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Typology of nominal and adjectival suppletion

Abstract

This article presents a sample-based typological account of suppletion in nouns and adjectives. The distribution of the grammatical categories involved in the suppletive forms is presented along with the lexical meanings most commonly found to be suppletive. It is demonstrated that nominal suppletion is not a rare phenomenon and most commonly involves the feature *number* followed by *possession*. The noun 'child' is the most common suppletive noun. In general, nouns referring to humans are more likely to be suppletive than others. The investigation shows that adjectival suppletion is less common than nominal suppletion and affects frequent adjectives with general meanings of the types *value* and *size*.

Keywords: nominal suppletion, adjectival suppletion, morphology, typology, relevance hierarchy, frequency, economy.

1. Introduction

Suppletion is characterized by a total deviation from a regular pattern so that a prototypical suppletive form has to be maximally irregular in a unique way. Consequently, an investigation of suppletion will lead us to fundamental questions such as "what is a possible word" (Corbett 2007) and "what is a paradigm" (Veselinova 2003). Although verbal suppletion has received attention in the literature, not as much research has been done on nominal and adjectival suppletion. This paper therefore presents an inventory of suppletive nouns and adjectives cross-linguistically and the features involved in nominal and adjectival suppletion since such data has been lacking up till this point. Relevant theoretical issues based on the outcome of the data will also be touched upon.

In the literature, it has been suggested that nominal suppletion, just as verbal suppletion, affects frequent items, that nominal suppletion is less frequent than verbal suppletion, and that collective nouns are more often suppletive than plural nouns (see e.g. Bybee 1985). This paper confirms the first two assumptions but not the third. The study presents data on nominal and adjectival suppletion from a sample of 63 languages. The main focus of the paper will be on suppletion in nominal paradigms since, as will be shown, adjectival suppletion is cross-linguistically less frequent.

It is well established that irregularity and frequency are highly connected (Corbett et al. 2001). We thus expect frequent words to undergo suppletion. Greenberg (1966), Bybee (1985), Croft (1990) and Haspelmath (2008) consider economy to be the main cause of suppletive paradigms. Others, such as Gorbachevskij (1967: as cited in Veselinova 2003) and Koneckaja (1973: as cited in Veselinova 2003) argue that suppletive paradigms may emerge through semantic convergence whereby two forms come together in a paradigm

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due to semantic and morphological change. In addition to these questions, grammatical features involved in suppletion are also predicted to follow relevance hierarchies. Bybee (1985) hypothesizes that grammatical markings involved in verbal suppletion should obey the relevance hierarchy for verbs. This hypothesis was later confirmed by Veselinova (2003). In the present study, this idea is extended to relevance hierarchies for nouns and adjectives. The question of the genesis of suppletive paradigms as well as relevance hierarchies for nouns and adjectives will be discussed in sections 3.3 and 4.

The investigation presented in this article includes suppletive nouns and adjectives from the 34 languages available in the online database Surrey Suppletion Database[1], henceforth referred to as SSD, supplemented by 29 additional languages chosen in order to enhance the genealogical and geographic diversity of the sample following WALS genealogical classification. Appendix 1 shows the languages included in the sample and whether or not they are taken from SSD, the language family they belong to and in what region they are spoken.

The SSD lists all the suppletive forms in the 34 languages of their sample and categorizes them according to grammatical features such as for example number, case, possession and part of speech. Apart from suppletive nouns and adjectives, suppletive verbs, adverbs and different types of pronouns are also included. For every language there is an explanatory report where relevant grammatical information is given and exemplified. The suppletive forms are preceded by examples of regular paradigms. The languages of the database were selected in order to present a genealogically diverse sample. Out of the 34 languages in the database, 30 languages did contain instances of suppletion, including verbal, nominal, adjectival, adverbial, and various types of pronominal suppletion.

In the present investigation, the additional 29 languages were searched for suppletive nouns, and if the language exhibited an adjectival class, also for suppletive adjectives. The references given in Appendix 1 have been thoroughly searched focusing on chapters on nouns (including all inflectional and derivational features), adjectives, phonology and also word lists. The additional 29 languages were selected in order to include languages from unrepresented families and reinforce the geographical spread of the languages of the sample. However, issues concerning availability and the quality of grammars have also affected the choice of languages. The full list of the forms of the suppletive nouns and adjectives found in the sample are presented in Appendix 2 and 3, respectively.

A short comment on the part of speech of adjectives and its inclusion in the sample is needed. Far from all languages have adjectives as a class and typical adjectival meanings may therefore fall under other classes such as nouns and verbs. In this study, only languages that exhibit a clearly separate adjectival class have been searched for suppletive adjectives. This means that for languages that do not have an adjectival class the typical adjectival meanings involved in suppletion may be unrepresented unless they are part of the noun class. In fact, one suppletive noun with a typical adjectival meaning was found in the sample: Martuthunira (Pama-Nyungan) *kupuyu* 'little.sg' is a suppletive noun, as the language does not have adjectives (see Dench 1995: 97).

The upcoming section of this article is a short overview to the definition of suppletion adopted in this study. Section 3 deals with the results on nominal suppletion including a

[1] The Surrey Suppletion Database is created by Dunstan Brown, Marina Chumakina, Greville Corbett and Andrew Hippisley at the University of Surrey and available at http://www.smg. surrey.ac.uk/Suppletion/.

discussion of the results. Section 4 presents the results on adjectival suppletion including a discussion. The final section contains the conclusion.

2. Defining suppletion

In this study, a suppletive form is defined as a uniquely irregular form that is phonologically distant from the expected regular form. The suppletive form appears although a productive rule, applying to all or almost all members of the group the item belongs to, is expected to apply to the item. Thus, the English adjective *bad* is suppletive in the comparative form *worse* which is not predictable and phonologically distant from the expected form **badd-er*. A few points are briefly mentioned in this section. For a more extensive discussion on the criteria defining suppletion in general, the reader is referred to works such as Mel'čuk (1994), Fertig (1998), Veselinova (2003), and Corbett (2007).

The well cited definition given by Mel'čuk is often taken as a starting point in studies on suppletion.

> For the sign X and Y to be suppletive their semantic correlation should be maximally regular, while their formal correlation is maximally irregular (Mel'čuk 1994: 358).

This means that the phonological material in common for a suppletive pair such as *go* and *went* needs to be minimal while no semantic changes exist in the paradigm. However, both "phonologically distant" and "semantically close" are two problematic notions as one may wonder, how much phonological material is distance enough and how much semantic change is close enough for a pair to constitute suppletion. The fundamental question raised by these criteria is whether we want to place two forms in the same paradigm or not. In his article on canonical suppletion, Corbett (2007: 16) comments that a watertight measurement of the amount of similar phonological material to be accepted in suppletion is difficult to make. In addition, phonological similarity requires knowledge of language-internal phonology, complicating cross-linguistic comparison. Nevertheless, though difficult to define, the requirement of phonological distance must be part of the definition of suppletion. One may then talk about canonical or prototypical suppletion, in which the suppletive item and the expected form have no phonological material in common. In addition, the inclusion or exclusion of the regular grammatical marker also needs to be considered, so that *bad* versus *worse* is more canonically or prototypically suppletive than *good* versus *bett-er*, as the latter takes the regular comparative marker (Corbett 2007: 15). Let's look at the above mentioned example from Martuthunira. In this language there are several ways of number marking. The regular plural marker is expressed by the suffix *-ngara* as seen in example (1).

(1) Martuthunira (Australian, Pama-Nyungan)
pawulu-ngara
child-PL
'children' [Dench 1995: 96]

However, one noun behaves somewhat differently. The regular plural of the noun *kupuyu* 'little.SG' is expected to be **kupuyu-ngara* with *-ngara* as a suffix. Yet this form is not found, instead the plural form appears as *kupiyaji* 'little.PL' (Dench 1995: 97). The two

forms *kupuyu* 'little.SG' and *kupiyaji* 'little.PL' are similar phonologically. However, the deviation of the plural *kupiyaji* is greater when one considers the expected form **kupuyu-ngara.* CORBETT's (2007: 15) first criterion for suppletion states that a fused stem is more canonically suppletive than a form to which the regular morpheme is added. In the current study, in accordance with this criterion, the amount of phonological distance is estimated involving the expected form. It should still be noted that though the Martuthunira example has been included in the sample, it is viewed as a non-prototypical instance of suppletion. For a discussion on phonological distance and grading of irregularities and suppletion the reader is referred to DAMMEL (2008).

