of adpossession constructions, this is not a burning issue, because it is easy to understand why ‘hand’ should occur more often as a possessed noun than ‘house’. Thus, I will not discuss this matter further here and trust that at least in the case of alienability splits, even skeptics will be convinced.

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References

- Aikhenvald, Aleksandra Y. 2013. Possession and ownership: A cross-linguistic perspective. In Alexandra Y. Aikhenvald & R. M. W. Dixon (eds.), *Possession and ownership: A cross-linguistic typology*, 1–64. Oxford: Oxford University Press.
- Berry, Keith & Berry, Christine. 1999. *A description of Abun: A West Papuan language of Irian Jaya*. (Pacific Linguistics, B-115) Canberra: Australian National University.
- Buechel, Eugene. 1939. *A grammar of Lakota: The language of the Teton Sioux Indians*. St. Francis, SD: St. Francis Mission/Rosebud Educational Society.
- Bybee, Joan L. 1985. *Morphology: A study of the relation between meaning and form*. Amsterdam: Benjamins.
- Bybee, Joan L. 1988. The diachronic dimension in explanation. In John A. Hawkins (ed.), *Explaining language universals*, 350–379. Oxford: Blackwell.
- Bybee, Joan. 2007. Introduction. In Joan Bybee, *Frequency of use and the organization of language*, 5–22. Oxford: Oxford University Press.
- Chappell, Hilary & McGregor, William. 1989. Alienability, inalienability and nominal classification. In Kira Hall, Micheal Meacham & Richard Shapiro (eds.), *Proceedings of the 15th Annual Meeting of the Berkeley Linguistics Society. General Session and Parasession on Theoretical Issues in Language Reconstruction*, 24–36. Berkeley, CA: Berkeley Linguistics Society.
- Chappell, Hilary & McGregor, William. 1996. Prolegomena to a theory of inalienability. In Hilary Chappell & William McGregor (eds.), *The grammar of inalienability*, 3–30. Berlin & Boston: Mouton de Gruyter.
- Corbett, Greville G., Andrew Hippisley, Dunstan Brown & Paul Marriott. 2001. Frequency, regularity and the paradigm: A perspective from Russian on a complex relation. In Joan L. Bybee & Paul Hopper (eds.), *Frequency and the emergence of linguistic structure*, 201–226. Amsterdam: Benjamins.
- Creissels, Denis. 2006. *Syntaxe générale: Une introduction typologique*. Paris: Lavoisier-Hermès Science.
- Croft, William. 1990. *Typology and universals*. Cambridge: Cambridge University Press.
- Croft, William. 1991. *Syntactic categories and grammatical relations: The cognitive organization of information*. Chicago;IL: The University of Chicago Press.
- Croft, William. 2003. *Typology and universals*. 2nd edition. Cambridge: Cambridge University Press.
- Croft, William. 2008. On iconicity of distance. (Commentary on Haspelmath 2008b.) *Cognitive Linguistics* 19(1). 49–58.
- Crowley, Terry. 1996. Inalienable possession in Paamese grammar. In Hilary Chappell & William Gregory (eds.), *The grammar of inalienability: A typological perspective on body part terms and the part-whole relation*, 383–432. Berlin & Boston: Mouton de Gruyter.
- Dahl, Östen & Maria Koptjevskaja-Tamm. 2001. Kinship in grammar. In Irène Baron, Michael Herslund & Finn Sørensen (eds.), *Dimensions of possession*, 201–225. Amsterdam: Benjamins.
- Dahl, Östen & Maria Koptjevskaja-Tamm. 1998. Alienability splits and the grammaticalization of possessive constructions. In Timo Haukioja (ed.), *Papers from the 16th Scandinavian Conference of Linguistics*, 38–49. Turku: University of Turku.
- Dickens, Patrick J. 2005. *A concise grammar of Ju/'hoan*. Köln: Köppe.

