

# Case and Number Suppletion in Pronouns

Peter W. Smith\*, Beata Moskal\*, Ting Xu<sup>†</sup>, Jungmin Kang<sup>‡</sup>  
and Jonathan David Bobaljik<sup>‡</sup>

\*Goethe-Universität Frankfurt am Main

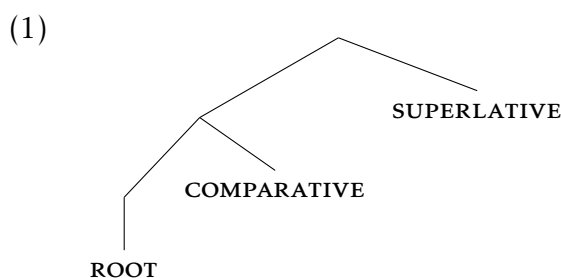
<sup>†</sup>Syracuse University

<sup>‡</sup>University of Connecticut

August 2016

## 1 Introduction

Suppletion refers to the phenomenon in which a single lexical item is associated with two phonologically unrelated forms. For instance, in the (non-suppletive) paradigm *smart-smarter-smartest* the root remains constant, but in the case of *good-better-best*, *good* ‘changes’ from the root *good* to *be(tt)* in the context of the comparative (and superlative). Suppletion is by definition irregular, however a recent spate of research (Veselinova 2006, Barbiers 2007, Bobaljik 2012, Bobaljik & Harley 2013, Baerman 2014, Moskal 2015a,b) has shown that underneath the surface irregularity lie clear, regular, predictable patterns. For example, in a large cross-linguistic survey of suppletion in comparative and superlative degree formation, Bobaljik (2012) shows that some patterns of suppletion are common, while others are virtually unattested: one finds many examples of an ABB pattern *good-better-best*, in which the comparative and superlative share a suppletive root, distinct from the root in the positive, but (with some qualifications) no ABA patterns, in which the comparative alone is suppletive: \**good-better-goodest*. Bobaljik argues at length that the universality of the patterning requires a structural explanation, and more specifically, that the patterns provide evidence for a largely invariant abstract, internal, hierarchical structure of adjectives. In a nutshell (we elaborate below): the representation of the superlative contains that of the comparative (which in turn contains the root form), as in (1) (a relationship that is morphologically transparent in many languages, though not in English):



In effect, the absence of the ABA pattern is a consequence of this structural containment – because the superlative contains the comparative, suppletion for the comparative allomorph of the adjectival root will always preclude the unmarked allomorph in the superlative context. On this account, the unattested patterns do not arise as they cannot be generated in a manner consistent with Universal Grammar.

The goal of the present study is to widen the domain of inquiry to two further complex phenomena to see whether the logic of \*ABA in Bobaljik’s work holds more generally than just in adjectival suppletion. If Bobaljik’s approach is correct, we should find that ABA suppletive patterns in particular are excluded (thus unattested) in any sequence of categories that are related via containment. Since the key argument comes from the absence of certain phenomena (\*ABA), the domains of inquiry must be large enough to be able to support the claim that the unattested patterns are systematic, and not just accidental gaps. To this end, we investigate suppletion patterns in personal pronouns with respect to morphological case and number. Both areas provide a rich empirical ground for investigating suppletion, and in both domains, we find striking parallels to adjectival suppletion: ABB patterns are robustly attested across language families and are stable over long time periods, while \*ABA patterns are unattested. Parity of reasoning with Bobaljik (2012) lends support to theories in which markedness hierarchies for case and number are thus encoded as structural containment of one sort or another. In the course of the investigation, we encounter various differences that point to theoretical refinements: (i) AAB patterns are attested in case suppletion, in contrast to adjectival suppletion (section 3.6), (ii) the interaction of case and number calls into question the general assumption that suppletion is restricted to configurations of structural (Bobaljik 2012) or linear (Embick 2010) adjacency, requiring a somewhat weaker, domain-based relation (cf., Moskal 2015a,b, Moskal & Smith 2016) (section 3.7), and (iii) variation between pronouns and nouns in suppletion for number, along with variation in affix ordering, points to a certain degree of flexibility in structure, which we argue can be modelled via an adaptation of the representation of number in Harbour (2007), along with assumptions about the role of markedness in suppletion (section 4.3.1). In the next section, we provide a brief overview of

Bobaljik (2012), on which we rely theoretically, and then turn to suppletion in case and number, respectively.

## 2 The locality of suppletion: comparatives and superlatives

Bobaljik (2012) conducts a wide cross-linguistic survey into adjectival suppletion in the context of comparative and superlative morphology. Striking in that survey is the finding that not all patterns of suppletion are attested, but rather there are clearly defined patterns of suppletion with respect to what is, and what is not, possible. The first attested pattern is where there is no suppletion, and the root remains constant as in *smart-smarter-smartest*, referred to as an AAA pattern, since the same root is used in all three degrees. If there is suppletion, then we find two possibilities. First is a pattern where both the comparative and superlative form are suppletive with respect to the positive, but share a common root, an ABB pattern as in the English *good-better-best*. Finally there exist ABC patterns where both the comparative and superlative are suppletive, both with respect to the positive and to each other, seen in the Latin paradigm *bonus-melior-optimus*.

(2)

		POS	COMP	SPRL	Pattern
a.	English	<b>smart</b>	<b>smart</b> -er	<b>smart</b> -est	AAA
b.	English	<b>good</b>	<b>bett</b> -er	<b>be</b> -st	ABB
c.	Finnish	<b>hyvä</b>	<b>pare</b> -mpi	<b>parha</b> -in	ABB
d.	Latin	<b>bon</b> -us	<b>mel</b> -ior	<b>opt</b> -imus	ABC
e.	Welsh	<b>da</b>	<b>gwell</b>	<b>gor</b> -au	ABC

Strikingly, however there are two suppletion patterns which are not attested. Firstly, there are virtually no cases of an ABA pattern.<sup>1</sup> In other words, there are no adjectival paradigms in which the root is identical in the context of the (regular) adjective and the superlative, to the exclusion of the comparative (3a). The second pattern which is unattested is an AAB pattern, where the positive form and the comparative form are constant, whilst the superlative form is suppletive (3b).

<sup>1</sup>There is one possible counter-example among adjectives of quality from Basque, and a handful of possibly challenging examples from quantifiers: ‘many/much-more-most’. See Bobaljik (2012) for discussion and alternative accounts consistent with the generalizations presented in the main text. In this study we only take into account morphological, or synthetic constructions, and make no predictions for periphrastic constructions.

(3)

		POS	COMP	SPRL	Pattern
a.	unattested	<b>good</b>	<b>bett-er</b>	<b>good-est</b>	*ABA
b.	unattested	<b>good</b>	<b>good-er</b>	<b>be-st</b>	*AAB

Put together, these observations may be stated as follows:

- (4)
1. If a root undergoes suppletion in the comparative, it cannot have the positive form in the superlative (roots stay suppletive = \*ABA).
  2. For suppletive morphology to be possible in the superlative, the comparative form must also be suppletive (= \*AAB).

In this paper, we aim to build upon these observations and show that (4.1) has analogies in other domains of suppletion. The fact that (4.2) does not generalize in the same way is anticipated in Bobaljik (2012) and the asymmetry between the two conditions provides further evidence regarding the specific representations involved, and the nature of locality in morphosyntactic representations. Before delving into these areas, we first give an overview of how Bobaljik accounts for the attested patterns of suppletion in adjectival suppletion, and how the unattested patterns are ruled out.

## 2.1 Adjectival Suppletion

### 2.1.1 The Containment Hypothesis

A crucial ingredient for Bobaljik to explain the attested patterns, and rule out the unattested patterns, is the *Containment Hypothesis*:<sup>2</sup>

- (5) The Containment Hypothesis (from Bobaljik 2012)  
 The representation of the superlative properly contains that of the comparative.

In other words, the containment hypothesis maintains that the construction in (6) is not a legitimate grammatical object:

- (6) \* [[positive] superlative]

Rather, a superlative construction always has the structure as in (7), crucially containing the comparative.<sup>3</sup>

<sup>2</sup>Bobaljik (2012, Chapter 7) proposes that the Containment Hypothesis is itself a consequence of a deeper condition on the content of functional nodes. Specifically, it is proposed that UG cannot combine the comparative operator MORE and the universal quantifier inherent in the superlative THAN ALL OTHERS into a single functional node (cf. Kayne 2005).

<sup>3</sup>Note that of course not all constructions contain a superlative projection; as such, a comparative is represented as [[ positive ] comparative ].

(7) [[[ positive ] comparative ] superlative ]

The validity of the containment hypothesis is supported by two facts. Firstly, we see in various languages that the containment hypothesis is reflected transparently in the morphology of the forms, such as in Czech, Hungarian, and Ubykh, where we can clearly see that the superlative form of the adjective also contains the comparative morpheme:

(8)

	POS	COMP	SPRL	Gloss
a. Czech	<b>mlad</b> -ý	<b>mlad</b> -ši	nej- <b>mlad</b> -ši	‘young’
b. Hungarian	<b>nagy</b>	<b>nagy</b> -obb	leg- <b>nagy</b> -obb	‘big’
c. Ubykh	<b>nüs</b> <sup>oə</sup>	ç’a- <b>nüs</b> <sup>oə</sup>	a-ç’a- <b>nüs</b> <sup>oə</sup>	‘pretty’

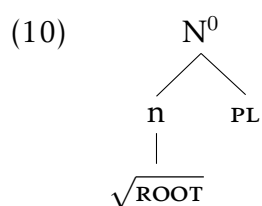
The second piece of evidence suggesting that the containment hypothesis holds cross-linguistically comes from typological universals concerning comparatives and superlatives. Bobaljik formulates the *Synthetic Superlative Generalization*:

- (9) The Synthetic Superlative Generalization (SSG)  
 No language has morphological superlatives (*X-est*), but only periphrastic comparatives (*more X*).

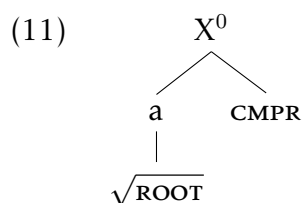
If the Containment Hypothesis is correct, then the SSG (9) effectively follows if the grammar cannot construct a morphological superlative without first constructing a morphological comparative. In other words, a grammar with the resources to construct a morphological superlative must be a grammar that has the resources to construct a morphological comparative.

### 2.1.2 Distributed Morphology and adjectival suppletion

With the containment hypothesis in tow, Bobaljik shows how the \*ABA pattern is excluded within a theoretical framework such as Distributed Morphology (DM henceforth, see Halle & Marantz 1993). A key tenet of DM is Late Insertion: the hypothesis that morphological complexity may be abstract – multi-morphemic words are constructed in the syntax as complexes of abstract terminals ( $X^0$  nodes), which are then subject to post-syntactic rules of exponence (vocabulary insertion, VI). For example, on a DM account, the syntax may represent plural nouns in a language like English or German consistently as in (10). The syntax abstracts away from the choice of plural suffix, and it is the post-syntactic, morphological component that determines the overt allomorph of the plural suffix.



In the same vein, a comparative adjective may be represented abstractly as in (11) (we take no stance on the labels of the higher nodes):



Crucially, phonological substance is provided post-syntactically ('Late Insertion') and occurs cyclically starting from the most deeply embedded element (Bobaljik 2000). Under this perspective, suppletion may be treated in DM as a special case of contextual allomorphy: more than one VI rule may compete to spell out a single terminal node. In such a situation, the Elsewhere Principle (Kiparsky 1973), which ensures that more specific VI rules win out over less specific ones, regulates which exponents are inserted into the syntactic structure during the morphology. In English, there are the following VI rules for the *good-better-best* paradigm:<sup>4</sup>

- (12)
- a.  $\sqrt{\text{GOOD}} \rightarrow \text{be(tt)} / \_ ] \text{CMPR}$
  - b.  $\sqrt{\text{GOOD}} \rightarrow \text{good}$  (elsewhere)
  - c.  $\text{SPRL} \rightarrow \text{-est}$
  - d.  $\text{CMPR} \rightarrow \text{-er}$

In the positive the context of the comparative is not met and as such the context-free VI rule in (12b) applies. In the comparative structure (11) however, the Elsewhere Condition will ensure that the root allomorph (12a) *be(tt)* will be inserted, bleeding the default realization of the same root (12b). This (along with (12d)) correctly derives the form *better*, rather than *gooder*.<sup>5</sup> Crucially, if we combine the Containment Hypothesis with Late Insertion and the Elsewhere principle, the same VI rules will ensure that in the superlative as

<sup>4</sup>Note that for the exponents in the VI rules here, and below, we abstract away from the phonological shape, and represent them orthographically.