The criterion of semantic closeness is more problematic than phonological distance. In their studies on suppletion, GORBACHEVSKIJ (1967), KONECKAJA (1973) and FERTIG (1998) consider semantic change to motivate suppletion. As an example, FERTIG (1998: 1077), taking BYBEE's (1988: 130) statement "[t]he more closely related two forms are semantically, the more likely they are to be similar morphophonemically" as a starting point, argues that the meaning of the forms of the regular German verb *lernen* 'to learn' when marked for person are more closely related to one another than the forms of the suppletive verb *sein* 'to be'. Since the copula is regarded as having close to no meaning at all, the forms of the copula can be seen as having less meaning in common than the forms of a verb like *lernen*. Thus, words that have a more general meaning are more likely to be suppletive. VESELINOVA's (2003: 115) study on verbal suppletion confirms that verbs with general meaning are more prone to undergo suppletion. If, however, semantic change somehow causes suppletive paradigms, the criterion of semantic closeness becomes problematic since semantic change will entail semantic diversity in paradigms rather than semantic closeness. In addition, although the observation of *lernen* 'to learn' versus *sein* 'to be' is interesting, it is unclear exactly how the semantic alternation of the forms caused the rise of a suppletive paradigm. Rather, semantic change seems to be an important part of the historical changes taking place resulting in the rise of some suppletive paradigms. This subject will be further discussed in section 3.3.

In the literature, a vast discussion on inflectional versus derivational suppletion is found. Some scholars, such as CORBETT (2007) and BYBEE (1985), argue that suppletion only applies to inflectional paradigms. CORBETT (2007: 12) argues that in inflectional suppletion "the same semantic distinction is being made across large number of items (sometimes across all possible items)". Hence, the criterion of semantic correlation being maximally regular is better followed in inflectional suppletion than derivational suppletion. Consequently, derivations involve larger semantic changes of the stem than inflectional markers (BYBEE 1985: 83). Others, such as VESELINOVA (2003) and MEL'ČUK (1994) argue that since no clear distinction between inflectional and derivational morphology exists, one cannot exclude derivational paradigms when defining suppletion. In the present investigation the latter line of thought has been adopted. That is, any grammatical marking applying to nouns and adjectives which is productive and applies to the whole part of speech, or a clear group within that part of speech, has been investigated and searched for suppletive forms. In addition, STOLZ & VESELINOVA (2005) demonstrate that derivational suppletion is a cross-linguistic relevant notion in the derivation of ordinal numbers from cardinal ones; in many languages, ordinal numbers are regularly derived from their respective cardinal ones with the exception of 'first' which is morphologically independent from 'one'. In e.g. Kisi (Southern Atlantic) all ordinal number are regularly derived from cardinal ones taking the suffix *-ndɔɔ* with the exception of *tásè* 'first' which is suppletive with regard to its cardinal

partner *pìlɛɛ* 'one'. Nonetheless, the results of this study show that suppletion mainly applies to the grammatical categories traditionally viewed as inflectional. It is, however, still argued that in order to find all suppletive forms in a certain language it is better to use the broader definition as it does not define or distinguish between inflectional and derivational morphology but simply applies to any regular and productive category that is expected to be part of a regular form.

In the sample only Ewondo (Niger-Congo) shows an example of non-inflectional suppletion. In Ewondo nouns are divided into classes and possession is expressed by possessive pronouns agreeing in number with the noun. Class 2 is the plural of Class 1. In Table 1 below, possessive pronouns for Class 1 and 2 are shown.

Singular possessee		Plural possessee	
wɔm	my	*bám*	my
woe	your.SG	*bóe*	your.SG
woé	his, her, its	*bée*	his, her, its
waán, wɔán	our	*bán*	our
waán, wán	your.PL	*báán*	your.PL
wabán, wɔbán, w´ɔb´ɔ	their	*bábá(n)*	their

Table 1: Ewondo possessive pronouns of Class 1 and 2 (REDDEN 1979)

Table 2 shows regular possessive constructions. The possessive pronoun follows the possessed noun in the language.

	1.SG possessed		1.PL possessed	
1SG possessor	*mɔ´ŋgɔ´wɔm*	'my child'	*bɔ´ŋgɔ´bàm*	'my children'
1PL possessor	*mɔ´ŋgɔ´waàn*	'our child'	*bɔ´ŋgɔ´bàn*	'our children'

Table 2: Ewondo possessive constructions (REDDEN 1979: 63)

A number of irregularities were found in possessive constructions that qualify as suppletive forms. The nouns in Table 3 have their own separate form for expressing possession.

ísiá	'father', 'his father'	`ŋɲiá	'mother'
tadá	'my father'	naná, nna	'my mother'
isoá	'your father'	noá	'your mother'

Table 3: Ewondo possessive construction for 'father' and 'mother' (REDDEN 1979: 56)

Note that *ísiá* seems to mean both 'father' and 'his father', whereas *`ŋɲiá* simply means 'mother'. The forms above all look like suppletive forms. Yet, it is problematic to define them as such since there is no inflectional paradigm that they differ from. The suppletive forms instead appear where possessive pronouns and the nouns they modify are expected. The Ewondo possessives are listed as suppletive in the present paper as they break a regular and productive paradigm which is a requirement of the definition. Also the requirement of phonological distance is fulfilled. Phonological distance is then referring to the expected regular form, rather than the lexical stem of 'father' or 'mother', while demanding some change in the stem. The suppletive forms in Ewondo also resemble typical inalienable nouns in that they are inherently possessive but fall by definition under suppletion. They

are then interesting cases of interaction between the semantic notion of inalienability and the morphological notion of suppletion. Also, the suppletive forms in Ewondo show interaction with periphrastic forms, but not in the sense that periphrastic forms are found where inflectional markings are expected, as noted in suppletive paradigms by Corbett (2007: 30), but instead, suppletive forms are found where periphrastic forms are expected, a notion referred to as "anti-periphrasis" by Haspelmath (2000: 657). Again, these are non-prototypical cases of suppletion.

An important requirement in the definition of suppletion is the existence of a productive rule, i.e. a paradigm. The SSD includes instances of suppletive kinship terms in the vocative in Tariana (Arawakan). We may however find similar but non-suppletive patterns in other languages, here exemplified by English, Swedish and Kalapalo (Cariban), none of which are included in the sample: In English, the noun pairs *father:dad* and *mother:mom* could be considered suppletive if there existed a vocative marker in the language (although the examples are not ideal since both components of the pair may be used referentially, e.g. *my dad* and *my father*). Similar examples are found in Swedish *pappa:far* 'dad:father' and *mamma:mor* 'mom:mother'. Likewise, in Kalapalo *isi* 'mother' and *isuwə* 'father' have the unique vocative forms *ama* and *apa*, although no vocative marker exists in the language (Ellen Basso, p.c.). Due to the lack of regular vocative forms, none of these languages are considered to have suppletive vocative kinship terms. In Tariana, however, a pair such as e.g. *nu-wheri* '1sg-grandfather.non-voc' versus *duwhue* 'grandfather.voc' will fall under suppletion since vocative is regularly marked in the language by means of subtracting a suffix or by stress shift (Aikhenvald 2003: 69–70). Of course, giving up the requirement of a productive rule would make it impossible to distinguish suppletion from word formation altogether. Still, in cases like these, the notion of suppletion will force us to treat separately processes that may well be motivated by the same functional needs from the perspective of the speakers, that is, to separate or mark out e.g. the vocative of frequent kinship terms by different forms. Given the definition of suppletion, we will view the appearances of *dad*, *pappa* and *apa* as cases of word formation, while viewing the respective Tariana examples as suppletive. Examples like these thus show that at least in some cases, instances of nominal suppletion are better viewed together with other processes.

3. Results on nominal suppletion

In this section the results on nominal suppletion are presented. First, the distribution of the grammatical categories involved in nominal suppletion are demonstrated. Then, suppletion in nouns with human reference, animate reference and non-animate reference as well as the lexical meanings most often involved in suppletion are given. In section 3.3 a discussion on the result on nominal suppletion is made. The numbers given below are to be seen as tendencies rather than exact figures as the adding of features or lexical items to one another is problematic.

3.1. Distribution of grammatical category

Nominal suppletion was found in 28 (or 44 %) of the 63 languages in the sample. This indicates that nominal suppletion is not cross-linguistically rare. Table 4 below shows for each grammatical category the number of languages where suppletion is found. In Tariana,

9 instances of vocative case is found and one case of number suppletion. Likewise in Archi (Nakh-Daghestanian), 6 instances of number suppletion and 2 instances of absolutive/ergative suppletion is found. Due to these cases, the total number of languages in Table 4 will extend over 63.

	Total no. of languages	Number	Possession	Other	No. of nominal suppletion
No. of languages	63	20	8	2	35

Table 4: Distribution of grammatical categories in the number of languages of the sample

As can be seen in Table 4, number is by far the most common feature involved in languages that have nominal suppletion. Also, number suppletion is evenly spread as it appears everywhere except in Mesoamerica. The column "Other" includes vocative case suppletion in Tariana and suppletion in absolutive/ergative case in Archi.