- Diessel, Holger & Martin Hilpert. 2015. Frequency effects in grammar. In Mark Aronoff (ed.), *Oxford research encyclopedia of linguistics*. Oxford: Oxford University Press.
- Dixon, R. M. W. 2010. *Basic linguistic theory*, vol. 2: *Grammatical topics*. Oxford: Oxford University Press.
- Downing, Laura & Barbara Stiebels. 2012. Iconicity. In Jochen Trommer (ed.), *The morphology and phonology of exponence*, 379–426. Oxford: Oxford University Press.
- Elbert, Samuel. 1974. *Puluwat grammar* (Pacific Linguistics, B-29). Canberra: ANU.
- Elekfi, László. 2000. Semantic differences of suffixal alternates in Hungary. *Acta Linguistica Hungarica* 47(1–4). 144–177.
- Enrico, John. 2003. *Haida syntax*. 2 vols. Lincoln, NE: University of Nebraska Press.
- Evans, Nicholas. 1995. *A grammar of Kayardild*. Berlin & Boston: Mouton de Gruyter.
- Gabas, Nilson. 1999. *A grammar of Karo, Tupi (Brazil)*. Santa Barbara, CA: University of California dissertation.
- Graczyk, Randolph Jan. 2007. *A grammar of Crow: Apsáaloke Aliláau* (Studies in the Native Languages of the Americas). Lincoln, NE: University of Nebraska Press.
- Greenberg, Joseph H. 1966. *Language universals, with special reference to feature hierarchies*. The Hague: Mouton.
- Greenberg, Joseph H. 1995. The diachronic typological approach to language. In Masayoshi Shibatani & Theodora Bynon (eds.), *Approaches to language typology*, 143–166. Oxford: Clarendon.
- Guéron, Jacqueline. 2006. Inalienable possession. In Martin Everaert & Henk van Riemsdijk (eds.), *The Blackwell companion to syntax*, vol. 2, 589–638. Oxford: Blackwell.
- Haiman, John. 1983. Iconic and economic motivation. *Language* 59. 781–819.
- Haiman, John. 1985. *Natural syntax*. Cambridge: Cambridge University Press.
- Haspelmath, Martin. 1999. Why is grammaticalization irreversible? *Linguistics* 37(6). 1043–68.
- Haspelmath, Martin. 2006. Against markedness (and what to replace it with). *Journal of Linguistics* 42(1). 1–46.
- Haspelmath, Martin. 2008a. Frequency vs. iconicity in explaining grammatical asymmetries. *Cognitive Linguistics* 19(1). 1–33.
- Haspelmath, Martin. 2008b. Creating economical morphosyntactic patterns in language change. In Jeff Good (ed.), *Language universals and language change*, 185–214. Oxford: Oxford University Press.
- Haspelmath, Martin. 2010. Comparative concepts and descriptive categories in crosslinguistic studies. *Language* 86(3). 663–687.
- Haspelmath, Martin. 2011a. The indeterminacy of word segmentation and the nature of morphology and syntax. *Folia Linguistica* 45(1). 31–80.
- Haspelmath, Martin. 2011b. The gradual coalescence into “words” in grammaticalization. In Heiko Narrog & Bernd Heine (eds.), *The Oxford handbook of grammaticalization*, 342–355. Oxford: Oxford University Press.
- Haspelmath, Martin. 2014. On system pressure competing with economic motivation. In Brian MacWhinney, Andrej L. Malchukov & Edith A. Moravcsik (eds.), *Competing motivations in grammar and usage*, 197–208. Oxford: Oxford University Press.
- Haspelmath, Martin. 2015. The three adnominal possessive constructions in Egyptian-Coptic: Three degrees of grammaticalization. In Eitan Grossman, Martin Haspelmath & Tonio Sebastian Richter (eds.), *Egyptian-Coptic linguistics in typological perspective*, 261–287. Berlin & Boston: Mouton de Gruyter.