<sup>5</sup>Note that there is no competition or blocking among whole words; the form *\*gooder* is never derived. See Embick & Marantz (2008) for discussion and comparison with alternatives.

well as the comparative, the environment for the more specific VI rule in (12a) is met and as such, (12a) must apply. This result generalizes to the more than 100 examples of ABB patterns in Bobaljik (2012): since the superlative contains the comparative, any rule that bleeds the default root allomorph in the comparative will likewise bleed the default root allomorph in the superlative. In other words, \*ABA results from the fact that suppletion for the comparative will always entail that the superlative is also suppletive: an ABA pattern cannot be generated by the grammar.<sup>6</sup>

Note that this clearly allows for ABB patterns; it also allows for ABC patterns since we can make a VI rule that makes specific reference to the superlative.<sup>7</sup> Consider the Latin *bonus-melior-optimus* ‘good’ paradigm, and its corresponding VI rules:

- (13) a.  $\sqrt{\text{GOOD}} \rightarrow \text{opt} / \_ \_ ] \text{CMPR} ] \text{SPRL} ]$   
 b.  $\sqrt{\text{GOOD}} \rightarrow \text{mel} / \_ \_ ] \text{CMPR} ]$   
 c.  $\sqrt{\text{GOOD}} \rightarrow \text{bon}$  (elsewhere)

The VI rules in (13b-c) are in relevant respects identical to those in (12a-b). But just as the Elsewhere Condition operates to ensure that the comparative allomorph spreads to the superlative context when there is no more specific exponent, in (13a) there is a more specific root allomorph for the superlative context and thus *opt-* wins out over its competitors.

An additional assumption is needed to exclude AAB patterns. Bobaljik proposes, in effect, that no grammar may have a rule like (13a) unless it also has a less complex rule like (13b), considering various ways in which this might be derived (see also Bobaljik & Wurmbrand 2013). The existence of AAB patterns turns out to be a point of difference between adjectival degree and pronominal case, and we return to this in more detail below.

In sum, the containment hypothesis taken together with the Elsewhere Principle will prevent a root from ‘reverting’ to its original form in the superlative once it has undergone suppletion in the comparative form, and thus ABA patterns are impossible.

---

<sup>6</sup>Additional minor rules are needed to ensure that the superlative surfaces as *best* and not \**betterest* – see Bobaljik (2012) for discussion. What is relevant for the illustrative point here is that the comparative and superlative share a common root. Since ABC patterns are describable (see immediately below), it is formally possible to mimic a surface ABA pattern, via accidental homophony of A and C. Bobaljik proposes to exclude this via a general learning bias against root homophony.

<sup>7</sup>This is somewhat of a simplification especially as regards locality; see Bobaljik (2012) and Moskal & Smith (2016), and section 3.7 below.

### 3 Case driven suppletion in personal pronouns

Rather than being limited to adjectival suppletion patterns, the same logic should apply to all complex structures where we see evidence for nesting of one head inside another. In this paper we extend this hypothesis to morphological case and number, with a particular focus on pronouns. Pronouns are known to show suppletion for both case and number cross-linguistically (Moskal 2015a,b). In addition, pronouns are well described cross-linguistically and we are thus able to construct a large enough sample that gaps may be significant. Our general hypothesis is of the form: given a structure in which three (or more) categories stand in a containment relation [ [ [ X ] Y ] Z ], if X suppletes for Y, it will also supplete in the context of Z - that is, there will be no ABA patterns. Working backwards, we may then take the absence of ABA patterns in domains rich with suppletion to constitute evidence of nested structure.

We now turn our attention to the first of the phenomena that are the focus of the present study, morphological case. We will show that the patterns of suppletion that we find with respect to case in personal pronouns show the hallmark \*ABA diagnostic of a containment structure for case.

#### 3.1 Why look at case?

It has long been held that the morphological categories of case are subject to a markedness hierarchy, such as in (14) (Blake 1994, Caha 2009):

- (14) NOM < ACC < GEN < DAT < INS < COM

More recently, it has been proposed in a number of studies (notably Caha 2009 et seq.) that morphological case is not represented as a simple feature value, NOM, ACC, DAT etc, but the morphological cases themselves are internally complex, with more complex cases properly containing less complex ones.

There are a variety of strands of evidence that suggest that cases are internally complex. As is the case with degree morphology, there are some languages where case containment is transparently reflected in the morphemes. This is particularly prevalent in locative cases, which are often internally complex, having distinct pieces showing Path and Place (see Radkevich 2010). In addition, oblique cases in many languages are built on a direct case, such as the ergative. The Tabasaran example in (15) shows 4 levels of embedding in the versative case:

- (15) nir -i -q -in -ri  
river -ERG -ON -ALL -VERS  
'towards the bank of the river' (Tabasaran)



Caha (2009) also cites examples from Colloquial Czech, in which the accusative morpheme is arguably seen within the case morphology of the instrumental case (the following data are taken in a truncated form from Caha 2009):

(16)

	‘man’	‘chicken’	‘eye’
NOM	muž-i	kuřat-a	oč-i
ACC	muž-E	kuřat-A	oč-I
INST	muž-E-ma	kuřat-A-ma	oč-I-ma

In addition to the (albeit rare) instances where one case is clearly contained within another, Caha shows that one can formulate implicational universals for whether case is to be expressed morphologically or periphrastically, much in the same way as the SSG of Bobaljik (2012) (see (9) above). Caha proposes the following case sequence, purported to hold universally (although he gives a number of important qualifications):

(17) NOM - ACC - GEN - DAT - INSTR - COM

The sequence is motivated by syncretism patterns (see below), as well as typological observations about case, e.g. the case hierarchy of Blake (1994). Taking prepositions to be the manifestation of a case morpheme that has not undergone merger to the nominal head, Caha claims that this is the periphrastic realization of case. He shows that if a case is expressed morphologically, then all cases to the right on the sequence in (17) will also be able to be expressed morphologically in that language. That is, if the dative case is synthetic in a language, then the nominative, accusative and genitive, will be as well. Similarly, if a case is expressed periphrastically by a functional preposition, then all cases to the left on the sequence will be expressed periphrastically using prepositions.

The final piece of evidence towards cases being internally complex is that case syncretisms always target contiguous regions on the sequence (Caha 2009). Since syncretisms must target contiguous cases, a possible syncretism would be one where the accusative, genitive, dative and instrumental are syncretic, however a pattern where the nominative and dative are syncretic to the exclusion of the accusative and genitive is not a possible pattern. By and large, this holds across Caha’s typology of syncretism (but see Harðarson 2014 for a possible counterexample). Abstracting away from the details, Caha shows it is not possible to generate a VI-entry that will target the genitive and the nominative, but not the accusative; in other words, if the genitive and nominative are syncretic, then the accusative must be syncretic with them also.<sup>8</sup>

<sup>8</sup>There is a rich tradition dating to work by Roman Jakobson of using case syncretism to motivate internally complex cases; see Calabrese (2008) for a somewhat different proposal than Caha’s.

Case, then, turns out to prove an ideal testing ground for a wider application of Bobaljik’s proposal. If the case hierarchy is represented as a containment configuration, then we predict that ABA patterns should be excluded in suppletion. For example, if obliques contain the accusative, which in turn contain the unmarked case (nominative), then an element that shows suppletion for the accusative will not ‘revert’ to the default root in an oblique. This prediction is systematically borne out for a large sample, to which we now turn.

### 3.2 Case suppletion

It is common for pronouns to show suppletion for case (Moskal 2015b), with the Icelandic first and second person pronouns serving as an illustrative example (a pattern that is reconstructed for Proto-Indo-European, Katz 1998). The second person singular is not suppletive, in the sense that it has an invariant person formant  $\text{ɸ}$ , followed by a piece that varies for case. The other pronouns in this table, to the extent they are segmentable, show suppletion of the person formant—the first person singular has an  $m$ - corresponding to 2 SG  $\text{ɸ}$  everywhere except the nominative, where *ég* starts with a glide  $j$ -. First and second person plural pattern with the first person singular in this regard, with special nominative forms that share no segments with the corresponding non-nominatives.

(18) Icelandic

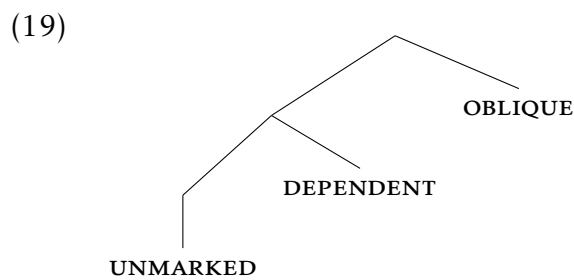
	NOM	ACC	DAT	GEN	
1SG	ég	mig	mér	mín	ABBB
2SG	þú	þig	þér	þín	AAAA
1PL	við	okkur	okkur	okkar	ABBB
2PL	þið	ykkur	ykkur	ykkar	ABBB

Since pronouns are ubiquitous and well-documented, it is easy to construct a sizeable cross-linguistic sample. Our initial sample consisted of 160 languages (see Appendix). Of these, roughly half (76) had no suppletion for case: pronouns have an identifiable formant that is consistent across all cases.<sup>9</sup> Another 19 languages had suppletion for case, but had only a two-way case-contrast, and hence are uninformative about the key prediction: they lack ABA patterns, but trivially so, as there is no third category to investigate, leaving 65 informative languages. To this initial sample we added additional cases brought to our attention over the course of the investigation.

<sup>9</sup>There are sometimes tricky judgment calls to be made in distinguishing suppletion from mere morphophonological irregularity. Other than the segmentation of the Archi 2PL discussed below, nothing of consequence turns on the particular cases that fall in the grey area.

In order to ensure commensurability among languages, we examined a simplified case hierarchy. Specifically, we considered (i) the unmarked case (the case of canonical intransitive subjects, either nominative or absolutive), (ii) the corresponding dependent case (accusative or ergative), and (iii) a representative oblique case, typically dative. Considerations of markedness, Caha-style syncretic patterning, and what little evidence there is for transparent morphological containment point to the representation of case in (19), relative to which we can investigate the attested and unattested patterns of suppletion. We consider unmarked the basic form, such that all other cases will at least contain also the unmarked case. Dependent case contains the unmarked case only. Oblique cases contain both unmarked and dependent cases.<sup>10</sup>

Throughout the study, we set aside the genitive case, as available sources do not consistently distinguish a genitive case (relevant to the case hierarchy) from possessive pronouns (which are not part of the hierarchy).<sup>11</sup>



### 3.3 Results: Overview

Our results are summarized in (20). Consistent with our predictions, there is a fundamental asymmetry between the widely attested, Icelandic-like ABB pattern and the virtually unattested ABA pattern. There is but a single possible case of an ABA pattern (more accurately ABBA as it involves multiple obliques), in Archi, which may fall to an alternative analysis as a non-suppletive pattern, as discussed in (31) below.

---

<sup>10</sup>Given Caha's conclusions, there is likely further containment relations amongst the oblique cases, however we abstract away from these for the present study. Nothing of consequence hinges on whether we use the simple label 'oblique' or decompose that node further.

<sup>11</sup>See also Harðarson (2014) for evidence that the position of the genitive relative to the dative is not universally stable on Caha's hierarchy.

(20)

Pattern	Prediction	<i>n</i> Attested	Representative Languages
AAA	✓	numerous	Lezgian, W. Greenlandic, etc.
ABB	✓	24	Indo-European, Evenki, Khakas, Chuvash, Itelmen
ABC	✓	1	Khinalugh
AAB	✓	8	Hunzib, Wardaman
ABA	✗	(1)	Archi 2PL

In addition to noting whether patterns are attested or not, we have given numbers from our sample. Note that these numbers are quite conservative, in that they count the number of attested cognate triples of pronouns, not languages (Bobaljik 2012, 40-43). If multiple languages share the same pattern and the elements are cognate, then they are not counted separately. By this count, the common Indo-European 1sg pronouns in (21) collectively contribute only a single data point – one of the 42 instances of an ABB pattern in (20)). The suppletive pattern in Indo-European arose once and has been inherited by the daughter languages, remaining stable over thousands of years.

(21)

Form	NOM	ACC	DAT	Other
Lithuanian	àš	manè	mán	man-
Russian	ja	menja	mnje	mn-
German	ich	mich	mir	
Latin	ego	mē	mihi	m-
Greek	egō	eme	emoi	

Before moving on to the data, we must point out that we restrict our attention to case suppletion in personal pronouns only, and not case suppletion in lexical nouns. This is forced upon us due to an asymmetry between lexical nouns and pronouns discussed in Moskal (2015a,b), where it is shown that whilst pronouns frequently supplete for case, barring a handful of examples, lexical nouns never do. The reason for this asymmetry is shown by Moskal to be the result of a difference in structure between functional and lexical material: lexical structure in contrast to functional structure contains category defining nodes, which have the effect of making case information too far away from the lexical root in order to condition suppletion. Functional structure, by way of contrast, is small enough to allow for case information to condition suppletion

on the base of the pronoun. Notably, all of the cases of suppletion in lexical material is shown to involve less structure, which brings case information close enough to the lexical root for suppletion to happen.

### 3.4 Capturing variation in case suppletion

Our main result, as noted, is that the predicted patterns are well attested, while the \*ABA pattern is unattested, with only one dubious potential problem. The AAB pattern turns out to be a point of difference between degree suppletion and pronominal suppletion, and we therefore discuss that pattern in its own right in the next subsection.

As noted above, roughly half of the languages in our initial survey did not show suppletion. Case suppletion is thus not necessary or by any means universal. Select pronouns from Lezgian illustrate a language with rich case distinctions, but no suppletion (AAA).

(22)

Form	ABS	ERG	DAT	ADE	INE
1SG	zun	za	zaz	zaw	za
2SG	wun	wuna	waz	waw	wa
1PL	čun	čna	čaz	čaw	ča

Even in languages with suppletion, like Icelandic, not all pronouns are suppletive for case, as the contrast between the 1sg and 2sg forms show. Likewise in English, *I~me* and *she~her* appear to be suppletive, to be contrasted with *they~them*.