Table 5 shows the distribution of the suppletive nouns according to grammatical category. The numbers in this table represent the total number of suppletive items, not the number of languages, e.g. vocative case suppletion was found only in Tariana, where 9 different nouns were suppletive in the vocative case.

	Total no. of suppletive nouns	Number	Possession	Vocative case	ABS/ERG case
Instances of nominal suppletion	88	50	27	9	2

Table 5: Distribution of grammatical categories in total number of suppletive nouns

In the sample, 88 instances of suppletive nouns were found. In some cases, the suppletive lexemes may involve several interacting grammatical features. In for example Russian, *god* 'year' is suppletive in the plural *let* 'year.PL.GEN' but only for genitive case. Thus, one instance of number suppletion above also involves genitive case which is not shown in Tables 4 and 5. The grammatical category possession may also involve interaction with other grammatical features. In some cases, possessive suppletion is quite straightforward involving an unpossessed form such as Jacaltec (Mayan) *ŋah* 'house' and a possessed form *-atut* taking personal pronoun prefixes for possession, as compared to *oje* 'foot' and *-oj*. In other cases the pictures is somewhat more complicated. In Kashaya (Hokan), 10 kinship terms are suppletive in the first person possessive while regular in the other persons. Morphological processes in Kashaya are subject to several phonological rules. These are thoroughly illustrated in BUCKLEY (1994) and will not be presented here. Table 6 below shows the regular 1st person forms as well as the suppletive ones where the stem is alternated. In Kashaya possessive pronouns are prefixed to the stems.

The suppletive kinship terms in Kashaya exemplify the frequent interaction of suppletion with syncretic paradigms, i.e. merging of morphological forms in a given paradigm which is thoroughly discussed in the literature (e.g. BAERMAN et al. 2005: 175–177, CORBETT 2007: 30, EVANS et al. 2001: 215, PLANK 1994, VESELINOVA 2003, CORBETT 2011). For example, the forms *ṭʰaʔkín'* 'husband' and *ṭhaʔmén'* 'wife' merge into *ʔdaqʰan'*, leading BUCKLEY (1994: 382–383) to conclude that the meaning of the stem *ʔdaqʰan'* is 'spouse'.

		1POSS	2POSS	3POSS	3REFL
Regular kinship terms	'son'	*pʰakíʼn*	*mi pʰaʼki*	*miyáʼpʰaki*	*mapʰaʼki*
	'older sister'	*dikíʼn*	*mideʼki*	*miyáʼdiki*	*madeʼki*
	'father's younger brother'	*cikíʼn*	*miceʼki*	*miyáʼciki*	*maceʼki*
	'mother's younger sister'	*škíʼn*	*mišeʼki*	*miyášíki*	*mašeʼki*
Suppletive kinship terms	'friend'	*kʼaṭʰíʼn*	*mikʼaʼn*	*miyáʼkʼaʼn*	*makʼaʼʼn*
	'husband'	*ṭʰaʔkíʼn*	*miʔdaqʰáʼn*	*miyáʼdaqʰaʼn*	*madaqʰáʼn*
	'wife'	*ṭhaʔméʼn*			
	'younger brother'	*kúʼn*	*miṭʼikí*	*miyáʼṭʼiki*	*maṭʼikí*
	'younger sister'	*šoméʼn*			
	'son-in-law'	*hiʔbayáyaʔ*	*mihceye*	*miyáʼceye*	*mahceyé*
	'mother-in-law'	*tʼile-yáʔ*	*miša´*	*miyáʼša´*	*maša´*
	'father-in-law'		*miba´*	*miyáʼba´*	*maba´*

Table 6: Kashaya possession of Kinship terms (BUCKLEY 1994: 377, 382)

Similarly, he suggests that the meaning of the stem *ṭʼiki* with the 1st possessive forms *kúʼn* 'younger brother' and *šoméʼn* 'younger sister' is 'younger sibling' and refers to the forms in the last cell of Table 6 as the 'in-law terms'. In a similar manner, two Kashaya nouns, namely 'mother' and 'father' are (non-canonically) suppletive in the 2nd person possessive/3rd person reflexive and 3rd person possessive. Interaction between suppletion in possessive forms and personal number was also demonstrated for Ewondo, where possessive forms of 'mother' and 'father' are suppletive in the 1st, 2nd and to some extend also 3rd person.

Out of the 88 suppletive nouns found in the sample, 50 (57 %) instances showed suppletion according to number. In e.g. Halkomelem (Salishan) regular nouns mark plural in four different ways shown in Table 7: an infix *-l-* with or without glottalization, CV reduplication, CVC reduplication or a change in the vowel.

Singular	Plural	Type
sqéwθ 'potato'	*sqéləwθ*	*-l-* infixation
kʷəʼmləxʷ 'root'	*kʷəkwímləxʷ*	CV reduplication
słénəy̓ 'female, woman'	*słénłénəy̓*	CVC reduplication
séy̓e 'friend, relative'	*sìyéy̓ə*	vowel change

Table 7: Regular plural marking of human referents in Halkomenem (SUTTLES 2004: 205)

However, the noun 'child' has a singular form and two plural forms. No other noun shows the pattern of two plurals shown in example 2.

(2) Halkomelem (Salishan)

(2a) *sƛ̓ʼqƛ̓ɬ*
'child'

(2b) *stéʔexʷəɬ*
'children'

(2c) *stəwíx^{w}əɬ*
'bunch of children, many children' [Suttles 2004: 211]

Example (2c) constitutes a case of "overdifferentiation", a phenomenon observed by Corbett (2007: 32) in which, according to Corbett, a distinction not formally made in a language is made through a suppletive form. I would argue, however, that it is problematic to talk of overdifferentiation as instances of suppletion, since, by definition, there is no regular expected form. Instead, forms like (2c) will have to fall under word-formation while (2a) and (2b) are regarded as a suppletive pair for the feature number.

In her book on morphology, Bybee (1985: 93) makes the following comment: "[I]t is my impression that suppletion in noun paradigms is somewhat less common than suppletion in verbal paradigms". In Veselinova's (2003) study, around 65 % of all the languages did have some type of verbal suppletion. Her study includes verbal suppletion regarding tense, aspect, imperative and verbal number. She concludes however, that verbal number is a difficult category and may consequently be excluded in distribution estimates (Veselinova 2003: 148–150). Excluding verbal number from her sample leaves us with a total distribution of verbal suppletion of approximately 50 % of the languages. Recall that the current study shows that 44 % of the languages in the sample have some type of nominal suppletion. However, the number of suppletive forms per language still differs between verbal and nominal suppletion. According to Veselinova (p.c.) the number of suppletive verbs in a given language is often larger than the number of suppletive nouns, both regarding the total number of verbs versus nouns, and the total number of verb forms versus noun forms. Bybee's impression is thus confirmed. The outcome is also not unexpected since cross-linguistically, verbs inflect for more categories than nouns and verbal morphology is often more irregular and complex than nominal morphology.

3.2. Lexical meaning in nominal suppletion

The outcome of the study shows a strong correlation between suppletion and animacy in that nouns denoting humans are most commonly affected by nominal suppletion. Of the total 88 suppletive nouns found in the sample, 63 nouns, or 72 %, did involve human referents. As may be noted in Table 8 below, not surprisingly, suppletion in vocative case only affects nouns with human referents. Suppletion of nouns referring to inanimate objects more often involved number than possession.

	Instances	Number	Possession	Vocative case	Other
Instances of nominal suppletion	88	50	27	9	2
Human raeferents	63	34	18	9	2
Animal referents	6	3	3	–	–
Inanimate referents	19	13	6	–	–

Table 8: Distribution of nominal suppletion regarding animacy and features

Table 9 presents the distribution of the suppletive forms found in the number of languages of the sample as well as the distribution according to grammatical feature. As expected, the suppletive nouns are frequent nouns in discourse. Also, 'child' is by far the most common lexical item to be involved in suppletion. Cross-linguistically, approximately a sixth of all the languages of the sample had a suppletive form for 'child'. Any additional

Meaning of lexeme	In no. of languages	Grammatical features			
		Number	Possession	ABS/ERG	VOC
child	11	9	2	1	
woman	5	5			
person	5	5			
mother	5	1	4		
man	4	4			
brother (younger brother to a man, younger brother)	4	3	1		
father	4		3	1	
cow	2	2			
dog	2		2		
father in law (wife's father/ husband's father)	2		1		1
house	2		2		
husband	2		2		
mother in law (wife's mother)	2		1		1
sister (younger sister)	2	1	1		
tortilla	2		2		
wife	2	1	1		

Table 9: Lexical distribution in number of languages and grammatical category

meanings or lexical items included in the counting are given in brackets. Thus the 4 instances of 'brother' also include one instance of a lexeme meaning 'younger brother to a man' and two instances of lexemes meaning 'younger brother'.[2] 27 lexical suppletive items occurred only once in the sample. These may be viewed in Appendix 2.