- Haspelmath, Martin & Andres Karjus. 2017. Explaining asymmetries in number marking: Singulatives, pluratives and usage frequency. *Linguistics*, to appear.
- Haspelmath, Martin, Andreea Calude, Michael Spagnol, Heiko Narrog & Elif Bamyacı. 2014. Coding causal-noncausal verb alternations: A form-frequency correspondence explanation. *Journal of Linguistics* 50(3). 587–625.
- Hawkins, John A. 2014. *Cross-linguistic variation and efficiency*. Oxford: Oxford University Press.
- Heine, Bernd. 1997. *Possession: Cognitive forces, sources, and grammaticalization*. Cambridge: Cambridge University Press.
- Herslund, Michael. 1980. *Problèmes de syntaxe de l'ancien français: Compléments datifs et génitifs*. Copenhagen: Akademisk Forlag.
- Hippisley, Andrew. 2001. Suppletion, frequency and lexical storage. In Mary Andronis, Christopher Ball, Heidi Elston & Sylvain Neuvel (eds), *proceedings from the 37th Annual Meeting of the Chicago Linguistic Society*. Vol. 1: *The Main Session*, 201–214. Chicago, IL: Chicago Linguistic Society.
- Hollmann, Willem & Anna Siewierska. 2007. A construction grammar account of possessive constructions in Lancashire dialect: Some advantages and challenges. *English Language and Linguistics* 11(2). 407–424.
- Itkonen, Esa. 2004. Typological explanation and iconicity. *Logos and Language* 1. 21–33.
- Johnston, Ray. 1981. Conceptualizing in Nakanai and English. In Karl Franklin (ed.), *Syntax and semantics in Papua New Guinea languages*, 212–224. Ukarumpa, Papua New Guinea: SIL.
- Kammerzell, Frank. 2000. Egyptian possessive constructions: A diachronic typological perspective. *Sprachtypologie und Universalienforschung (STUF)* 53(1). 97–108.
- Khizanishvili, Tamar. 2006. Possession in Georgischen. In Thomas Stolz & Cornelia Stroh (eds.), *Possession, Quantitative Typologie und Semiotik: Georgisch, Irisch, Türkisch* (Diversitatis Linguarum 11), 1–76. Bochum: Brockmeyer.
- König, Ekkehard & Martin Haspelmath. 1998. Les constructions à possesseur externe dans les langues d'Europe. In Jack Feuillet (ed.), *Actance et valence dans les langues de l'Europe* (Empirical Approaches to Language Typology/EUROTYP 20–2), 525–606. Berlin & Boston: Mouton de Gruyter.
- Koptjevskaja-Tamm, Maria. 1996. Possessive noun phrases in Maltese: Alienability, iconicity, and grammaticalization. *Rivista di Linguistica* 8(1). 245–274.
- Koptjevskaja-Tamm, Maria. 2003. Possessive noun phrases in the languages of Europe. In Frans Plank (ed.), *Noun phrase structure in the languages of Europe* (Empirical Approaches to Language Typology/EUROTYP 20–7), 621–722. Berlin & Boston: Mouton de Gruyter,.
- Lazard, Gilbert. 2005. What are we typologists doing? In Zygmunt Frajzyngier, Adam Hodges & David Rood (eds.), *Linguistic diversity and language theories*, 1–23. Amsterdam: Benjamins.
- Langacker, Ronald W. 1993. Reference-point constructions. *Cognitive Linguistics* 4(1). 1–38.
- Langacker, Ronald W. 1995. Possession and possessive constructions. In John R. Taylor & Robert E. MacLaury (eds.), *Language and the cognitive construal of the world*, 51–79. Berlin & Boston: Mouton de Gruyter.
- Lehmann, Christian. 1983. Rektion und syntaktische Relationen. *Folia Linguistica* 17(1–4). 339–378.
- Lehmann, Christian. 1998. *Possession in Yucatec Maya: Structures – functions – typology*. Munich: Lincom Europa.

- Li, Charles N. & Sandra A. Thompson. 1981. *Mandarin Chinese: A functional reference grammar*. Berkeley, CA: University of California Press.
- Mańczak, Witold. 1980. Frequenz und Sprachwandel. In Helmut Lüdtke (ed.), *Kommunikationstheoretische Grundlagen des Sprachwandels*, 37–79. Berlin & Boston: Walter de Gruyter.
- Marcus, Solomon & Andreea Calude. 2010. Syntactic iconicity, within and beyond its accepted principles. *Revue Roumaine de Linguistique* 55(1). 19–44.
- McGregor, William. 1996. The grammar of nominal prefixing in Nyulnyul. In Hilary Chappell & William McGregor (eds.), *The grammar of inalienability*, 251–292. Berlin & Boston: Mouton de Gruyter.
- McKay, Graham R. 1996. Body parts, possession marking and nominal classes in Ndjébbana. In Hilary Chappell & William McGregor (eds.), *The grammar of inalienability*, 293–326. Berlin & Boston: Mouton de Gruyter.
- Mosel, Ulrike & Even Hovdhaugen. 1992. *Samoan reference grammar*. Oslo: Scandinavian University Press.
- Moser, Rosemarie. 2004. *Kabba: A Nilo-Saharan language of the Central African Republic*. Munich: Lincom Europa.
- Newmeyer, Frederick J. 2001. Where is functional explanation? In Mary Andronis, Christopher Ball, Heidi Elston & Sylvain Neuvel (eds.), *Proceedings from the 37th Annual Meeting of the Chicago Linguistic Society*. Vol. 2: *The Panels*, 99–122. Chicago, IL: Chicago Linguistic Society.
- Nichols, Johanna. 1988. On alienable and inalienable possession. In William Shipley (ed.), *In honor of Mary Haas*, 475–521. Berlin & Boston: Mouton de Gruyter.
- Nichols, Johanna. 1992. *Linguistic diversity in space and time*. Chicago, IL: The University of Chicago Press.
- Nichols, Johanna & Balthasar Bickel. 2005a. Obligatory possessive inflection. In Martin Haspelmath, Matthew S. Dryer, David Gil & Bernard Comrie (eds.), *The world atlas of language structures*, 238–241. Oxford: Oxford University Press.
- Nichols, Johanna & Balthasar Bickel. 2005b. Possessive classification. In Martin Haspelmath, Matthew S. Dryer, David Gil & Bernard Comrie (eds.), *The world atlas of language structures*, 242–245. Oxford: Oxford University Press.
- Noonan, Michael. 1992. *A grammar of Lango* (Mouton Grammar Library 8). Berlin & Boston: Mouton de Gruyter.
- Ortmann, Albert & Doris Gerland. 2014. She loves you, *-ja -ja -ja*: Objective conjugation and pragmatic possession in Hungarian. In Doris Gerland, Christian Horn, Anja Latrouite & Albert Ortmann (eds.), *Meaning and grammar of nouns and verbs*, 269–313. Düsseldorf: d|u|p – düsseldorf university press.
- Payne, Doris L. & Immanuel Barshi (eds.). 1999. *External possession*. Amsterdam: Benjamins.
- Payne, Thomas E. 1997. *Describing morphosyntax: A guide for field linguists*. Cambridge: Cambridge University Press.
- Plungian, Vladimir. 1995. *Dogon*. Munich: Lincom Europa.
- Rainer, Franz, Wolfgang U. Dressler, Francesco Gardani & Hans Christian Luschützky. 2014. Morphology and meaning: An overview. In Franz Rainer, Francesco Gardani, Hans Christian Luschützky & Wolfgang U. Dressler (eds.), *Morphology and meaning: Selected papers from the 15th International Morphology Meeting, Vienna, February 2012*, 1–46. Amsterdam: Benjamins.