Before moving on from AAA patterns, we note a potential difficulty in discerning suppletive patterns. Note that not all AAA patterns are entirely regular. We draw a distinction between suppletive forms, which are built on a phonologically unrelated root, and ‘mere’ irregularity, in which a common root is clearly discernible, despite other irregularities in the form. The Lezgian 1sg ergative pronoun lacks an ending that the other ergative pronouns have, and is thus irregular, but is clearly built on the *z(a)*- base that characterizes 1sg. These patterns were regularly encountered within our survey. One might wonder where to draw the line between suppletion and irregularity (see Bye 2007, Haugen & Siddiqi 2013 for discussion), and to this question we do not offer anything novel here and abstract away from this debate. We were conservative in classifying suppletive forms as such, and thus our numbers are if anything, on the low side for suppletive forms.

Returning to the data, we now consider ABB forms, where in the dependent and oblique cases, the pronominal base is suppletive relative to the unmarked

case, but the suppletive base is consistent. We have illustrated ABB patterns with select Indo-European pronouns above, repeated here.

## (23) Icelandic

	NOM	ACC	DAT	
1SG	ég	mig	mér	ABBB
1PL	við	okkur	okkur	ABBB
2PL	þið	ykkur	ykkur	ABBB

These patterns replicate the basic suppletive patterning seen in degree morphology, and thus receive the same account. For the Icelandic first person singular root, we would set up rules of exponence (vocabulary insertion) such as the following:<sup>12</sup>

- (24) a. 1SG → m- / [ \_\_ ] ACC ]  
 b. 1SG → ég (elsewhere)

Following the logic established for degree suppletion, since the oblique cases, by hypothesis, properly contain the accusative (whether in a Caha-style representation or otherwise – see below), the *m-* allomorph will be used in all the non-nominative cases.<sup>13</sup> This approach to suppletion commits us to the view that pronouns are grammatically internally complex; failing to do so (e.g., by listing the various case forms independently as 1SG.DAT → *mér*; 1SG.ACC → *mig*; etc.) would not capture the shared elements among the pronouns, and would not express the patterns of suppletion and syncretism as part of the grammar.

Note that it is not the case that all of Indo-European shares obviously cognate forms. It is not (only) vocabulary items as in (24) that are shared – some of the individual forms have diverged, but the overall pattern remains constant. In addition, some languages have lost a syncretic pattern, while others have innovated – compare the Armenian forms in (25), where there is an ABB pattern in 2SG, to those above also from Indo-European (18), where 2SG is AAA. It

<sup>12</sup>Above, we have been representing case containment in terms of [ [ [ unmarked ] dependent ] oblique ]. Since Icelandic has a nominative - accusative case alignment, the case structure for Icelandic is [[[ nominative ] accusative ] dative ].

<sup>13</sup>David Adger, Andrea Calabrese, and others have raised the question of whether one could treat the nominative as the marked form, and the non-nominative as the elsewhere case, thus accounting for its wider distribution. This depends on the representation of the unmarked case, e.g., whether the nominative is the absence of case, and thus the larger question of whether rules of suppletion may make reference to the absence of features. For degree morphology, the positive form of the adjective is typically the base for derivational morphology, hence that allomorph should be treated as context-free; but because pronouns do not typically participate in morphological derivation, an analogous argument is hard to construct. We maintain here that the featurally unmarked exponent should be the default, and return to the role of markedness in section 4.3.3.

seems then that ABB in Indo-European languages does not stem from an innovation in the set of VI-rules of a single ancestor language, but rather there must be something conspiring to keep ABB wherever there is suppletion.

(25)

Form	NOM	DAT	ABL	LOC	INSTR
1SG	es	inj	inj(a)nic	inj(a)num	inj(a)nov
2SG	du	k'ez	k'ez(a)nic	k'ez(a)num	kez(a)nov
2PL	duk'	jez	jez(a)nic	jez(a)num	jez(a)nov

An illustrative selection of Nakh-Dagestanian interrogative pronouns (Kibrik & Kodzasov 1990) illustrates the same point: an ABB pattern remains generally stable, although the actual absolutive forms vary from language to language. Hunzib and Hinuq patterns are given showing that the ABB patterns may regularize, with either the A form or the B form generalizing. Yet although the ABB pattern is thus not immutable, what does not arise, as far as we can tell, is an ABA pattern.<sup>14</sup>

(26)

	ABS	ERG	DAT	
Archi	k <sup>w</sup> i	Hi-(li)	Ha-s	ABB
Avar	su	hi-d	hi-bé	ABB
Andi	emi-Ril	He-di-Ril	He-j-Ril	ABB
Bezhta	suk'od	to-d	to-l-di	ABB
Hunzib	suk'u	suk'u-l	suk'-u	AAA
Hinuq	tu	tuj	tuz	AAA

Additional ABB patterns are, as indicated above, numerous cross-linguistically. ABB is fairly well attested across our database, with 35 different instances. For instance, in the Georgian 3rd person pronouns, we can see that the forms in the nominative are different from those in the more complex cases, which all share a common element *m(a)*-:

(27)

Form	NOM	ERG	DAT	INSTR
3SG	is	ma-n	ma-sa	m-ita
3PL	isi-n-i / igi-n-i	ma-ta	ma-ta	ma-ta

Itelmen (Khairjuzvo dialect forms are given in (28)) may also provide an example – the 1sg pronoun is regular, but the 2sg pronoun lies in the grey area between suppletion and irregularity. The root alternates between unmarked

<sup>14</sup>The Andi form is an ABB pattern: emi-/LLe is the *wh*-root; -Ril is a suffix that distinguishes, according to the description, 'known' from 'unknown' *wh*-words.

*kəzza* and the root *kn-* in all other cases. The historical phonology of this alternation can be reconstructed on the basis of comparative Chukotko-Kamchatkan evidence, but synchronically, it is difficult to see a motivation for treating this as anything other than suppletion.

(28)

	DIR	LOC	DAT	ABL
1SG	kəmma	kəmma-nk	kəmm-ank-e	kəmma-n-xʔal
2SG	kəzza	kni-nk	kn-ank-e	kna-n-xʔal

Finally, we note that ABC patterns, as with adjectival suppletion, are exceedingly rare, but appear to be attested. A selection of Nakh-Daghestanian 1SG pronouns are given in (29) (from Kibrik & Kodzasov 1990). While the majority of these, like Lezgian above, show a constant formative across the cases (thus constitute AAA patterns), the Khinalugh pronoun appears to be deviant, showing an ABC pattern.

(29)

	ABS	ERG	DAT
Khinalugh	zi	jä	as(ir)
Rutul	zi	za-d	za-s
Tabasaran	izú	izu	izu-s
Chamalal	di:	de:	di-ła

### 3.5 Apparent ABA - Archi 2PL

There is only one potential candidate for an ABA pattern in our sample: the 2PL form in Archi. The following table illustrates the Archi system for first and second person pronouns:

(30)

	ABS	ERG	DAT	OBL
'who'	k <sup>w</sup> i	Hi-	Ha-	–
1SG	zon	za-ri	◆-ez	za-
1PL.EX	nen	nen	◆-el	la-
1PL.IN	nen	nen+◆	◆-el-a-◆-u	la-
2SG	un	un	wa-s	wa-
2PL	ž <sup>w</sup> en	ž <sup>w</sup> en	wiš	ž <sup>w</sup> a-

Before turning to the ABA form, the Archi dative form in (30) deserves additional comment. In a typologically rare pattern (though to some degree attested in related languages), certain Archi pronouns show agreement in gender/noun class with a clausemate absolutive argument. This is indicated as ◆ (for gender



marker) in (29), a prefix that surfaces as {w-, d-, b- or Ø}. See Polinsky et al. (In press) for discussion of this phenomenon.

The potential problem for us comes from the final row of the table. The 2PL form appears to show suppletion in the dative (*wiš*), before apparently reverting to the non-suppletive root for more complex oblique cases. However, if we assume a deeper level of complexity in the pronominal form as highlighted by the segmentation below in (31a), a potential AAA pattern surfaces, where there is a common base across the cases. This analysis is supported in two ways. Firstly, the Archi 1SG forms show a similar pattern (31b) (see also Moskal 2013):

(31) 2ND PLURAL

2ND PLURAL				1ST SINGULAR			
a.	ABS	ž <sup>w</sup>	-en	b.	z	-on	
	ERG	ž <sup>w</sup>	-en		za	-ri	
	GEN	w-	iš	◆-	is		
	DAT	w-	ež	◆-	ez		
	OBL		ž <sup>w</sup> a-		za-		

Furthermore, Nakh-Dagestanian languages consistently show AAA patterns in 2PL. That is, where many of the suppletive patterns we have examined are relatively stable across languages and over time, if the Archi 2PL is ABA, then it is anomalous within its own family:

(32)

	ABS	ERG	DAT	
Avar	muž	muže-L	muže=b=e	
Tsez	meži	mež-a	mež-ur	
Hinuq	meži	meži	mežu-z	
Rutul	we	we-d	we-s	
Tsakhur	šu	šo-sse	šo-s	
Andi	bissil	bissi-di	bissi-j	
Archi	ž <sup>w</sup> en	ž <sup>w</sup> en	wiš	ž <sup>w</sup> a-

Given the evidence, it seems reasonable to treat with some suspicion the notion that Archi 2PL forms constitute an ABA pattern. Of course, more work needs to be done in order to check whether our perspective on the facts truly holds water, but for now, we tentatively suggest that Archi 2PL is not a true ABA case.

To summarize this section, we have shown that within the realm of case suppletion, we find the expected patterns of AAA, ABB, ABC but as expected, we do not find ABA patterns. This supports the view that the grammatical representation of morphological case is based on containment, with more marked

cases obligatorily containing less marked cases. Furthermore, the findings support the proposal that suppletion patterns are sensitive to internal complexity.

### 3.6 AAB: suppletion and syncretism

At this point, we turn to the final pattern of suppletion in our survey, AAB, where suppletion seems to target the ‘third’ case in a pronoun’s paradigm, rather than suppling immediately from the second case onwards. AAB is not attested with degree suppletion, however, as Bobaljik (2012) discusses, AAB contrasts with ABA in that it is a pattern able to be generated by the grammar: separate factors conspire to keep it from arising with degree suppletion. In our survey of case suppletion, we do find cases of AAB. Before turning to the theoretical interest, a clarification is in order regarding the two types of patterns that may be described as AAB. Once more, Nakh-Daghestanian languages provide an array of comparative data, this time from the 2sg pronouns, given in (33):

(33)

	ABS	ERG	DAT	
Aghul	wun	wun	was	{A=A}A
Tsez	mi	mi	deb-er	{A=A}B
Hinuq	me	me	ded-ez	{A=A}B
Archi	un	un	wa-s	{A=A}B
Andi	mín	min	du-j	AAB
Chamalal	mì:	mín	du-ła	AAB
Inxokvari	mó	me	dub-ul	AAB
Khinalugh	vì	va	oX(ir)	AAB
Avar	mun	du-la	du-r	ABB

The Aghul, Tsez, Hinuq, and Archi pronouns show no distinction between the absolutive and ergative pronouns, but the dative is suppletive relative to these. In our view, these are, however, not compelling evidence of an AAB pattern. Instead, these are examples of case syncretism: in the 2sg pronouns in these languages, the contrast between absolutive and ergative is simply neutralized. These may be modelled, for example, via impoverishment, deleting the ergative case feature, so that the unmarked case exponent (absolutive) is used in the ergative context. On such a view, these pronouns show simply a two-way contrast (unmarked/direct case vs. dative), which is an AB pattern, and not really a true instance of AAB.

Similar patterns involving syncretism are seen in various Indo-European languages, for example, we see syncretic AAB in German for the third person non-masculine singulars, and in the third person plural:

(34)

	NOM	ACC	DAT
3.SG.M	er	ihn	ihm
3.SG.F	sie	sie	ihr
3.SG.N	es	es	ihm
3.PL	sie	sie	ihnen

Another syncretic AAB pattern is seen in Kadugli (Krongo, Reh 1985a).

(35)

Form	Case 1	Case 2	Case 3	Case 4	Case 5
1SG	àʔàŋ	àʔàŋ	àʔàŋ	nkàtí	kàtí
2SG	ùʔùŋ	ùʔùŋ	ùʔùŋ	nkòtú	kòtú
1EX	óow	óow	óow	nkòtíg	kòtíg

True AAB patterns never arise with degree morphology, in which the superlative is suppletive, compared to the positive and comparative: (\*good–gooder–best). McFadden (2014) finds additional support for this with non-suppletive stem changes for case in a sample of languages from four families, namely that the only way to produce a (surface) AAB pattern in the languages in his sample is through syncretism of AA cases. The stem alternations McFadden discusses consistently distinguish the unmarked (nominative) from all other cases, with the sole exceptions being instances where the nominative and accusative are syncretic, seen in Latin below:

(36)

	NOM	ACC	PART/GEN	INESS/DAT	Gloss	Type
Finnish	ihmi-nen	ihmi-se-n	ihmi-s-tä	ihmi-se-ssä	‘person’	AAA
Latin	it-er	it-er	itiner-is	itiner-ī	‘journey’	{A=A}B
Icelandic	mað-ur	mann-Ø	mann-s	mann-i	‘man’	ABB
Tamil	maram	maratt-ai	maratt-Ø	maratt-ukku	‘tree’	ABB

It would seem, if all AAB patterns were this way (i.e. involving full syncretism of the first two cases), then suppletion is triggered by a marked case. However, if we return to Nakh-Daghestanian, we see that in Andi, Chamalal, Inxokvari, and Khinalugh, whilst the forms of the absolutive and ergative cases are very similar, they are not fully syncretic. There is an irregularity in the ergative case that is not present in the absolutive. If the cases were syncretic, then (by definition) there should be no difference between the two of them, as there would be no distinct case feature for the irregular rule to target in order to make them distinct. These are then clearly AAB cases distinct from the {A=A}B cases, and we cannot maintain a view whereby suppletion happens only for a marked case.