The results show that both "proper" kinship terms such as 'brother' and terms used as kinship terms, so called "improper" kinship terms as defined by Dahl & Koptjevskaja-Tamm (2001), such as 'child', 'woman', 'man', occur as suppletive regarding number, whereas notions such as 'mother' and 'father' more often occur in possessive suppletion. Although it is not surprising that 'mother' and 'father' are not involved in number suppletion, it is not as clear why notions such as 'child', 'woman', 'man', 'person' and 'brother' do not occur as often in possessive suppletion as in number suppletion. The upcoming section will discuss some theoretical issues regarding nominal suppletion in the light of the results presented above.

[2] This is connected to the question of lexical meaning which is theoretically problematic, as it is not certain that one given translation correlates to the same meaning in another language. In fact, one can argue that every lexical item in a language is slightly different in another language. Also, it is not clear whether the meaning given for a lexical item as for example 'man' also involves the meanings 'person' or 'human being'. These issues are however general problems within the field of semantic typology.

3.3. Discussion of nominal suppletion

In this section, first the results concerning the grammatical features involved in nominal suppletion and their semantic relevance for nouns are dealt with. Thereafter, the question of the genesis of suppletive nominal paradigms is briefly discussed.

In her seminal work on morphology, Bybee (1985: 91–92) suggests that the morphological categories closest to the stem are the ones most relevant for the meaning of the verb. The verbal category aspect for example, is one of the most relevant categories in the relevance hierarchy for verbs (preceded by valence and voice), since the meaning of all verbs has some inherent temporal meaning which aspect modifies (Bybee 1991: 79). In her discussion on suppletive verbs she points out that verbal suppletion should obey two principles; first they should affect highly frequent items, and second they should involve grammatical categories most relevant for the stem. Veselinova's (2003) study also shows that the categories involved in verbal suppletion follow the relevance hierarchy for verbs. Following the results on verbal suppletion, we may assume that the grammatical categories involved in nominal suppletion also should follow a given relevance hierarchy for nouns. This means that the grammatical categories involved in nominal suppletion presented in this study should be grammatical categories high up in a relevance hierarchy for nouns. A relevance hierarchy for nouns is yet to be proposed and must be based on semantic arguments and confirmed by typological data in the same way as was done for verbs. But if the suppletion data reflects such a relevance hierarchy, number will have a higher position than possession, that is, number would be a more relevant feature for the stem than possession. Similarly the present study suggests that possession would be a more relevant feature for the stem than e.g. vocative case and ergative/accusative case. As shown in (3), possible categories not captured by suppletion may interfere between the mentioned categories.

(3) …
NUMBER
…
POSSESSION
….
VOCATIVE CASE, ACCUSATIVE/ERGATIVE CASE
….

Let us contemplate on the possible reasons why number should be a feature more relevant to the nominal stem than others. Bybee (1985: 93) predicts that the grammatical feature number will not be involved in inflectional splits, i.e. suppletive paradigms, since singular versus plural nouns do not "change the inherent quality of the entity". Instead, Bybee predicts that collectives will display splits like the one from Halkomelem in example (2). In the sample no other such example was found. Thus, this prediction was not confirmed by the current study. I would instead argue that plural may indeed constitute an inherent change in the meaning of nouns. A reference such as 'child' in the singular often has a certain age and a certain sex, also specific parents, while a group of children will not have such specific features. Thus, the semantic content of *child* is rather different from the semantic content of *children*. Syntactic case such as e.g. ergativity, on the other hand, does not add any semantic information to the noun. Since nouns refer to objects in the world, a grammatical category such as number is obviously more relevant for the meaning of the noun than a syntactic category such as case, relating the noun to other elements in the

clause. Similarly, the referent of a possessed noun ('my mother', 'your mother' etc.) may be quite different from the referent of 'a mother', again compared to syntactic case where the referent stays the same, therefore possession is a category more relevant for the noun case.

In addition, as noted by Croft (1990) and Greenberg (1966), syncretism is more prominent in the plural than in the singular. As mentioned earlier, syncretism is also often found in nominal suppletion. One reasonable explanation for this correlation is that plural is inherently more general than singular. Examples of such paradigms were shown in the Kashaya data in Table 6. Comparably, in a variety of Arabic not included in the sample, the dialect of Tillo spoken in the region of Siirt in southeastern Turkey (Lahdo 2009: 95), the suppletive pair *əbən* 'son' with the plural *awlād/əwlād* 'sons, children' is found. In Maltese (Semitic), the plural of *bin* 'son of' and *bint* 'daughter of' is *wlied* 'sons and daughters'. Also, in the aforementioned Halkomelem the lexeme *sƛ̓'qƛ̓ɬ* 'child' was defined as suppletive with regard to its plural *sté?exʷəɬ* 'children' while an additional form *stəwíxʷəɬ* 'bunch of children, many children', not existing for other nouns, also existed for this noun (Suttles 2004: 211). These examples show that notions such as 'child', 'son' and 'daughter' may have more heterogeneous members in their plural such as 'bunch of children' and 'sons and daughters' respectively. They may thus exemplify why syncretism is more often found in the plural than in the singular and further indicate that the grammatical category number is a semantically relevant category for nouns.

Hippisley et al. (2004) point out that there are cross-linguistic grammatical categories that never or seldom give rise to suppletion no matter how common they are or how generally they apply to a particular part of speech. According to them, such categories are structural case which seldom occurs with nominal suppletion and number, gender or case which seldom occurs with adjectival suppletion. The absence of gender/class suppletion is not surprising although these categories can be expected to be semantically highly relevant for nouns. This is due to the fact that gender and class are inherent to the noun and defined through agreement (see Corbett 1991). In order to find gender suppletion we would first need a language that systematically turned the meaning of a lexeme into e.g. 'man' when masculine agreement markers applied to items other than the noun, e.g. the noun phrase it was heading, and 'woman' when feminine agreement markers applied to the noun phrase it was heading, or, in the same way, systematically turned lexemes occurring in class 1 with reference to human objects into abstract entities when occurring in class 14. A suppletive pair of nouns would then be a pair with two different stems in the masculine and feminine or class 1 and 14. However, I do not know of any such language. In some languages such as for example German, a derivational marker exists turning forms denoting men into the female counterpart as in e.g. *Professor* vs. *Professor-in* 'professor', *Arzt* vs. *Ärzt-in* 'doctor', *Student* vs. *Student-in* 'student' and so on. In my view, suppletive forms are those where such a marker can be expected to be found in a clearly delimited class of nouns (e.g. "nouns denoting professions" or "nouns denoting humans"), but where a different stem is used instead. The problem is however that often derivational markers do not apply to a clearly delimited class of nouns, and thus, in such cases, cannot be argued to be involved in suppletion. Similar to the vocative kinship terms discussed in section 2 such potential suppletive forms fall under word formation rather than suppletion. In addition to these issues, it may well be the case that the relevance of a grammatical category for a certain noun is dependent on the animate vs. non-animate reference of the noun which would then be confirmed by the data in Table 8.

An alternative analysis to semantic closeness to the stem is that the frequency of a given grammatical category involved in suppletion merely corresponds to the frequency of that category cross-linguistically, that is, number is a more common category found in suppletion than possession since number is more often marked on nouns than possession cross-linguistically and so on. Perhaps then, the order of grammatical features in the current study merely corresponds to the frequency of the occurrence of a grammatical category together with a particular noun. That is, the data in e.g. Table 9 would suggest that the combination of the grammatical category number and the kinship term 'brother' are more frequent in discourse than the combination of the grammatical category possession and 'brother'. If this is the case, we can conclude that nominal suppletion regarding grammatical category merely corresponds to the frequency of that grammatical category occurring with nouns. If not, we need to account for the fact that certain grammatical categories license suppletion while others do not. Given the fact that accusative or ergative case suppletion never or almost never are found in nominal suppletion although both accusative and ergative case may be assumed to be frequently marked on nouns, I would suggest that grammatical categories involved in nominal suppletion somehow interact with semantic relevance rather than merely correlate to the frequency of occurrence of categories with nouns. Frequency is nevertheless still a strong requirement for suppletive nouns. Research on the nature of the interaction of suppletion and semantic relevance hierarchy for nouns is however lacking at this point.