- Rohlf, Gerhard. 1949–1954. *Historische Grammatik der italienischen Sprache und ihrer Mundarten*. 3 Vols. Bern: Francke.
- Ronneberger-Sibold, Elke. 1988. Entstehung von Suppletion und Natürliche Morphologie. *Zeitschrift für Phonetik, Sprachwissenschaft und Kommunikationsforschung* 41. 453–462.
- Seiler, Hansjakob. 1983. *Possession as an operational dimension of language*. Tübingen: Narr.
- So-Hartmann, Helga. 2009. *A descriptive grammar of Daai Chin* (STEDT Monograph Series 7). Berkeley, CA: University of California, Center for Southeast Asia Studies.
- Stiebels, Barbara. 2006. From rags to riches. Nominal linking in contrast to verbal linking. In Dieter Wunderlich (ed.), *Advances in the theory of the lexicon*, 167–234. Berlin & Boston: Mouton de Gruyter.
- Stolz, Thomas, Sonja Kettler, Cornelia Stroh & Aina Urdze. 2008. *Split possession: An areal-linguistic study of the alienability correlation and related phenomena in the languages of Europe*. Amsterdam: Benjamins.
- Tai, James H.-Y. 1993. Iconicity: Motivations in Chinese grammar. In Mushira Eid & Gregory Iverson (eds.), *Principles and prediction: The analysis of natural language (Papers in honor of Jerry Sanders)*, 153–174. Amsterdam: Benjamins.
- Thompson, Chad. 1996. On the grammar of body parts in Koyukon Athabaskan. In Hilary Chappell & William McGregor (eds.), *The grammar of inalienability*, 651–676. Berlin & Boston: Mouton de Gruyter.
- Tröbs, Holger. 1998. *Funktionale Sprachbeschreibung des Jeli (West-Mande)* (Mande Languages and Linguistics 3). Köln: Köppe.
- Ultan, Russell. 1978. Toward a typology of substantival possession. In Joseph H. Greenberg, Charles A. Ferguson & Edith A. Moravcsik (eds.), *Universals of human language*, vol. 4: *Syntax*, 11–50. Stanford, CA: Stanford University Press.
- Vafaeian, Ghazaleh. 2013. Typology of nominal and adjectival suppletion. *Sprachtypologie und Universalienforschung* 66(2). 112–140.
- van Rijn, Marlou. 2016a. Locus of marking typology in the possessive NP: A new approach. *Folia Linguistica* 50(1). 269–327.
- van Rijn, Marlou. 2016b. The grammaticalization of possessive person marking: A typological approach. *Transactions of the Philological Society* 114. 1–44.
- Welmers, William E. 1973. *African language structures*. Berkeley, CA: University of California Press.
- Wilson, Peter J. 1992. *Una descripción preliminar de la gramática del Achagua (Arawak)*. Bogotá: Asociación Instituto Lingüístico de Verano.
- Young, Robert W. & William Morgan. 1987. *The Navajo language: A grammar and colloquial dictionary*. Albuquerque, NM: University of New Mexico Press.
- Zepeda, Ofelia. 1983. *A Papago grammar*. Tucson, AZ: University of Arizona Press.
- Zipf, George K. 1935. *The psycho-biology of language: An introduction to dynamic philology*. Boston, MA: Houghton Mifflin. [Republished 1965 by MIT Press].

Abbreviations in glosses

ACC	accusative
AL	alienable possession
APOSS	antipossessive marker
ART	article
DAT	dative
F	feminine
GEN	genitive
INAL	inalienable
M	masculine
NOM	nominative
OBL	oblique (case)
PL	plural
POSS	possessive marker
POSSD	possessed marker
SG	singular