(37)

	ABS	ERG	DAT	
Andi	mín	min	du-j	AAB
Chamalal	mì:	mín	du-ła	AAB
Inxokvari	mó	me	dub-ul	AAB
Khinalugh	vi	va	oX(ir)	AAB
Avar	mun	du-la	du-r	ABB

Another case of AAB without syncretism among the first two cases comes from Wardaman (38). Here, we can see that the difference between the first two cases is not reflected by means of an irregularity in the form, but by the presence of a case suffix in the ergative form, that is not present in the absolutive.

(38)

Form	ABS	ERG	DAT
3SG	narnaj	narnaj-(j)i	gunga
3PL	narnaj-bulu	narnaj-bulu-yi	wurrugu

We must therefore conclude that genuine AAB patterns are attested, and ask why pronominal suppletion is different in this way from adjectival suppletion. There are two possibilities, and we are unable to adjudicate between them on the evidence available to us.

One possibility, pursued in Smith et al. (2015), is that case categories are indeed internally complex, but containment is represented as a complex feature bundle, and not the hierarchical case containment of (19) or Caha (2009). We could therefore assume the case features to be represented as follows (the labels for case features, and the question of whether the unmarked case has any features are not important for the general point):

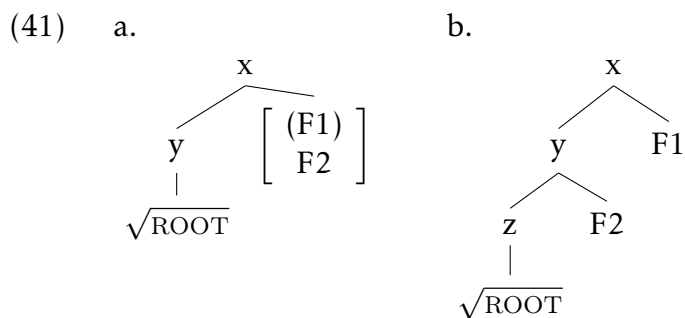
(39)

[NOM]	$\begin{bmatrix} \text{NOM} \\ \text{ACC} \end{bmatrix}$	$\begin{bmatrix} \text{NOM} \\ \text{ACC} \\ \text{DAT} \end{bmatrix}$	$\begin{bmatrix} \text{NOM} \\ \text{ACC} \\ \text{DAT} \\ \text{LOC} \end{bmatrix}$
-------	--	--	--

Since each case contains (the features of) all the cases to its left on the hierarchy, the \*ABA prediction is maintained. The rules of exponence for the Icelandic 1SG in (24) will have the same effect relative to these representations as they do relative to (19) – the accusative is contained in the obliques (dative) and therefore an ABB pattern, not an ABA pattern, will arise. Similarly, with appropriate changes in case feature labels for an ergative system, the Wardaman pattern can be readily characterized:

- (40) a.  $3 \rightarrow \text{wurrugu} / \_ \left[ \begin{array}{c} \text{ABS} \\ \text{ERG} \\ \text{DAT} \\ \text{-SINGULAR} \end{array} \right]$
- b.  $3 \rightarrow \text{gunga} / \_ \left[ \begin{array}{c} \text{ABS} \\ \text{ERG} \\ \text{DAT} \end{array} \right]$
- c.  $\left[ \begin{array}{c} \text{ABS} \\ \text{ERG} \end{array} \right] \rightarrow \text{-yi/-ji}$
- d.  $\text{ABS} \rightarrow \emptyset$
- e.  $[\text{-SINGULAR}] \rightarrow \text{-bulu}$
- f.  $3 \rightarrow \text{narnaj}$  (elsewhere)

Representing complex cases as involving featural, but not structural, complexity would allow the difference between adjectival suppletion (AAB unattested) and case suppletion (AAB attested) to be treated as a difference in locality, following the logic set out in (Bobaljik 2012, 158-163). Bobaljik notes that both of the structures in (41) will exclude the \*ABA pattern, but that at the same time, if there is a condition of structural adjacency on suppletion (such that the trigger for suppletion must be on the node adjacent to the root), then root allomorphy conditioned by F1 will be possible in (41a) but not in (41b). In the latter, the more marked feature (F1) is not sufficiently local to the root to govern suppletion, since it is not adjacent.



Root Allomorphy conditioned by F1 ? a - yes, b - no

While this may seem to be a simple approach to the difference between case and degree morphology, it relies on the assumption that structural adjacency is a condition on suppletion. There is however, emerging evidence, to which we now turn, that such a condition is too strict, and that there are some structures like (41b) in which F1 may condition root allomorphy.

### 3.7 Adjacency as a restrictor on allomorphy?

Of particular relevance in the present study are the third person pronominal paradigms in Khakas and Tamil. In Khakas, we see that the pronouns are suppletive in the singular: the base changes from *ol* in the nominative case to *an* in other cases. However, in the plural forms, the base is uniformly *ol*.

(42) Khakas

	SG	PL
NOM	ol	olar
ACC	ani	olarni
DAT	aɣaa	olarya
LOC	ande	olarda
LAT	aniŋzar	olarzar
ABL	anəŋ	olardaŋ / olarnaŋ

Ostensibly, the suppletive base is blocked from arising in the plural forms because the plural suffix *-lar* linearly (and structurally) intervenes between the base and the case suffix. An approach that assumes that allomorphic relations can only be established between elements that are hierarchically adjacent (or linearly adjacent, see Embick 2010) can easily capture this blocking.

However, consider further the first and second person pronouns in Tamil:<sup>15</sup>

(43) Tamil

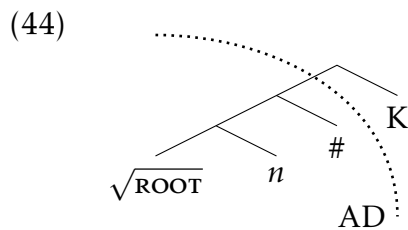
1PERS	SG	PL	2PERS	SG	PL
NOM	naan	naan-ga(!)	NOM	nii	nii-nga(!)
OBL	en	en-ga(!)	OBL	on	on-ga(!)
DAT	en-akku	en-gaḷ-ukku	DAT	on-akku	on-gaḷ-ukku

Here we see suppletion for case across the plural morpheme *ga(l)*. In the plural form, the dative case morpheme *-ukku* lies outside the number morpheme, and hence is neither linearly nor structurally adjacent. The fact that there is still suppletion in this configuration shows that adjacency cannot be a universal restrictor on allomorphy. Instead, it appears that the theory of locality will need to appeal to domains: in structures like (41b), F1 may sometimes condition root allomorphy despite the intervening morpheme. The statement of

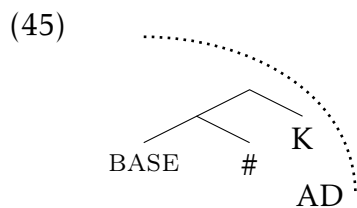
<sup>15</sup>The relevance of these forms were originally pointed out by an anonymous reviewer of Bobaljik (2012). Andrea Calabrese, in work in progress, offers an alternative characterization in which *on-*, respectively, *en-* are the underlying forms of the pronominal bases and in which no suppletion is involved. Rather, the nominative forms involve an augmentation of the base (compare our treatment of Archi, above).

locality will be of the general form: a morpheme  $\mu$  may trigger suppletion of a root  $\mathfrak{R}$  only if no domain boundary intervenes between  $\mu$  and  $\mathfrak{R}$ . There are a variety of theories with this character in the current literature, with competing proposals on how domains (and thus domain boundaries) are defined. As long as the comparative node in (7), but not the number node in Tamil pronouns, serves to delineate a domain boundary, the correct distinction will be drawn in the distribution of AAB patterns. Although we do not aim to adjudicate among competing theories on this point (see Moskal 2015a for a review), we offer a few relevant observations about how the data here bears on competing approaches.

One approach which may draw the right cut between adjectives (no AAB for comparison) and pronouns (AAB for case), at least to a first approximation, is that developed in Moskal (2015a,b). Moskal argues for a dynamic definition of cyclic heads (see Bobaljik & Wurmbrand 2005), and parasitic on this, a definition of an *accessibility domain* (AD): following Marantz (2000, 2007) and others, she proposes that the functional heads that categorize roots are potentially cyclic, but define a cyclic domain only if they constitute the highest in a particular sequence of projections. The accessibility domain for a root consists of the heads that have been merged into the derivation when the cycle containing that root is fixed – thus, the AD for a root will contain the first category-defining node above the root, and one node above that (since that node determines that the potentially cyclic category node is in fact the cyclic node). This is illustrated for a noun in (44).

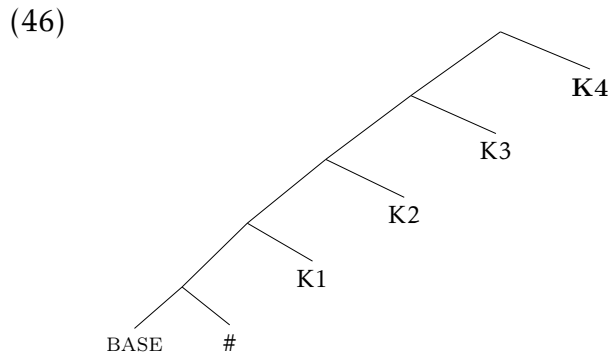


Moskal argues that for lexical nouns, this has the effect that case information is too far away from the root in order to factor into allomorphy (of the root). Pronouns on the other hand are deficient; Moskal argues that they lack category defining nodes, and so there is no domain created low in the structure that contains just the pronominal root or base. Thus, case information is accessible to the base, and suppletion for case is possible in pronouns.



This same approach, which defines a larger accessibility domain in pronouns than in nouns, may be brought to bear to exclude AAB patterns in adjectives, if adjectives, like nouns, have a category defining node (*a*) between the root and the comparative affix. Just as K will be too far away from the root to trigger root suppletion in (44), so will the superlative head be too far away to trigger root suppletion in adjectives, while AAB patterns in pronouns will be permitted, as there is no internal domain in pronominals.<sup>16</sup>

Under Moskal’s approach, positing an articulated structure for case (multiple K heads) would not change the fundamental asymmetry between nouns and pronouns. All the K heads would be outside the domain of a noun in (44), and unable to condition root suppletion, while in pronouns, since there is no domain delimiter in (46), all case information will be accessible to the pronominal base.



We may then maintain the structural containment view of case, motivated

<sup>16</sup>The apparent ‘blocking’ effect seen in Khakas is not a locality effect under this approach and must be stated in the vocabulary insertion rules of that language. Moskal & Smith (2016) propose that it is the non-nominative singular forms that are suppletive, and are picked out by VI rule in (ia) that makes reference to both number and case. All other forms (nominative singular and all plural forms) use the elsewhere form of the base, determined by the elsewhere rule in (ib):

- i a. [3] ⇔ an / \_ ] SG ] K ]
- b. [3] ⇔ ol

Alternatively, one may simply state in the rule itself that the Khakas non-nominative form requires adjacency to K (as in (iia)) as opposed to the Tamil oblique allomorph, which requires only (domain-local) c-command, but not adjacency (iib). If singular number is pruned or otherwise not present in the structure at the point of vocabulary insertion, the rules in (ii) will distinguish the two types of system.

- ii a. [3] ⇔ an / \_ ] K ]
- b. [2] ⇔ on / \_ ] ... ] K

Since the blocking effects are not immediately relevant to our purposes, we refer the reader to Moskal & Smith (2016) for further discussion.



by Caha (2009). This also obviates problems when there is overt containment of cases, as well as keeping a strict parallel between case and adjectival suppletion.<sup>17</sup> If structural adjacency is not a universal condition on suppletion, then it becomes possible to maintain the structural representation of containment in (19). Case and degree may have analogous structural representations, but the difference would then have to lie in whether or not there is a locality domain.

In sum, the fact that genuine AAB patterns are found for case is not surprising, given the different options for capturing them that we have outlined in this section. One possibility is that containment of case can be represented as involving complex features on a single node, however this means giving up on the strict parallel between case and degree suppletion. Such a strict parallel can be maintained by representing case containment over distinct K projections, coupled with an independently necessary relaxation of adjacency requirements in allomorphic relations. Crucially however, the logic of containment coupled with the Elsewhere Condition continues to rule out ABA patterns.