Let us discuss the issue of the origin of suppletive paradigms by looking at the Russian suppletive pair *god* 'year' and *let* 'year.PL.GEN'. The regular form of *god* 'year' is *god-ov* 'year-PL.GEN'; while *god-ov* is used in more general contexts, *let* is used after numerals (in Russian, higher numerals are followed by nouns in the genitive plural). *Let* 'year.PL.GEN' originates from *leto* 'summer'. A reasonable assumption is then that people earlier counted years in summers (Östen Dahl p.c.). Since some numerals take the genitive plural, this form has entered the paradigm of *god*. Over time, the connotation with 'summer' is bleached and today, *let* is understood as 'years'. Due to this historical development, the regular form *god-ov* 'year-PL.GEN' and *let* 'year.PL.GEN' exist synchronically but have slightly different functions.

The often cited suppletive paradigm of *go* and *went* shows a comparable historical development. The form *went* originated as the past tense form of *to wend* 'to turn/direct' (Bybee 1985: 91–92). The verb *to go* had the already suppletive past tense form *eode*. The verb *to wend* was thus more restricted in its meaning than the verb *to go*. Over time, the past tense forms of *wend* must have dissociated themselves from the other forms of the verb, bleached in meaning, and become part of the past tense of *go* while the form *eode* became less and less frequent in use. In this way, the past tense forms of *wend* entered the paradigm of *go* resulting in the forms we have today. Similar processes of lexical mixing are shown to have taken place in the East Frisian (Germanic) verbs *loope* 'go' and *sjoo* 'see' (Nübling 2011: 149–150). For Koneckaja (1973: as cited in Veselinova 2003), the example of English *go* and *went* constitutes semantic convergence whereby two forms come together in a paradigm. In her view, one of the causal factors for the origin of such paradigms is semantic change. Although it is clear that semantic changes play a role in the genesis of these paradigms and may explain remaining differences in function, as in the Russian example, it is not at all clear how semantic changes themselves give rise to these suppletive paradigms.

A similar type of confusion also seems to exist in Fertig's (1998: 1077) line of thought who, taking Bybee's statement "[t]he more closely related two forms are semantically, the

more likely they are to be similar morphophonemically" (Bybee 1988: 130) as a starting point, draws the conclusion that suppletive paradigms arise due to lack of similarity in meaning which is then reflected in the lack of similarity in form, exemplifying with the suppletive paradigm of *sein* compared to the regular paradigm of *lernen* mentioned in section 2. In my view, although it is true that the forms of in the paradigm of *sein* are more general in meaning and thus can be said to have less semantic content in common in comparison to the forms of *lernen*, it is not at all clear how this circumstance would *give rise* to suppletive paradigms. Examples like these still need historical explanations in order to be fully understood.

Another motivation given for suppletive paradigms is *economy*. The fact that suppletive forms are frequent is not surprising and has previously been observed by e.g. Bybee (1985), Corbett et al. (2001), Hippisley (2001) and Veselinova (2003). Based on their results from the SSD, Hippsley et al. (2004) also list high frequency as one of three properties of suppletion. Some linguists, such as Greenberg (1966), Bybee (1985), Croft (1990), and Haspelmath (2008) consider morphosyntactic asymmetries to be motivated by economy, and Haspelmath makes the strong claim that:

> All universal morphosyntactic asymmetries can be explained on the basis of frequency asymmetries, i.e. they all show economic motivation: More frequent patterns are coded with less material (Haspelmath 2008: 1).

As expected, the present study confirms that suppletive nouns are most often frequent nouns, although there are also examples to show the contrary which also need to be accounted for (see e.g. Hebrew 'tyre', 'puncture' and Archi 'corner of a sack' in Appendix 2). Likewise, there seems to be a tendency towards suppletive forms being shorter than the expected regular forms. However, the suppletive instances for which we do have historical data do not show that suppletive paradigms arise from phonological attrition, which usually accompany frequent items, but rather, items of different origin seem to enter paradigms. A prototypical suppletive form has a completely altered stem, suggesting a different origin. Thus, suppletion may in prototypical cases be a very distinct phenomenon from irregularity since irregular stems normally arise as results of phonological attrition motivated by economy. Given that "it is more efficient to access highly frequent forms directly than to produce them by a rule [and that] the maximizing of formal differentiation in suppletive paradigms facilitates perception" (Fertig 1998: 1070), economy may explain why suppletive paradigms are maintained, but do not quite pinpoint why and how suppletive paradigms have come to exist. It may however be reasonable to assume that in a given situation where two competing forms of a high frequent lexeme are available to the speaker, one being a regular and phonologically longer form and the other being a shorter suppletive form, speakers may be more prone to choose the latter for economic reasons. However, again, economy does not explain the rise of such a state with two competing forms in the first place, but merely explains why one form is chosen over the other. It thus seems as if our knowledge of the genesis of suppletive paradigms is still insufficient and unsatisfactory. Historical data on the rise of suppletive paradigms as well as psycholinguistic research on storage of suppletive items are still needed.

4. Adjectival suppletion

In the sample, only the following seven languages had suppletive adjectives: Basque (Basque), Georgian (Kartvelian), Halkomelem (Salishan), Hungarian (Uralic), Kashaya (Hokan), Russian (Indo-European) and Tariana (Arawakan). Geographically then, only Europe and the Americas show suppletion in adjectives. There is also an interesting division of the grammatical features found with adjectival suppletion: while the European languages show comparative suppletion, the American languages show number suppletion. The cross-linguistic distribution of adjectival suppletion adds up to 11 % in this study which means that adjectival suppletion is a relatively rare phenomenon. However, it was mentioned earlier that the category of adjectives is not a category found in all languages.

Table 10 shows the adjectival meanings involved in suppletion, the number of languages in which they occur and the grammatical category for which they are suppletive. Any additional meanings are given in brackets. That means that in the sample, in addition to the meaning 'big' the word *hanu* in Tariana also means 'wide/long' and in Hungarian *sok* means 'many/a lot'.

Meaning of lexeme	No. of languages	POS/COMPR	Number	Long/Short[3]
good	3	3		
big (wide/long)	3		2	1
bad	2	2		
many (a lot)	2	2		
few	1	1		
little	1		1	

Table 10: Results on adjectival suppletion

The most common type of adjectival suppletion involves comparative forms. In e.g. Basque, the comparative marker *-ago* attaches to the adjectival stem as in *handi* 'big' versus *handi-ago* 'bigger'. The adjective *on* 'good' however, has a suppletive stem form in the comparative, namely *hobe* or *hobe-ago* 'better' (Hualde & Ortiz de Urbina 2003: 140). The occurrence of comparative suppletion in adjectives in European languages is not surprising and has been formerly discussed (see e.g. Wurzel 1987: 487). Stolz et al. (2012) also investigate comparative suppletion with focus on European language. They provide evidence that comparative suppletion in Europe is not only a genealogical but also an areal phenomenon as western European languages are most likely to have suppletive comparative paradigms while the probability of finding comparative suppletion decreases the more eastwards one travels. They also suggest that the lack of comparative suppletion in the Indo-European languages on the Balkans, Anatolia and in the Baltic countries can be assumed to be contact-induced due to influence from non-suppletive, non-Indo-European languages. Comparably, although comparative suppletion is lacking in all the non-Euro-

[3] The grammatical category LONG/SHORT refers to the Russian suppletive adjective *bol'šoj* 'big' which has a suppletive short form *velik*. In Russian, a minority of adjectives have long and short forms used in different contexts. In modern Russian, short forms such as *velik* are often used meaning 'too big'.

pean languages of their sample[4], it is found in non-Indo-European languages within Europe such as Basque, Georgian, Finnish, Estonian, Karelian, Livonian, Votic and Hungarian, again suggesting areal influence (Stolz et al. 2012: 27, 30). A detailed account of the processes whereby contact influences suppletion is subject for future research.

The second most common type of adjectival suppletion involves the grammatical feature number and is only found in the Americas. In Kashaya for example, adjectives inflect for number taking the plural clitic *-yya* after vowel or *-ʔay* after consonant. The adjective *bahṭhe* 'big.SG' however has the non-prototypically suppletive plural form *ʔahṭhiy* 'big.PL' (Oswalt 1975: 6).

It is difficult to draw general conclusions based on such a small amount of data. With that in mind, one may note that the adjectives affected are frequent and general in meaning, and the same ones to be the first to grammaticalize into an adjectival class in languages that lack such a class (Dixon 1977). Thus, if a language has adjectives, these are the meanings that are included, and, we may now add, if a language has adjectival suppletion, these are the meanings that are most likely to be involved in suppletion. Also, out of the four adjectival types *size*, *value*, *age* and *colour* defined by Dixon (1977: 63), only the types *value* and *size* were involved in suppletion in the sample. It should however be noted that the type *age* may also be involved in suppletion as the comparative of 'old' is suppletive in many Germanic languages (Stolz et al. 2012: 31). In Swedish for example, the comparative of *gammal* 'old' is not the expected **gaml-are* but *äld-re* 'older' taking the regular comparative marker *-are*. One reason for the lack of the type *colour* in the sample may be the lack of grammatical marking on colour terms or frequency in usage of such markings. Also, since colour terms are not scalar notions, grammatical categories such as comparatives are not relevant to them.