### **3.8 Summary**

In this section we have seen evidence for two major claims. Firstly, the patterns from suppletion lend support to the proposal made in various places that morphological case is complex, with more complex cases containing their less complex counterparts. Thus, at least to a first approximation, our findings are mostly in accordance with the proposals put forward in Caha (2009) that the case hierarchy is formally represented in the grammar. However, we have left open the precise nature of that representation, in particular, whether it involves structural or featural containment. The second finding of our study is that it appears as though we can generalize the model in Bobaljik (2012) for capturing possible suppletion patterns to an independent empirical domain. In a survey of 160 languages, we find more than 50 distinct suppletive patterns, for which the distribution is as predicted by applying the logic of Bobaljik (2012) to complex case categories.

---

<sup>17</sup> It should be noted that adopting this view of case containment may yet turn out to be inconsistent with the view of locality advocated for in Moskal (2015a). There, she argues that a small number of instances of case suppletion in lexical nouns results from the absence of a number node, which brings case into the Accessibility Domain of the root. However, adopting the structural containment of case means that in the ‘one-node-above-cyclic-nodes’ approach that Moskal gives, case suppletion in lexical nouns is unable to be stated, since the only node able to be targeted would be K1, and hence there would be no way to distinguish K1 from K2. A similar set of questions is raised if Number is split, as we suggest below, or if there are other functional elements in the nominal spine.

## 4 Number driven suppletion in personal pronouns

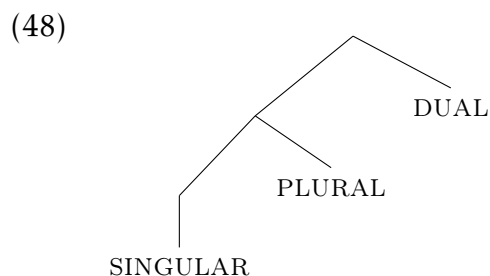
With the facts from case in mind, we now turn our attention to number. Given that we are looking to see whether suppletion can ever revert to a default form as the category becomes more complex, simply looking at the familiar cases of singular-plural number suppletion like *person* – *people* will not suffice. Therefore, we must look at languages which have at least a three-way number distinction, for instances languages which have a dual in addition to singular and plural.

### 4.1 Complex number

As with case, we take statements of typological markedness as our starting point. For number, the relevant observation is the following:

- (47) No language has a dual unless it has a plural. (from Universal 34, Greenberg 1963, Corbett 2000)

Postponing for the moment a more refined understanding of the categories involved, we might assume, as we did for case, that the markedness hierarchy is reflected as structural containment, as in (48):



Similarly, when looking for direct evidence of containment in the overt morphology, we find examples that are straightforwardly consistent with (48), i.e., in which the form for the dual transparently contains the form for the plural.<sup>18</sup> An example is seen in Manam (Lichtenberk 1983), where we can see the plural morpheme *-di* is also contained in the dual form, which is formed from the plural form with the addition of a linker morpheme and the dual suffix *-ru*.

<sup>18</sup>In fact the opposite is also attested, with the plural apparently containing the dual. For expository reasons, we hold that in abeyance for the moment, returning to such evidence in section 4.3.

- (49) a. áine ŋára      b. áine ŋára-di      c. áine ŋara-dí-a-ru  
          woman that-SG      woman that-PL      woman that-PL-LINKER-DL  
          ‘that woman’      ‘those women’      ‘those two women’

Furthermore, looking at systems that are three-way-contrastive for number, other than for singular – plural – dual, we again find containment patterns. For instance, Warrwa has having a minimal – unit augmented – augmented system (McGregor 1994), and here we see that the unit augmented form is built on the (suppletive) augmented form:

- (50) Warrwa pronominals

	MINIMAL	AUGMENTED	UNIT-AUGMENTED
1EXCL	ngayu	yaarra, yarrin	yaarra-wili, yarrin-bili
1INCL	yawu		yadirr, yarru
2	juwa	kurra	kurra-wili, kurrawa-wili
3	kinya	yirra	yirra-wili

As before, the structure in (48) leads us to expect that ABB patterns should be possible, but \*ABA should be unattested. Whether ABC and, more interestingly, AAB patterns should exist depends on the additional questions of locality, and whether number containment is represented as structural containment, as in (48), or featural containment, as in (41), topics we return to as we refine the discussion below.

## 4.2 Number suppletion

For pronominal number suppletion we looked at an initial sample of 80 languages, which was supplemented with information from the extensive database compiled by Norval Smith.<sup>19</sup> We also utilised the suppletion database at the Surrey Morphology Group.<sup>20</sup> Few languages had three values for number and suppletion. Among those that do, the following table summarizes our results, where in the triplet XYZ, X = singular, Y = plural/augmented, and Z = dual/unit-augmented. We find ABB and (rarely) ABC patterns, but both ABA and AAB are unattested.

<sup>19</sup><http://languagelink.let.uu.nl/fpps/>

<sup>20</sup><http://www.smg.surrey.ac.uk/suppletion/>

(51)

Pattern	Prediction	<i>n</i> attested	Representative languages
AAA	✓	numerous	Mapuche, Dumi
ABB	✓	37	Kayardild, Kham, Jingulu
ABC	✓	13	Yimas, Flinders Island
ABA	✗	–	n/a
AAB	?	–	n/a

The first thing of note about the attested patterns is that all the attested patterns, and crucially also the unattested patterns, are in accordance with Bobaljik’s findings regarding degree suppletion. That is, we find examples where the base remains constant, cases where the base suppletes once, but the dual and plural share a common base (ABB), and further cases where the base suppletes twice and the singular, plural and dual all have different bases (ABC). What we do not find in our sample are any instances of ABA suppletion, and interestingly, no cases of AAB suppletion (at least in pronouns, though AAB suppletion is found in lexical nouns, which we discuss below).

The absence of both patterns points, as above, to the conclusion that the distribution of suppletion is not random, but follows consistent patterns across languages and domains. The absence of ABA patterns in particular reinforces our contention that features are hierarchically structured, even within small functional categories like pronouns. Before turning to some complications, we present a quick overview of our empirical findings.

#### 4.2.1 AAA, ABB, etc

There is, of course, no requirement that pronouns show suppletion for number, thus AAA patterns are well attested. Mapuche (Smeets 2008) and Samoan (Smith 2011) serve to illustrate:<sup>21</sup>

(52) Mapuche

	SINGULAR	PLURAL	DUAL
1	iñché	iñchiñ	iñchiu
2	eymi	eymün	eymu
3	fey	feyengún	feyengu

(53) Samoan

	SINGULAR	PLURAL	DUAL
2	'oe	'outou	'oulua
3	ia	'ilatou	'ila'ua

<sup>21</sup>We also note that Mapuche builds the plural from the dual, not vice versa.

Where suppletion is attested, by far the most common pattern is ABB, where the plural form and the dual form share a suppletive base that is different from the base of the singular. We illustrate with examples from Kayardild, (54) from Evans (1995), and Kham, (55) Watters (2002):

(54) Kayardild

	SG	PL	DL
2	nyinka	kilda	kirra
3	niya	bilda	birra

(55) Kham

	SG	PL	DL
1	ŋa:	ge:	gin
2	n̄:	je:	j̄in
3	no:	no:-rə	no:ni

In both Kham and Kayardild, we can see that both the dual and the plural forms are suppletive with respect to the corresponding singular forms of the pronouns. However, both appear to decompose straightforwardly into a non-singular person formative: second person *ki*, third person *bi*, and an element that reflects number.

ABB is also seen in Gothic second person pronouns (Smith 2011).

(56) Gothic

	SG	PL	DL
2	þu, þuk	jus, izwis	jut, igqis

Turning to ABC patterns, there are various candidates found in our sample. Firstly, in Kham, while the personal pronouns provide ABB patterns as just noted, the possessive and reflexive pronouns constitute ABC patterns as in (57):<sup>22</sup>

(57)

	SINGULAR	PLURAL	DUAL
3 POSS	o-/u-	ya-	ni-
3 REFL	ol	ya:	ni:

Next, in Jehai (Austro-Asiatic) second and third person pronouns show and ABC pattern:<sup>23</sup>

<sup>22</sup>Thanks to Kenyan Branon for pointing these out to us.

<sup>23</sup>The neutralization of a 2 vs. 3 person contrast in the plural suggests that only one of these is properly considered an ABC pattern.

(58) Jehai

	SG	PL	DL
2	miʔ, moʔ, paj	gin	jih
3	ʔoʔ	gin	wih

Third person pronouns in some Pama-Nyungan languages show an ABC pattern (these are presumably cognate, so count as one data point) :

(59) Pama-Nyungan ABC

	SG	PL	DL	
3	ɲayi	ya:na	palay	Jarnango
3	njulu	djana	bula	Kuk-Yalanji
3	ɲulu	yada	wula	Flinders Island

Away from Pama-Nyungan, we also see an apparent ABC pattern in Bukiyip second person:

(60) Bukyip

	SG	PL	DL
2	nyak	ipak	bwiepú

In our survey of patterns of pronominal suppletion for number, AAA, ABB, and ABC were the only patterns we found. We did not find any clear ABA patterns, confirming the basic prediction of a structural approach to suppletion. For the sake of completeness, we note that in our survey only two languages, clearly related, present a candidate for an ABA pattern, Nyamal and Wajarri. The Wajarri pronoun data are given below, with the pronouns of interest coming from the third person:<sup>24</sup>

(61)

	SINGULAR	PLURAL	DUAL
1.EXCL	ngatja	nganju	nganju
1.INCL	–	ngantju	ngalltja
2	njinta	njurra	njupali
3	palu(-tja)	tjana	pula(-tja)

In the table, it seems as though the plural form is suppletive relative to the dual and singular forms. However, it is not clear that it is accurate to consider the third person forms as constituting a single pronominal paradigm. Dixon

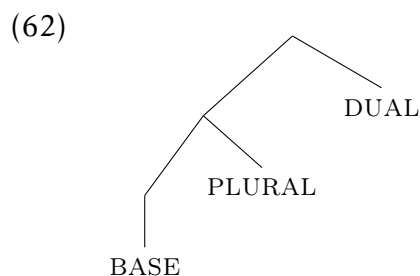
<sup>24</sup>As they are cognate languages and geographically close to one another, we will assume that the explanation give for Wajarri is the same for Nyamal.

(1989) notes that “it is not uncommon for Australian languages to have forms that can be recognised as 3DL and 3PL pronouns, but nothing that could properly be called 3.SG”. Instead, this function is often taken up by determiners. In Wajarri, the 3SG form bears a striking resemblance to the positional pronoun *pala*, for which Douglas (1981) gives the gloss ‘that mid-distant person or thing.’ In addition, Douglas notes that the forms *palu* and *pula* “refer to 3rd person singular and dual (respectively) within the local group. To refer to a third person (singular) outside the group *palutja* is used. To refer to third person dual outside the group *pulatja* is used.” That the non-plural forms are subject to changes in location of the referent, but the plural form is not, suggests that the non-plural forms are part of the demonstrative paradigm and that it is inaccurate to represent all three numbers as (suppletive) forms of a single pronoun.

We also did not find any AAB patterns, which is consistent with our basic architecture, though not dispositive of one or another of various structures. The existence of ABC patterns in the absence of AAB patterns is directly reminiscent of the adjectival patterns considered in Bobaljik (2012) (but against the findings from pronominal suppletion for case in the previous section). However, for reasons that will become clear in the next section, we will not push that similarly further.

### 4.3 Number: beyond the basics

The data from pronouns as presented are clearly in support of an analysis where the representation of the dual contains that of the plural, as we discussed above in (48):



At this point, three related issues arise. First, our labels `PLURAL` and `DUAL` do not do justice to the significant literature on the semantics of number, and our proposed structure should receive further scrutiny from that perspective. Second, although we provided the Manam example in (49) as transparent support of (48), we noted there that the opposite pattern is also attested (footnote 18). Third, and most pressingly, in the course of our investigation of pronouns, we found sporadic examples of suppletion for number in nouns which appear to

show the opposite pattern with plural the odd one out, and dual and singular sharing a stem. The four examples we have found are given below. According to (48), this would constitute an ABA pattern.

(63)

Language	SINGULAR	DUAL	PLURAL	Gloss
Hopi	wùuti	wùutit	momoyam	‘woman’
Lavukaleve	vo’vou	vo’voul	tulav	‘boy’
Yimas	panmal	panmalc-rm	pay-um	‘man’
Slovenian	člóvek	člóvek-a	ljudj-e	‘person’

We suggest that the three issues just raised are interrelated, and that a more sophisticated representation of number than that in (48) allows sufficient flexibility to describe the attested patterns, while still providing the means to exclude the unattested patterns under the general containment logic that unifies the various domains we have investigated. We approach the argument in steps, noting that there are various ways to cash out the ideas presented here, and we present only one as a demonstration that it is possible to do so.

#### 4.3.1 Representing number

Our naive approach to number does apparently capture the facts of pronominal suppletion, however it is worth considering number in more detail since the naive approach does not match up as well with established theories of number in natural language. Work that looks into the representation of number, and how it relates to *plural*, *dual* etc., such as Noyer (1992), Harbour (2007, 2011) a.o. has converged on the idea that number is complex: not made up of privative features that correspond to *plural* or *dual*, but rather composed of the features [ $\pm$ singular] and [ $\pm$ augmented]. Harbour (2014) in particular shows that a feature system that is based on [ $\pm$ singular] and [ $\pm$ augmented] generates only the attested values of number found across natural languages, whereas an approach such as the one above would overgenerate, being essentially open ended, allowing for distinctions above *trial*, which are not attested.<sup>25</sup> The features [ $\pm$ singular] and [ $\pm$ augmented] are semantically defined as follows in (64).

- (64) a. [ $+$ singular] =  $\lambda x[\text{atom}(x)]$   
 b. [ $+$ augmented] =  $\lambda P . \lambda x: P(x) . \exists y [P(y) \wedge y \sqsubset x]$

<sup>25</sup>We refer the reader to Harbour (2014) for discussion. In essence, [ $+$ singular] has its intuitive value of a quantity of X’s for which no subpart is an X (true of singulars, but not true of plurals), where [ $+$ augmented] is true only when the quantity is more than the minimum needed to satisfy the denotation of the predicate.



The semantics of number is not our focus here, so for a more in depth discussion of these features and how they relate to the wider typology of number, we refer the reader to the cited works and references therein. What is important here is how these features combine to produce the number values of singular, dual and plural. All three are formed by a combination of these features (note that the fourth combination [+singular, +augmented] is semantically incoherent):

- (65) a. singular = [+singular,-augmented]  
 b. dual = [-singular,-augmented]  
 c. plural = [-singular,+augmented]

Returning to the issue under discussion, a first glance at the feature values reveals mixed success with dealing with the suppletion facts. Recall that from suppletion, we always find that in pronouns dual patterns with plural, but never with singular. This can be captured using the [ $\pm$ singular] and [ $\pm$ augmented] system, if we suppose that suppletion in these forms is sensitive to [-singular], thus grouping the dual and plural together to the exclusion of the singular. The following VI-rules, expressing the pattern of Kayardild in (54) above, demonstrate the point:

- (66) a. [2] → ki / \_\_\_ ] -SG ]  
 b. [3] → bi / \_\_\_ ] -SG ]  
 c. [2] → nying  
 d. [3] → ni  
 e. [1] → nga  
 f. [-SG, -AU] → -rr  
 g. [-SG, +AU] → -l  
 h. [NOM] → -a

Despite this success, an approach based on Harbour's representation of number overgenerates. With the complex binary features at a single Number head, we would be able to describe any pattern of suppletion, attested or unattested. The rules in (67) and (68) would allow, respectively, for the plural to be suppletive on its own, or the dual to be suppletive on its own. Neither pattern is attested in our survey.

- (67) a. *plural alone suppletive*  
 X → Y / \_ [+augmented]  
 b. X → Z (elsewhere)
- (68) a. *dual alone suppletive*  
 X → Y / \_ [-singular, -augmented]

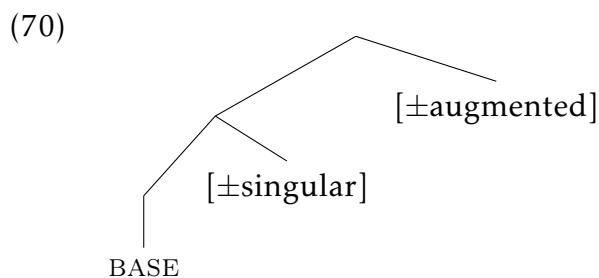
b.  $X \rightarrow Z$  (elsewhere)

In addition, Harbour’s representation offers no clear connection to overt morphological containment relations, as seen in Manam (49) and other languages.

Nevertheless, one could alter Harbour’s theory minimally, in order to represent the containment relations among numbers. Thus, in light of the facts from pronominal number suppletion, if we want to maintain the ([±singular], [±augmented]) approach to number, we seemingly need to supplement the theory with containment, as formulated below:

- (69) Number containment hypothesis  
 [±augmented] always contains [±singular].

There are a number of ways that (69) could be implemented. For example, like with degree morphology, we could assume that (69) is structural in nature. That is, the functional head NumP is in fact more articulated than is usually assumed, and that each of the features [±singular] and [±augmented] constitutes a head in its own right, as in (70):



Note that because of the way that Harbour sets up the semantics of the features, [±singular] must compose with the pronominal base before [±augmented] does (Harbour 2014, 206) – composing [±singular] after [±augmented] would be either vacuous or uninterpretable. More so than with case, it is therefore not implausible to think of (70) as a consequence of the Complexity Condition that, by hypothesis, motivates the containment structure in degree morphology. That is, it could well be the case that learners are forced to posit a structure like (70) for languages with a singular-plural(-dual) contrast, by virtue of there being too much information stored on a single head.<sup>26</sup>

<sup>26</sup>It should be borne in mind that we are not making the claim that this is the universal structure of NumP. Harbour (2014) shows that there are languages that do not make use of the feature [±singular], and only use [±augmented] (languages which only make a minimal-augmented contrast for instance). Other features, and combinations are attested, see Harbour (2014) for discussion.

Harbour (2007) argues against distributing the features across nodes on the basis of adjectival suppletion in Kiowa. However, that argument relies on the assumption that the trigger for suppletion must be strictly adjacent (structurally and linearly) to the target, an assumption that we have argued above is unsupported. In addition, Harbour's observation is that Kiowa adjectival suppletive patterns group the dual with the plural, or group the dual with the singular, but never treat the dual alone as against the singular and plural together. Harbour observes that the attested groupings contrast in a single feature: [+] vs. [-] singular, or [+] vs. [-] augmented, but while the unattested contrast requires a more complex notation, nothing in the theory prevents its description even internal to Harbour's assumptions about locality. We accordingly see no principled reason not to split the number features in order to represent containment relations.

The revised structure in (70) has many of the properties that our naive structure had. Among other properties, it faithfully encodes the content of Greenberg's Universal 34 (47) – the contrast between dual and plural ([±augmented]) is a subdivision of the non-singulars, thus, a language must first divide the space into singular vs. non-singular in order to make further subdivisions. But does (70) satisfy the containment hypothesis? The answer is a qualified yes, where the qualifications provide just enough flexibility to address the issues raised at the top of this section.

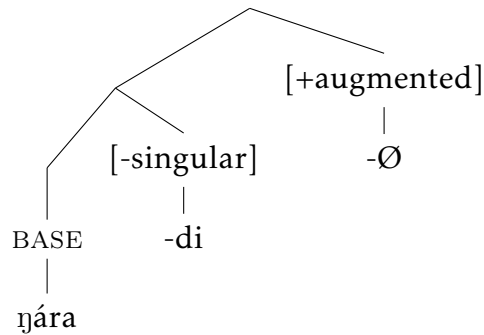
### 4.3.2 Containment and Markedness

Recall from above that Manam was characterized as building the dual from the plural:

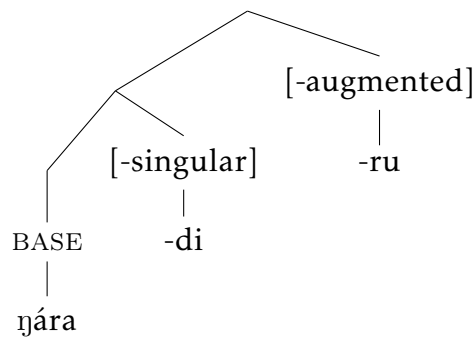
- (49) a. áine ŋára            b. áine ŋára-**di**        c. áine ŋ**ara-dí-a-ru**  
           woman that-SG        woman that-PL        woman that-PL-LINKER-DL  
           'that woman'            'those women'        'those two women'

With reference to the structure in (70), we now understand the containment relation somewhat differently. Manam *-di* is not the plural affix, but is the exponent of [-singular] (see also Nevins 2011), a node that is shared by both the plural and the dual. However, of the two values of [±augmented], only one ([-augmented]) is characterized by an overt exponent, as shown in (71). It is not true, strictly speaking, that the representation of the dual contains that of the plural in Manam. Rather, the dual (and the plural) contain [-singular]. But because the plural has no overt exponent of [+augmented], the form of the plural coincides with the unmarked [-singular].

(71) a. Manam plural



b. Manam dual



From this perspective, it should come as no surprise that it is possible to preserve the same syntactic (and thus semantic) representations of the dual and plural, but to vary the phonological markedness relations (overt vs. null) of the exponents of [ $\pm$ augmented]. A language in which [+augmented], rather than [-augmented] is the sole overtly signalled exponent of that node would then have an apparent containment pattern that is the reverse of Manam. Indeed, this is what is found.

Corbett (2000) and Harbour (2014) have noted that, in the realm of overt containment relations, sometimes the dual appears to contain the plural, but sometimes the plural appears to contain the dual. Harbour (2014) for example provides striking minimal contrasts from related languages (some of which have more than a three-way number distinction). Sursurunga and Mokilese emphatic pronouns both show a range of number contrasts, but they differ regarding which of the non-singulars is unmarked; in Sursurunga, the plural serves as the base for the other non-singulars (like Manam), but in Mokilese, it is the dual that serves this function.<sup>27</sup>

(72) Sursurunga

<sup>27</sup>Examples are presented with Harbour's segmentation and analysis.

	SG	PL	DL	PCL	GR.PCL
1IN		git	git-ar	git-tul	git-hat
1EX	iau	gim	gi-ur	gim-tul	gim-hat
2	iáu	gam	ga-ur	gam-tul	gam-hat
3	-i/on/ái	di	di-ar	di-tul	di-hat

## (73) Mokilese

	SG	PL	DL	GR. PCL
1IN		kisa-i	kisa	kihs (kisa- <sup>i</sup> )
1EX	ngoah	kama-i	kama	kimi (kama- <sup>i</sup> )
2	koah	kamwa-i	kamwa	kimwi (kamwa- <sup>i</sup> )
3	ih	ara-i/ira-i	ara/ira	ihr (ara/ira- <sup>i</sup> )

The pattern of apparently forming plurals from duals is also found outside of Austronesian, for example in the Pama-Nyungna language Panytyima, where the plural form appears to come from the dual, with the addition of *-kuru*.

## (74) Panytyima

	SG	PL	DL
1EXCL	ŋatha	ŋaliyakuru	ŋaliya
1INCL	ŋatha	ŋalikuru	ŋali
2	njinta	nhupalukuru	nhupalu

Under our proposal, we do not need to posit that dual contains plural in some languages, with the opposite relation in others: the structure underlying these patterns in our view is always (70), with the cross-linguistic variation lying in which of value of  $[\pm\text{augmented}]$  receives an overt exponent.<sup>28</sup> Our interpretation of Harbour's structures, allowing for variation in morphological markedness of the  $[\pm\text{augmented}]$  node, provides a succinct characterization of this variation, while maintaining as invariant the structural representation of Greenberg's Universal 34.

## 4.3.3 Suppletion, Markedness and \*ABA

We are now in a position to return to Hopi, one of the four languages identified in (63) as having suppletive patterns in nominals where the plural, rather

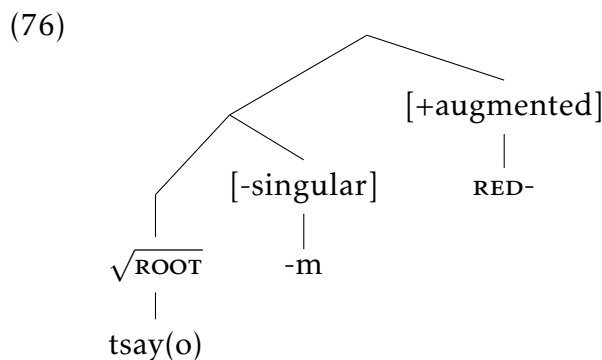
<sup>28</sup>In Lavukaleve, it appears that there is language-internal variation on this point  $[-\text{augmented}]$  is the marked value in pronouns, such that descriptively, dual forms are built from plurals, while in nouns,  $[\text{+augmented}]$  is the marked value, such that plural forms appear to be built on duals.

than the expected dual, behaves as the most marked form (as in (63)). It turns out that the markedness ‘reversal’ in the suppletive patterning coincides with markedness evidence from containment relations, to the (limited) extent that those are transparent in the language. In some Hopi nominals, the dual and plural are formed by suffixes, *-t* and *-m*, respectively. One class of nominals (including some deadjectival forms) mark the dual with one of these suffixes, and the plural with the dual form plus reduplication. In these nominals, including the forms for ‘donkey’ and ‘child’ in (75), the form of the plural apparently contains the form with the dual suffix, the reverse of Manam.

(75)

	SINGULAR	DUAL	PLURAL
‘person’	sino	sino-t	sino-m
‘donkey’	mooro	mooro-t	moo-moro-t
‘child’	tsay	tsaayo-m	ttaa-tsayo-m

On the view we are considering here, the Hopi word for ‘child’ would have the structure in (76). Abstracting away from the prefixal nature of reduplication (not represented in the tree), this is precisely analogous to Manam (71), except that [+augmented] is the marked value for non-singular, rather than [-augmented].



The vast majority of suppletive patterns that we have seen for number involve ABB patterns, which are succinctly described as being conditioned by [-singular], the feature that is shared by dual and plural. But since we have now rejected adjacency as a condition on allomorphy, we may describe the suppletion in the root for ‘woman’ in (63) as conditioned by the feature [+augmented], the feature that uniquely characterizes plural, correctly characterizing the observed pattern. Of course, this raises the spectre of the overgeneration issue that we identified above. Why could Hopi not just as easily have had a suppletive root triggered by [-augmented]?