Let's turn to an example of a suppletive paradigm for adjectives. The paradigms of Swedish *god* 'good' may in certain contexts be regarded as suppletive. *God* has, among others, the two meanings 'good' and 'tasty'. The meaning 'tasty' has a regular comparison *god*, *godare*, *godast*, whereas the notion of 'good' with certain collocations, such as e.g. *god omsorg* 'good care', has a suppletive comparative paradigm *god*, *bättre*, *bäst*. The latter two forms, however, have another, irregular or suppletive, positive form *bra*. In fact, the paradigm *bra*, *bättre*, *bäst* is much less marked as it applies more generally while the paradigm *god*, *bättre*, *bäst* is highly restricted to certain collocations. This suppletive paradigm is yet another example making the requirement of semantic closeness problematic as semantic change is clearly part of the historical processes leading to the suppletive paradigm. To my knowledge, a more detailed understanding of the historical process taking place in the rising of the suppletive paradigm is lacking.

Following the same discussion made for relevance hierarchies for nouns, the results on adjectival suppletion may suggest that in a given relevance hierarchy for adjectives, comparative is more relevant to the adjectival meaning than number. Similar to nominal suppletion, the absence of structural case suppletion in adjectives is not surprising.

[4] Their informal search for suppletion in non-European languages incorrectly lists Persian as lacking comparative suppletion; the adjective *khob* 'good' is suppletive with respect to its comparative form *beh-tar* 'bett-er'.

(4) …
COMPARATIVE
…
NUMBER
…

As mentioned above, if a language has a small set of adjectives, the meanings involved in adjectival suppletion will most likely be included in that set. Yet again, our understanding of how these paradigms come to exist, or why, is still highly limited.

5. Conclusion

In this article, on the basis of a sample-based typological study involving 63 languages, an inventory of nominal as well as adjectival suppletive forms were presented. In the vast literature on the notion of suppletion much focus has been devoted to verbal suppletion, while nominal and adjectival suppletion have received much less attention. The present study sheds some light on these previously understudied phenomena. The results of the typological investigation showed that number is the most common grammatical category involved in nominal suppletion. It was also shown that the lexeme 'child' is the most common lexical item to show suppletion. Also, possession was shown to be relatively frequent in nominal suppletion. A strong correlation between human referent and suppletion was noted. As expected, the data showed that mainly frequent nouns undergo suppletion. Although nominal suppletion is common in the world's languages, it is not as common as verbal suppletion. Kinship terms were shown to be most prone to show suppletion; terms such as 'father' and 'mother' are suppletive with regard to the grammatical feature possession while other kinship terms may also be suppletive regarding the grammatical feature number. Two main causes for the genesis of suppletive paradigms has been put forward in the literature, one being economy and the other being semantic change. The present study however concludes that both these explanations are insufficient.

The present paper also confirms that adjectival suppletion is less common cross-linguistically than nominal suppletion but shows areal preferences, i.e. Europe and the American continents. Adjectival suppletion mainly affects the types "value" and "size", and occurs in the same adjectival meanings that are cross-linguistically the first to grammaticalize into the part of speech 'adjectives'. The two features involved in adjectival suppletion were "comparative" and "number", in that order.

Historical investigations of the rise of suppletive paradigms in nouns and adjectives, as well as psycholinguistic research on issues such as processing and acquisition of suppletive forms for these classes are still in demand.

Appendix 1

The languages taken from the Surrey Suppletion Database are marked with SSD in the last column while references to the grammars used are given for the additional 29 languages. The codes given below refer to the ISO 639-3 codes provided by Ethnologue.com.

Language-Name	Code	Language-Family	Location	Reference/Database
!Xóõ	nmn	Khoisan	Namibia	SSD
Apurinã	apu	Arawakan	Northwestern Amazon region of Brazil	(Facundes 2000)
Arabana-Wangkangurru	ard	Australian	Southern Australia	(Hercus 1994)
Arapesh	aon	Torricelli	Papua New Guinea	SSD
Archi	aqc	Nakh-Daghestanian	Daghestan	SSD
Azari	azb	Altaic	Northern Iran	(Dehghani 2000)
Bafut	bfd	Niger-Congo	Cameroon	(Ambe 1989)
Barasano	bsn	Tucanoan	Southeastern Colombia	(Jones & Jones 1991)
Basque	eus	Basque	Spain/France	SSD
Berbice Dutch Creole	brc	Dutch- based Creole	Guyana	(Kouwenberg 1994)
Chicheva	nya	Niger-Congo	Malawi/Mozambique/ Zambia/ Zimbabwe	SSD
Ewondo	ewo	Niger-Congo	Cameroon	(Redden 1979)
Georgian	kat	Kartvelian	Georgia	SSD
Guarani	geo	Tupi	Paraguay/Argentina	SSD
Halkomelem	hur	Salishan	Canada	(Suttles 2004)
Hdi	xed	Afro-Asiatic	Cameroon/Nigeria	(Frajzyngier & Shay 2002)
Hebrew	hbr	Afro-Asiatic	Israel	SSD
Hua	ygr	Trans-New Guinea	Papua New Guinea	SSD
Hungarian	hun	Uralic	Hungary	SSD
Indonesian	ind	Austronesian	Indonesia	(Sneddon 1996)
Itelmen	itl	Chukoto-Kamchatkan	Tigil region, Russia	SSD
Jacaltec	jai	Mayan	Guatemala	SSD
Japanese	jpn	Japanese	Japan	SSD
Kannada	kan	Dravidian	India	SSD
Kashaya	kju	Hokan	United States	(Buckley 1994, Oswalt 1961, Oswalt 1975)
Kayardild	gyd	Australian	South Wellesley Islands, Australia	SDD
Ket	ket	Yeniseian	Krasnoyarsk region, Russia	SDD
Khanty	kca	Uralic	Russia	(Florian Siegl p.c.)
Koasati	cku	Muskogean	North America	SSD
Kolyma Yukaghir	yux	Yukaghir	Yakutia (Saha) Republic, Russia	SSD
Komi	kpv	Uralic	Eremeevo village, Russia	SSD
Lakhota	lkt	Siouan	United States/Canada	(Van Valin 1977)
Limbu	lif	Sino-Tibetan	Nepal	SSD

Continue Appendix 1

Language-Name	Code	Language-Family	Location	Reference/Database
Makah	myh	Wakashan	United States	(Davidson 2002)
Mandarin Chinese	cmn	Sino-Tibetan	China	(Li & Thompson 1989)
Mapuche	arn	Araucanian	Chile	(Smeets 2007)
Maricopa	mrc	Hokan	United States	(Gordon 1986, Halpern 1942, Langdon 1978)
Martuthunira	uma	Australian	Australia	(Dench 1995)
Mayali	gup	Australian	Northern Australia	SSD
Maybrat	ayz	West Papuan	Indonesia	(Dol 1999)
Mundari	unr	Austro-Asiatic	South Bihar and Orissa in India	(Osada 1992)
Navajo	nav	Na-Dene	Southwestern United States	SSD
Nduyka	djk	English-based Creole	Eastern Suriname	(Hutter & Hutter 1994)
Nez Perce	nez	Penutian	United States	(Aoki 1970, Aoki 1994)
Nishnaabemwin	otw + ojg	Algic	Southern Ontario, Canada	SSD
Northern Embera	emp	Choco	Colombia, Panama	(Mortensen 1999)
Palauan	pao	Austronesian	Palau	SSD
Paumarí	pad	Arauan	Brazil	(Chapman & Derbyshire 1991)
Qafar	aar	Afro-Asiatic	Ethiopia	SSD
Russian	rus	Indo-European	Former republics of the USSR and 30 other countries.	SSD
Samoan	smo	Austronesian	American Samoa, Samoa	(Mosel & Hovdhaugen 1992)
Tamazight	tmz	Afro-Asiatic	Morocco	(Penchoen 1973)
Tariana	tae	Arawakan	Northwestern Brazil	SSD
Tarma Quechua	qvn	Quechuan	Tarma province, Peru	SSD
Tetelsingo Nahuatl	nhg	Uto-Aztecan	Mexico	SSD
Thai	tha	Tai-Kadai	Thailand	(Iwasaki & Preeya 2005)
Totonac	top	Totonacan	Mexico	SSD
Turkana	tuv	Nilo-Saharan	Northwestern Kenya	SSD
Wirangu	wiw	Australian	Australia	(Hercus 1999)
Xakass	kjh	Altaic	Kazanovka village, Russia	SSD
Yimas	yee	Lower Sepik-Ramu	Papua New Guinea	SSD
Yupik	esu	Eskimo-Aleut	Alaska and Hawaii, United States	SSD
Zoogocho Zapotec	zpq	Oto-Manguean	Mexico	(Sonnenschein 2005)

Appendix 2

Language data from the sample: nominal suppletion. The given meanings refer to the first suppletive form.