We posit that the answer to this question lies in what are possible triggers of suppletion. Here we follow the suggestion of Moskal (2014), who proposes

that there are restrictions concerning markedness on which features can govern suppletion. On the basis of a survey into suppletion patterns found in the inclusive/exclusive distinction in first person pronouns, Moskal concludes that it can be the case that either marked features, or both unmarked and marked features can govern suppletion, but crucially that unmarked features alone are not able to govern suppletion (building on work by Calabrese 2005, Nevins 2010 in phonology). For the clusivity distinction, this means that possible suppletive forms are where the inclusive form is suppletive, compared to the 1SG pronoun, or both the inclusive and exclusive pronoun are suppletive. Impossible is a language where the inclusive pronoun is non-suppletive but the exclusive is. We briefly demonstrate these below:

- (77) Paraguayan Guaraní (suppletion for both inclusive and exclusive)

	SINGULAR	PLURAL
1	še	
1.EXCL		ore
1.INCL		yane

- (78) Evenki (suppletion for only the inclusive)

	SINGULAR	PLURAL
1	bi	
1.EXCL		bu
1.INCL		mit

In the case of number, we have argued on the basis of the overt morphology, independent of suppletion, that languages vary in which value of [ $\pm$ augmented] is marked in the context of [-singular]. In languages that (descriptively) build duals from plurals (like Manam and Sursurunga), [-augmented] is marked in the context of [-singular] (cf. Nevins 2011). Conversely, in languages like Mokilese and Panytyima, it is [+augmented] that is marked, yielding the appearance that plurals are built from duals. Now recall that Hopi, unlike Manam, shows transparent evidence from overt containment morphology (75) that the plural (not the dual) is the marked value among the non-singulars. From the corresponding structure in (76), we predict that \*ABA should be read against the sequence SINGULAR-DUAL-PLURAL – nothing excludes the plural from supploting on its own since [+augmented] is then the marked value. It is the dual that cannot be the odd member of the paradigm. And this is exactly what we found, not only for Hopi, but for the other three cases of nominal suppletion for number:

(63)

Language	SINGULAR	DUAL	PLURAL	Gloss
Hopi	wùuti	wùutit	momoyam	‘woman’
Lavukaleve	vo’vou	vo’voul	tulav	‘boy’
Yimas	panmal	panmalc-rm	pay-um	‘man’
Slovenian	človek	človek-a	ljudj-e	‘person’

The initially problematic cases, then, are in fact consistent with the predictions of the theoretical approach, given a more refined understanding of the structural representation of number. By allowing variation in markedness, we allow concomitant variation in suppletive patterns. What we continue to exclude is conflicting patterns: where the suppletive evidence and structural evidence go in opposite ways. In addition, on the assumption that the representation of number should be consistent within a given language, at least within a single domain (such as nouns), we do not expect variation in suppletive patterns within such a domain.

Slovenian is the exception that proves the rule. Slovenian has been reported to show exactly the kind of conflicting patterns of suppletion that we do not expect, with the dual of a single noun patterning with singular in some cases, and with the plural in others (the following data from Priestly 1993 and Corbett 2007):

(79)

	SINGULAR	DUAL	PLURAL
NOMINATIVE	človek	človeka	ljudje
ACCUSATIVE	človeka	človeka	ljudi
GENITIVE	človeka	ljudi	ljudi
DATIVE	človeku	človekoma	ljudem
INSTRUMENTAL	človekom	človekoma	ljudmi
LOCATIVE	človeku	ljudeh	ljudeh

Even the Slovenian data however do not show clear evidence for mixed patterns of suppletion in lexical nouns, once we recognize, as in the discussion of case, the important distinction between syncretism and shared roots. Across the language as a whole, the contrast between dual and plural is neutralized in the genitive and locative cases. These cases show only a singular vs. non-singular contrast - unlike the dual dative or nominative, there is no distinct dual genitive or locative form which shares a root with the plural - these cases simply lack a dual number.

In sum, suppletion for number in pronouns follows the expected pattern if the category of number is internally complex, and if there are containment relations among the values. The ABB and ABC patterns are attested, while ABA



is not. The core theoretical prediction is robustly supported. Matters become more complex when we incorporate variation in morpheme order as indicative of containment relations, and when we look at suppletion for number in lexical nouns. As it happens, these two sources of apparently challenging variation can be treated in the same way, once we are more careful with the theory of number and its structural manifestation.

## **5 Conclusions**

In this paper, we have investigated suppletive patterns in case and number in pronouns, an area in which sufficient data is available from a large enough sample of languages to distinguish systematic patterns from accidental gaps. With respect to both case and number we find robust patterns and systematic gaps, mirroring to a large extent the findings in Bobaljik (2012) regarding adjectival suppletion. We extended the reasoning of Bobaljik (2012) to this domain, and concluded not only that pronouns have internal structure, as is now often argued, but also that both case and number are categories with internal structure. Perhaps more importantly, our results contribute to a growing body of evidence that finds limits on cross-linguistic variation in large samples. Even suppletion, that most unruly of grammatical phenomena, turns out to be rule-governed when viewed at only a slight level of abstraction. We have argued that simple accounts of the observed limits on variation may be given in structural terms, and in particular, we hope to have demonstrated here that the key ingredients of these accounts extend beyond the phenomena for which they were first posited, providing evidence for general, universal conditions on grammatical representations.

## A Appendix A: Case

### A.1 Overview

Language	Suppletion	Source
Abkhaz	none	Chirikba (2003)
Abui	none	Kratochvil (2007)
Afrikaans	AB	Donaldson (1980)
Ainu	none	Tamura (2000)
Albanian	ABB	1sg Newmark (1982)
Araona	none	Pitman (1980)
Archi	AAB	2sg, 1sg, 1pl (excl), 1pl (incl) Kibrik & Kodzasov (1990)
Archi	? ABA	2pl <sup>29</sup>
Armenian	ABB	1sg, 2sg, 2pl, emphatic Kozintseva (1995)
Awa Pit	none	Curnow (1997)
Basaa	ABB	see below
Basque	none	Saltarelli et al. (1988)
Bawm	none	Reichle (1981)
Bengali (Chit-tagong)	none	Uççida (1970)
Bilua	none	Obata (2003)
Brahui	ABB	1sg Andronov (1980)
Burmese	none	Okell (1969)
Cahuilla	none	Seiler (1977)
Chalcatongo	none	Macauley (1996)
Mixtec		
Chawchila n/a	none	Newman (1944)
Chuvash	ABB	1sg, 2sg, 3sg, 2pl Clark (1998)
Comanche	none	Charney (1993)
Daasanach	none	
Daga	none	Murane (1974)
Dagaare	AB	Bodomo (1997)
Dani (Lower Grand Valley)	none	Bromley (1981)
Danish	AB	

<sup>29</sup>See section 3.5.

*Case and Number Suppletion in Pronouns*

Dolakha Newar	none		Genetti (2007)
Dumi	none		van Driem (1993)
Dutch	AB		
Dyirbal	none		Dixon (1972)
Dzongkha	none		van Driem (1998)
Eastern Pomo	none		McLendon (1975)
English	AB		
Epena Pedee	none		Harms (1994)
Estonian	none		Viitso (1998)
Evenki	ABB	1sg, 1pl	Nedjalkov (1997)
Faroese	ABB	1sg	
Faroese	AB	1pl	Thráinsson et al. (2004)
Fijian, Boumaa	none		Dixon (1988)
Finnish	noneq		Karlsson (1999)
French	AB		
Fur	none		Beaton (1968)
Garawa	none		Furby & Furby (1977)
Garo	none		Burling (1961)
Gashowu	none		Newman (1944)
Georgian	ABB	3sg, 3pl	Hewitt (1995)
German	ABB	1sg, 3sg masc	
German	AB	1pl	
Gimira	none		Breeze (1990)
Gooniyandi	none		McGregor (1990)
Greek (Modern)	AB		
Greenlandic (West)	none		Fortescue (1984a)
Hamtai (Kapau)	none		
Hua	none		Haiman (1980)
Hungarian	none		Kenesei et al. (1998)
Hunzib	AAB	2sg	van den Berg (1995)
Icelandic	ABB	1sg	
Imonda	none		Seiler (1985)
Itelmen (Chukotko- Kamchatkan)	ABB	2sg	Field notes (Bobaljik)
Japanese	none		Kaiser et al. (2001)
Jingulu	none		Pensalfini (2003)
Kalispel	none		Vogt (1940)
Kanuri	none		Cyffer (1998)

Kashmiri	ABB	1sg, 3sg masc remote, 3sg fem remote AB	Wali & Koul (1997)
Kayardild	none		Evans (1995)
Ket	none		Werner (1997)
Kewa	none		Franklin (1971)
Khakas	ABB	3sg	
Khalkha	ABB		Poppe (1951)
Kham	none		Watters (2002)
Khanty	none		Nikolaeva (1999)
Kiowa	none		Watkins (1984)
Klon	AB		
Koasati	none		Kimball (1991)
Korean	none		Lee & Ramsey (2000)
Koromfe	none		Rennison (1997)
Koyraboro	none		Heath (1999)
Senni			
Krongo (Africa)	ABB	1sg, 2sg, 1pl (incl), 2pl (excl), 2pl	Reh (1985b)
Pomo, (Hokan)	S-E ABB	1sg, 2sg	Moshinsky (1974)
Kunama	none		Bender (1996)
Ladakhi	none		Koshal (1979)
Lango	none		Noonan (1992)
Latvian	ABB		Mathiassen (1996)
Lavukaleve	none		Terrill (2003)
Lele	none		Frajzyngier (2001)
Lezgian	none		Haspelmath (1993)
Lithuanian	ABB	1sg	Mathiassen (1996)
Malakmalak	AB		Birk (1976)
Malayalam	ABB	1sg	Asher & Kumari (1997a)
Manam	none		Lichtenberk (1983)
Mangarayi	AAB	2sg	Merlan (1982)
Maori	none		Bauer (1993)
Mapuche	none		Smeets (2008)
Maranungku	none		Tryon (1970)
Marathi	none		Pandharipande (1997)
Maricopa	none		Gordon (1986)
Martuthunira	none		Dench (1995)

*Case and Number Suppletion in Pronouns*

Maybrat	none		Dol (2007)
Meithei	none		Bhat & Ningomba (1997)
Mian	none		Fedden (2007)
Mina	ABB	1sg, 3sg, 3pl	Frajzyngier et al. (2005)
Misanltla	none		
Miwok (South- ern Sierra)	none		Broadbent (1964)
Modern Khwe	none		Kilian-Hatz (2008)
Mongsen Ao	none		Coupe (2007)
Mordvin (Erzya)	none		Zaicz (1998)
Mundari	none		Osada (1992)
Murle	none		Arensen (1982)
Nenets	AB		Salminen (1998)
Nez Perce	none		Rude (1985)
Ngiyambaa	AB	clitics: 3 bound	Donaldson (1980)
Nubian (Don- golese)	none		Armbruster (1960)
Nunggubuyu	none		Heath (1984)
Oromo (Harar)	none		Owens (1985)
Pashto	AB		Penzl (1955)
Pirahã	none		Everett (1986)
Pitjantjatjara	none		Bowe (1990)
Polish	ABB	1sg, 3sg fem, 3pl masc, 3pl non-masc, 3sg neut, 3sg masc, 1pl	
Puyuma	none		Teng (2008)
Quechua (Im- babura)	none		Cole (1982)
Rabha	none		Joseph (2007)
Romani (Kalderash)	none		Boretzky (1994)
Russian	ABB	1sg, 3sg masc, 3sg fem, 3pl, 3sg neut, 3pl, 1pl	Wade (1992)
Saami (North- ern)	none		Nickel (1994)

Semelai	none		Kruspe (1999)
Serbian/Croatian	ABB	1sg, 3sg masc, 3sg fem, 3pl, 3sg neut, 1pl	
Shipibo-Konibo	none		Valenzuela (1997)
Sinaugoro	none		Tauberschmidt (1991)
Sinhala	none		Gair & Paolillo (1997)
Somali	none		Saeed (1999)
Spanish	AB		
Suena	none		Wilson (1974)
Supyire	none		Carlson (1994)
Tamashek	none <sup>30</sup>		Heath (2005)
Tiwi	none		Osborne (1974)
Trumai	none		Guirardello (1999)
Tunen	AB		Smith (2011)
Tunica	none		Haas (1940)
Turkana	none		Dimmendaal (1982)
Turkish	none		Kornfilt (1997)
Udihe	none		Nikolaeva & Tolskaya (2001)
Udmurt	none		Winkler (2001)
Ungarinjin	none		Rumsey (1982)
Urarina	none		Olawsky (2006)
Usan	none		Reesink (1987)
Wambaya	none		Nordlinger (1998)
Warao (S. Amer)	AB		Romero-Figueroa (1997)
Wardaman	AAB	3sg, 3pl	Merlan (1994)
Wichita	none		Rood (1976)
Wikchamni	none		Newman (1944)
Wintu	none		Seiler (1977)
Yanyuwa	none		Kirton (1996)
Yawelmani	none		Newman (1944)
Yokuts			
Yidiny	none		Dixon (2010)
Yimas	none		Foley (1991a)
Yukaghir (Kolyma)	none		Maslova (1999)
Yup'ik (Central)	none		Jacobson (1995)
Yurok	none		Robins (1958)

<sup>30</sup>There are suppletive-like alternations in the clitics, not included in this study

## A.2 ABB Patterns

The following table lists plausible cognate triples of pronouns showing the ABB suppletive patterns for case that we have identified. Since absolute numbers are not relevant, as opposed to the distinction between attested and unattested, we have made a number of educated guesses about cognates without making a careful study of each language. Note that only a single illustrative example of each cognate triple is given, with notes on where other languages have cognate forms given in the final column. For example, the Icelandic 1sg forms *ég - mig - mér* have cognates across Indo-European (Russian: *ja - menja - mne*; Latin *ego - mē - mihi*, etc. (see (21) in main text), but as these all descend from a common source, only one example is given in the table. Where it appears to us that a pronominal form may not be cognate with all forms in a related language (as in the Albanian nominative *unë*, we have listed such forms as separate entries.