LanguageName	Code	Forms	GramCat	Meaning
!Xóõ	nmn	!ōo	SG	
!Xóõ	nmn	ǂnûn	PL	knife
!Xóõ	nmn	tâa àa	SG	
!Xóõ	nmn	ǁxàã	PL	man
!Xóõ	nmn	tâa qáe	SG	
!Xóõ	nmn	ǀa̱ã	PL	woman
Apurinã	apu	N/A	N/A	
Arabana-Wangkangurru	ard	N/A	N/A	
Arapesh	aon	irohokwi-kụ	SG	
Arapesh	aon	ireuri-heu	PL	wife
Arapesh	aon	awamin	SG	
Arapesh	aon	arahim	PL	younger brother to a man
Arapesh	aon	aloḥ	SG	
Arapesh	aon	eheliḥ	PL	bread fruit tree
Archi	aqc	abttu	ABS.SG	
Archi	aqc	ummu	ERG.SG(OBL)	father
Archi	aqc	lo	ABS.SG	
Archi	aqc	laha	ERG.SG(OBL)	child
Archi	aqc	bošor	SG	
Archi	aqc	Lele	PL	man
Archi	aqc	ɬ¯onnol	SG	
Archi	aqc	xom	PL	woman
Archi	aqc	uɬdu	SG	
Archi	aqc	ɬ¯ʷat	PL	sheperd
Archi	aqc	x|on	SG	
Archi	aqc	buc¯'i	PL	cow
Archi	aqc	bič'ni	SG	
Archi	aqc	božᵊdo	PL	corner of a sack
Archi	aqc	biq|'ni	SG	
Archi	aqc	boR|do	PL	pier of a bridge
Azari	azb	N/A	N/A	
Bafut	bfd	m-u	SG	
Bafut	bfd	b-oo	PL	child
Bafut	bfd	n-u	SG	
Bafut	bfd	b-e	PL	person
Barasano	bsn	N/A	N/A	
Basque	eus	N/A	N/A	
Berbice Dutch Creole	brc	N/A	N/A	
Chicheva	nya	N/A	N/A	
Ewondo	ewo	ísiá	UNPOSS	
Ewondo	ewo	isoá	POSS (2)	
Ewondo	ewo	tadá	POSS (1)	father

Continue Appendix 2

LanguageName	Code	Forms	GramCat	Meaning
Ewondo	ewo	`ŋŋiá	UNPOSS	
Ewondo	ewo	noá	POSS (2)	
Ewondo	ewo	naná, nna	POSS (1)	mother
Georgian	kat	N/A	N/A	
Guarani	geo	N/A	N/A	
Halkomelem	hur	sƛ̓qƛɬ	SG	
Halkomelem	hur	stéʔexʷəɬ	PL	child
Hdi	xed	màràkw	SG	
Hdi	xed	mìá-xà	PL	woman
Hebrew	hbr	oto	SG	
Hebrew	hbr	mexoniyot	PL	car
Hebrew	hbr	tayer	SG	
Hebrew	hbr	tsmigim	PL	tyre
Hebrew	hbr	pančer	SG	
Hebrew	hbr	tkarim	PL	puncture
Hua	ygr	gnu/frosa	SG	
Hua	ygr	maga’	PL	person
Hua	ygr	a’/ba’	SG	
Hua	ygr	a’de	PL	woman
Hungarian	hun	N/A	N/A	
Indonesian	ind	N/A	N/A	
Itelmen	itl	N/A	N/A	
Jacaltec	jai	ɲah	UNPOSS	
Jacaltec	jai	w-atut	POSS(1SG)	house
Jacaltec	jai	wah	UNPOSS	
Jacaltec	jai	w-oč	POSS(1SG)	tortilla
Japanese	jpn	N/A	N/A	
Kannada	kan	N/A	N/A	
Kashaya	kju	ṭʰaʔkín’	1SG.POSS	
Kashaya	kju	ʾdaqʰan’	2–3 SG.POSS	husband
Kashaya	kju	ṭhaʔmén’	1SG.POSS	
Kashaya	kju	ʾdaqʰan’	2–3 SG.POSS	wife
Kashaya	kju	k’ún’	1SG.POSS	
Kashaya	kju	ẗiki	2–3 SG.POSS	younger brother
Kashaya	kju	šomén’	1SG.POSS	
Kashaya	kju	ẗiki	2–3 SG.POSS	younger sister
Kashaya	kju	hiʔbayá-yaʔ	1SG.POSS	
Kashaya	kju	ʰceye	2–3 SG.POSS	son in law
Kashaya	kju	ẗile-yáʔ	1SG.POSS	
Kashaya	kju	ša´	2–3 SG.POSS	mother in law
Kashaya	kju	ẗile-yáʔ	1SG.POSS	
Kashaya	kju	ba´	2–3 SG.POSS	father in law
Kashaya	kju	k’atʰín’	1SG.POSS	
Kashaya	kju	k’an’	2–3 SG.POSS	friend

Continue Appendix 2

LanguageName	Code	Forms	GramCat	Meaning
Kashaya	kju	pe	1POSS	
Kashaya	kju	ʔe	2POSS/ 3POSS.REFL	
Kashaya	kju	me	3POSS	father
Kashaya	kju	tʰe	1POSS	
Kashaya	kju	ʰt̩ʰe	2POSS/ 3POSS.REFL	
Kashaya	kju	ʰt̩ʰe	3POSS	mother
Kayardild	gyd	N/A	N/A	
Ket	ket	kɛ ʔt	SG	
Ket	ket	d ɛ ʔ-ŋ	PL	man
Ket	ket	:oks’	SG	
Ket	ket	a ʔq	PL	tree
Ket	ket	dyl’	SG	
Ket	ket	kat	PL	child
Khanty	kca	ханнэхе	SG	
Khanty	kca	ёх	PL	person
Koasati	cku	N/A	N/A	
Kolyma Yukaghir	yux	N/A	N/A	
Komi	kpv	mort	SG	
Komi	kpv	mort-jas/jöz	PL	person
Komi	kpv	detinka	SG	
Komi	kpv	detinka-jas/ čel’ad’	PL	child
Lakhota	lkt	ina	1SG.POSS	
Lakhota	lkt	ni-hų	2SG.POSS	mother
Limbu	lif	N/A	N/A	
Makah	myh	quɬuʼ	SG	
Makah	myh	qaquʼɬ	PL	slave
Makah	myh	ʔabeʼʔiqsu	SG	
Makah	myh	ʔaʼʔabiʼqsu	PL	mother
Makah	myh	qaɬaʼtq	SG	
Makah	myh	qaʼqɬaʼtq	PL	younger brother
Makah	myh	qʼidiʼƛ	SG	
Makah	myh	qʼiʼƛiʻqiʼƛ	PL	dog
Makah	myh	weʔič	SG	
Makah	myh	huʼʔič	PL	sleeping
Mandarin Chinese	cmn	N/A	N/A	
Mapuche	arn	N/A	N/A	
Maricopa	mrc	N/A	N/A	
Martuthunira	uma	kupuyu	SG	
Martuthunira	uma	kupiyaji	PL	little
Mayali	gup	N/A	N/A	
Maybrat	ayz	pine	UNPOSS	
Maybrat	ayz	-atia	POSS	father

Continue Appendix 2

LanguageName	Code	Forms	GramCat	Meaning
Maybrat	ayz	fene	UNPOSS	
Maybrat	ayz	-me	POSS	mother
Maybrat	ayz	kre	UNPOSS	
Maybrat	ayz	-sif	POSS	nest
Maybrat	ayz	soka	UNPOSS	
Maybrat	ayz	-asoh	POSS	mouth, front
Mundari	unr	N/A	N/A	
Navajo	nav	N/A	N/A	
Ndyuka	djk	N/A	N/A	
Nez Perce	nez	N/A	N/A	
Nishnaabemwin	otw + ojg	bnoojiinh	UNPOSS	
Nishnaabemwin	otw + ojg	niijaanis	POSS	child
Nishnaabemwin	otw + ojg	nimoš	UNPOSS	
Nishnaabemwin	otw + ojg	nday	POSS	dog
Nishnaabemwin	otw + ojg	nini	UNPOSS	
Nishnaabemwin	otw + ojg	nnaabem	POSS	husband
Nishnaabemwin	otw + ojg	wesiinh (wild)/ ookaan (farm)	UNPOSS	
Nishnaabemwin	otw + ojg	ndayhaam	POSS	animal (wild/farm)
Northern Embera	emp	N/A	N/A	
Palauan	pao	N/A	N/A	
Paumarí	pad	N/A	N/A	
Qafar	aar	N/A	N/A	
Russian	rus	čelovek	SG (NOM)	
Russian	rus	det´-i	PL(NOM)	person
Russian	rus	god-a	SG(GEN)	
Russian	rus	god-ov/let	PL(GEN)	year
Russian	rus	rebenok	SG(NOM)	
Russian	rus	det′-i	PL(NOM)	child
Samoan	smo	N/A	N/A	
Tamazight	tmz	t̲-arwa	SG	
Tamazight	tmz	t̲i-rəgg^{w}-in	PL	canal
Tamazight	tmz	ult̲-ma	SG	
Tamazight	tmz	ist-ma	PL	sister
Tamazight	tmz	əḡ-ma	SG	
Tamazight	tmz	ayt-ma	PL	brother
Tamazight	tmz	illi	SG	
Tamazight	tmz	issi	PL	daughter
Tariana	tae	nu-ñhawhe-ri	NON-VOC	wife's father;
Tariana	tae	nukhi	VOC	husband's father
Tariana	tae	nu-ñhawhe-ru	NON-VOC	
Tariana	tae	nukui	VOC	wife's mother
Tariana	tae	nu-phe-ri-sa-do	NON-VOC	
Tariana	tae	nu-phe-rinu	VOC	elder brother's wife

Continue Appendix 2

LanguageName	Code	Forms	GramCat	Meaning
Tariana	tae	nurinu	NON-VOC	
Tariana	tae	tethu	VOC	son's wife
Tariana	tae	nu-sima-ri	NON-VOC	
Tariana	tae	tesi	VOC	daughter's husband
Tariana	tae	nu-tedua-ri (son)/nu-tedua-ru (daughter)	NON-VOC	
Tariana	tae	nai	VOC	marriageable relative
Tariana	tae	nu-wasado	NON-VOC	daughter of male ego's
Tariana	tae	tethu	VOC	sister; daughter of one's wife's sister/brother
Tariana	tae	nu-wasado	NON-VOC	son of male ego's sister;
Tariana	tae	tesi	VOC	son's wife's brother
Tariana	tae	nu-wheri	NON-VOC	
Tariana	tae	duwhue	VOC	grandfather
Tariana	tae	nuri	SG	
Tariana	tae	nu-ie-nipe	PL	my son
Tarma Quechua	qvn	N/A	N/A	
Tetelsingo Nahuatl	nhg	pɪl-cin-tlɪ	UNPOSS	
Tetelsingo Nahuatl	nhg	no-konie	POSS	child
Thai	tha	N/A	N/A	
Totonac	top	N/A	N/A	
Turkana	tuv	i-koku	SG(N)	
Turkana	tuv	ŋi-de	PL(N)	child
Turkana	tuv	a-ɪtɛ	SG(F)	
Turkana	tuv	ŋa-atuk	PL(F)	cow
Wirangu	wiw	gidya	SG	
Wirangu	wiw	gidayara	PL	child
Wirangu	wiw	yugara	SG	
Wirangu	wiw	yugarilya	PL	young woman
Xakass	kjh	pale	SG	
Xakass	kjh	olFannar	PL	child
Yimas	yee	nar-maŋ	SG	
Yimas	yee	ŋayk-um	PL	woman
Yimas	yee	panmal	SG	
Yimas	yee	panmalŋc-rm	DU	
Yimas	yee	pay-um	PL	man
Yimas	yee	kalakn	SG	
Yimas	yee	kaymampan	DU	
Yimas	yee	kump-wi	PL	child
Yimas	yee	tnum	SG	
Yimas	yee	tp-wi	PL	
Yimas	yee	tp-wi	PL	sago palm
Yupik	esu	n/a	N/A	

Continue Appendix 2

LanguageName	Code	Forms	GramCat	Meaning
Zoogocho Zapotec	zpg	yet	UNPOSS	
Zoogocho Zapotec	zpg	chizxa’	POSS	tortilla
Zoogocho Zapotec	zpg	be’ko’	UNPOSS	
Zoogocho Zapotec	zpg	zxwikw	POSS	dog
Zoogocho Zapotec	zpg	yoo	UNPOSS	
Zoogocho Zapotec	zpg	lizh	POSS	house

Appendix 3

Language data from the sample: adjectival suppletion. The given meanings refer to the first suppletive form.

LanguageName	Code	Forms	GramCat	Meaning
!Xóõ	nmn	N/A	N/A	
Apurinã	apu	N/A	N/A	
Arabana-Wangkangurru	ard	N/A	N/A	
Arapesh	aon	N/A	N/A	
Archi	aqc	N/A	N/A	
Azari	azb	N/A	N/A	
Bafut	bfd	N/A	N/A	
Barasano	bsn	N/A	N/A	
Basque	eus	on	POS	
Basque	eus	hobe	COMPR	good
Berbice Dutch Creole	brc	N/A	N/A	
Chicheva	nya	N/A	N/A	
Ewondo	ewo	N/A	N/A	
Georgian	kat	bevr-i	POS	
Georgian	kat	meť-i	COMPR	many
Georgian	kat	coťa	POS	
Georgian	kat	nak’l-eb-i	COMPR	few
Georgian	kat	cud-i	POS	
Georgian	kat	u-ar-es-i	COMPR	bad
Georgian	kat	k’arg-i	POS	
Georgian	kat	u-k’et-es-i/u-mǰob-es-i	COMPR	good
Guarani	geo	N/A	N/A	
Halkomelem	hur	mím’ən’	SG	
Halkomelem	hur	ʔəmə́mə́ń	PL	little
Hdi	xed	N/A	N/A	
Hebrew	hbr	N/A	N/A	
Hua	ygr	N/A	N/A	
Hungarian	hun	sok	POS	
Hungarian	hun	tö-bb	COMPR	many, a lot
Indonesian	ind	N/A	N/A	
Itelmen	itl	N/A	N/A	

Continue Appendix 3

LanguageName	Code	Forms	GramCat	Meaning
Jacaltec	jai	N/A	N/A	
Japanese	jpn	N/A	N/A	
Kannada	kan	N/A	N/A	
Kashaya	kju	bahṭhe	SG	
Kashaya	kju	ʔahṭhiy	PL	big
Kayardild	gyd	N/A	N/A	
Ket	ket	N/A	N/A	
Khanty	kca	N/A	N/A	
Koasati	cku	N/A	N/A	
Kolyma Yukaghir	yux	N/A	N/A	
Komi	kpv	N/A	N/A	
Lakhota	lkt	N/A	N/A	
Limbu	lif	N/A	N/A	
Makah	myh	N/A	N/A	
Mandarin chinese	cmn	N/A	N/A	
Mapuche	arn	N/A	N/A	
Maricopa	mrc	N/A	N/A	
Martuthunira	uma	N/A	N/A	
Mayali	gup	N/A	N/A	
Maybrat	ayz	N/A	N/A	
Mundari	unr	N/A	N/A	
Navajo	nav	N/A	N/A	
Nduyka	djk	N/A	N/A	
Nez Perce	nez	N/A	N/A	
Nishnaabemwin	otw + ojg	N/A	N/A	
Northern Embera	emp	N/A	N/A	
Palauan	pao	N/A	N/A	
Paumarí	pad	N/A	N/A	
Qafar	aar	N/A	N/A	
Russian	rus	xorošij	POS	
Russian	rus	lučše	COMPR	good
Russian	rus	ploxoj	POS	
Russian	rus	xuže	COMPR	bad
Russian	rus	bol′šoj	LONG	
Russian	rus	velik	SHORT	big
Samoan	smo	N/A	N/A	
Tamazight	tmz	N/A	N/A	
Tariana	tae	hanu	SG	
Tariana	tae	MALE	PL	big, wide, long
Tarma Quechua	qvn	N/A	N/A	
Tetelsingo Nahuatl	nhg	N/A	N/A	
Thai	tha	N/A	N/A	
Totonac	top	N/A	N/A	
Turkana	tuv	N/A	N/A	

Continue Appendix 3

LanguageName	Code	Forms	GramCat	Meaning
Wirangu	wiw	n/a	n/a	
Xakass	kjh	n/a	n/a	
Yimas	yee	n/a	n/a	
Yupik	esu	n/a	n/a	
Zoogocho Zapotec	zpg	n/a	n/a	

Abbreviations

abs	absolutive	pos	positive
compr	comparative	poss	possessive
erg	ergative	refl	reflexive
gen	genitive	sg	singular
pl	plural	voc	vocative

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