We have titled the case columns as unmarked (=nominative/absolute), marked 1 and marked 2. While the general orientation is nominative - accusative - dative or absolute - ergative - dative, where syncretism would obscure the relevant patterns, we have made substitutions. For example, in Armenian, pronouns do not show a nominative vs. accusative distinction, hence the cases here are nominative/accusative - dative - ablative. Likewise, Albanian first and second person singular pronouns do not distinguish accusative and dative, so we have used nominative - accusative/dative - ablative. As noted in the main text, we have avoided genitive pronouns in this study as we have been unable to systematically distinguish genitive case from possessive pronouns in many of our sources.

Language	Pron	Cases			Notes
		unmarked	marked 1	marked 2	
<b>Indo-European:</b>					
Icelandic	1sg	ég	mig	mér	widespread in Indo-European
Albanian	1sg	unë	mua	meje	
Armenian (E)	1sg	es	inj	inj(a)nic	
Armenian (E)	2sg	du	k'ez	k'ez(a)nic	
Armenian (E)	2pl	duk	jez	jez(a)nic	
Russian	1pl	my	nas	nam	across Slavic
German	3sg(m)	er	ihn	ihm	<sup>31</sup>
Serbian	3sg(m)	on	nje-ga	nje-mu	across Slavic <sup>32</sup>

<sup>31</sup>We tentatively treat this as synchronically suppletive, although historically, they may share a stem.

<sup>32</sup>Despite the -n- in all three cases, we treat the *onsimnj(e)* alternation as suppletive.

Kashmiri	3sg(m)	su	təm'	təmis	(remote) <sup>33</sup>
Armenian (E)	emph	ink'ə	iren	irenic	
<b>Dravidian:</b>					
Brahui	1sg	ī	kane	kanki	
Tamil	1sg	naan	en	en-akku	also Malayalam
Tamil	2sg	nii	on	on-akku	
<b>Turkic:</b>					
Chuvash	1sg	epě	mana	mantan	
Chuvash	2sg	esě	sana	satan	34
Khakas	3sg	ol	an-i	aʏaa <sup>35</sup>	
<b>Tungusic:</b>					
Evenki	1sg	bi	mine(-ve)	min-du	36
Evenki	2sg	bu	mune(-ve)	mun-du	
<b>Mongolic:</b>					
Khalka	1sg	bi	namaigi	nadada	
<b>Kartvelian:</b>					
Georgian	3sg	is/igi	ma-n	ma-sa	(demonstrative) <sup>37</sup>
<b>Chukotko-Kamchatkan:</b>					
Itelmen	2sg	kəzza	kn-anke	kn-anxʔal	38
<b>Afro-Asiatic:</b>					
Mina	1sg	sə	kú	k(ù)	
Mina	3sg	Ø/a	Ø/u	ŋ(ù)	
Mina	3pl	i	tətótàŋ	ŋtətàŋ/ tətò	
<b>Bantu:</b>					
Basaa	1pl	di	ḃəs	ḃəsḃón	
Basaa	2sg	u	wε	wěŋ	
Basaa	2pl	ni	bee	beeḃón	
Basaa	3sg(1/2)	a	nyε	nyén	
<b>Kadugli-Krongo:</b>					
Kadugli	1sg	àʔàŋ	nkàtí	kàtí	
Kadugli	2sg	ùʔùŋ	nkòtú	kòtú	
Kadugli	1in	àŋŋá	nkàcá	kàcá	
Kadugli	1ex	óow	nkòtíg	kòtíg	

<sup>33</sup>Note also corresponding feminine forms: *sə- tami – təmis – etc.*. Since gender distinctions are lost in the dative and ablative, the feminine forms should arguably not be counted as distinct from the ABB pattern in the masculine series.

<sup>34</sup>The -s- segment in all columns may mean that this is not truly suppletive.

<sup>35</sup>Presumably from an-ya; see (43) in main text

<sup>36</sup>We note an abstract similarity *b/p - mVn - mVn-* among the members of the Altaic group represented here (cf. Chuvash and Khalka).

<sup>37</sup>The same suppletive pattern occurs in the plural, but the forms are syncretic across the non-nominative cases.

<sup>38</sup>We note an abstract similarity *b/p - mVn - mVn-* to Chuvash, within the controversial Altaic group.



Kadugli	2pl	àakà	nkàtúkwa	kàtúkwa	39
<b>Hokan:</b>					
Pomo (SE)	1sg	ʔa	wi-t	wi-tib	
Pomo (SE)	2sg	ma	ti	ti-tib	

### A.3 ABC Patterns

Language	Phi	Family
Khinalugh	1sg	Nakh-Dagestanian (see (29))

Total ABC = 1

### A.4 AAB Patterns

Language	Phi	Family
Archi	2sg, 2pl, 1sg, 1pl (excl), 1pl (incl)	Nakh-Dagestanian
Hunzib	AAB in 2sg	Nakh-Dagestanian
Mangarayi	AAB in 2sg	Mangarai, Mangarrayi, Manggarai, Mungarai, Mungerry, Ngarrabadji
Wardaman	3sg, 3pl	Australian, Gunwingguan, Yangmanic

Total AAB = 6

<sup>39</sup>The third 'case' indicated here is the benefactive form.

## B Appendix B: Number

### B.1 Overview

Language	Suppletion	Source
!Xhoo	none	Traill (1994)
Afrikaans	AB	Donaldson (1993)
Akwesansne Mo-hawk	none	Bonvillain (1973)
Aleut	none	Bergsland (1997)
Awtuw		Smith (2011)
Bardi	ABB	2/3 Smith (2011)
Basque	AB	de Rijk (2007)
Belait	ABC	2/3 Smith (2011)
Berik	none	Westrum (1988)
Bilua	none	Obata (2003)
Biri	none	Smith (2011)
Boumaa Fijian	none	Dixon (1988)
Bukiyip	ABC	1/2 Smith (2011)
Bunaba	ABB	2/3 Smith (2011)
Burushaski	AB	Berger (1998)
Camling	none	Smith (2011)
Carib	none	Courtz (2008)
Cavinenna	none	Guillaume (2008)
Chepang	none	Smith (2011)
Comanche	none	Smith (2011)
Crow	none	Graczyk (2007)
Dagaare	AB	Bodomo (1997)
Darling	ABB	3 Smith (2011)
Dehu	ABC/ABB	1/2 Smith (2011)
Djamindjung	ABB	1/2/3 Smith (2011)
Dolakha Newar	none	Genetti (2007)
Dumi	none	Smith (2011)
Dyirbal	none	Smith (2011)
Dzongha	none	van Driem (1992)
Eastern Pomo	AB	1 McLendon (1975)
Enets (Forest)	none	Smith (2011)
Evenki	none	Smith (2011)
Finnish	none	Karlsson (1999)
Flinders Island	ABC	3 Smith (2011)
Gagadu	ABB	1/3m Smith (2011)
Gothic	ABB	1/2 Smith (2011)

*Case and Number Suppletion in Pronouns*

Gurinja	none		Smith (2011)
Hawaaian	ABB	1/3	Smith (2011)
Hopi	AB	1	Forchheimer (1953) <sup>40</sup>
Hua	none		Haiman (1980)
I'saka	none		Donohue & Roque (2004)
Ingush	AB	2	Nichols (2011)
Jarawara	none		Kumar (2012)
Jarnango	ABC	3	Smith (2011)
Jaru	none		Smith (2011)
Jehai	ABC	2/3	Smith (2011)
Jingulu	ABB	2	Pensalfini (2003)
Kamas	ABB	2	Smith (2011)
Kannada	none		Smith (2011)
Karadjeri	none		Smith (2011)
Kayardild	ABB	2/3	Evans (1995)
Kham	ABB	2	Smith (2011)/lib
Koasati	none		Kimball (1991)
Koromfe	AB		Smith (2011)
Kuku-Yalanji	ABC	3	Smith (2011)
Kuna	none		Smith (2011)
Kwaza	none		van der Voort (2004)
Ladakhi	none		Campbell (2000)
Lavukaleve	ABB	1	Terrill (2003)
Lega-Shabunda	ABB	1/2/3	Smith (2011)
Lele	none		Frajzyngier (2001)
Lezgian	AB		Haspelmath (1993)
Malayalam	none		Asher & Kumari (1997b)
Manam	none		Lichtenberk (1983)
Mangala	none		Smith (2011)
Mangarayi	none		Merlan (1982)
Maori	ABB	1/3	Smith (2011)/lib
Mapudungun	none		Smith (2011)/lib
Margi	none		Smith (2011)
Martuthunira	ABB	2	Dench (1995)
Maybrat	AB		Waren (2007)
Mina	none		Frajzyngier et al. (2005)
Mlabri	ABB	2	Smith (2011)
Mokilese	ABB	3	Harbour (2014)
Mongsen Ao	none		Coupe (2007)
Naga Ao	ABB	3	Smith (2011)
Navajo	none		Smith (2011)
Ngandi	none		Smith (2011)

<sup>40</sup>Hopi has a constructed dual in pronouns, see *e.g.* Corbett (2000).

Ngarla	none		Smith (2011)
Nishnaabemwin	none		Valentine (2001)
Nyamal	ABA? <sup>41</sup>	3	Smith (2011)
Nyigina	ABB	1/2/3	Smith (2011)
Nyulnyul	none		Nekes & Worms (2006)
Nywaygi	ABC	3	Smith (2011)
Paamese	none		Crowley (1982)
Pantyima	ABB	2	Smith (2011)
Pileni	ABB	1	Smith (2011)
Pitta-Pitta	ABB/ABC	2/3	Blake (1979)
Puyuma	none		Teng (2008)
Qiang, northern	ABB	1	Smith (2011)
Rabha	none		Joseph (2007)
Rotuman	ABB	1	Smith (2011)
Samoan	none		Smith (2011)
Santali	none		Smith (2011)
Sanumá	none		Smith (2011)
Savosavo	ABC	1/2/3	Smith (2011)
Semelai	none		Smith (2011)
Sinaugoro	none		Tauberschmidt (1991)
Sursurunga	ABB	2	Harbour (2014)
Tamashek	none		Heath (2005)
Thai	none		Iwasaki & Ingkaphirom (2005)
Tiri	ABB/ABC	1/2resp.	Smith (2011)
Tokelauan	none		Smith (2011)
Toqabaqita	ABB	2/3	Lichtenberk (2008)
Tuvalaun	none		Smith (2011)
Urarina	AB	2	Olawsky (2006)
Wajarri	ABA? <sup>42</sup>	3	Smith (2011)
Wambaya	ABB	2	Smith (2011)
Warembori	ABB	1/2/3	Smith (2011)
Warrwa	ABB <sup>43</sup>	1/2/3	McGregor (1994)
West Greenlandic	none		Fortescue (1984b)
Wikngenchera	ABC	3	Smith (2011)
Yanyuwa	none		Kirton (1996)
Yawuru	ABB	1/2	Smith (2011)
Yimas			Foley (1991b)

---

<sup>41</sup>See section 4.2.1

<sup>42</sup>See section 4.2.1

<sup>43</sup>Warrwa has a minimal-augmented-unit-augmented system.

## B.2 ABB Patterns

Below we list the plausible candidates of ABB patterns for number. Once more, as absolute numbers are not relevant, we have made educated guesses regarding what counts as a cognate. Note that where the 1st person is given, if the language makes a clusivity distinction, we list the exclusive form as opposed to the inclusive. Moskal (2014) shows that wherever the exclusive form is suppletive relative to 1SG, then the inclusive form will also be suppletive. Since the exclusive form is most likely the unmarked version of 1st person non-singular, we consider that form to be the a more reliable guide of suppletion in 1st person pronouns.

Language	Pron	Numbers			Notes
		singular	plural	dual	
<b>Indo-European:</b>					
Gothic	1	ik, mik	wit, ugkis	weis, uns(is)	
Gothic	2	pu, puk	jut, igqus	jus, izwis	
<b>Nyulnyulan:</b>					
Nyigina	1	ɲayu	yarrdju	yarrdjumirri	also Warrwa also Bardi, Nyigina and Warrwa
Yawuru	2	djōio	goreer	gorgada	
Bardi	3	ginjing/jen	er	erguiar	
<b>Bunaban:</b>					
Bunaba	2	nginji	yinggirriyani	yinggirriway	
Bunaba	3	niy	biyirriyani	biyirriway	
<b>Pama-Nyungan:</b>					
Kayardild	2	nyingka	kilda	kirra	
Martuthunira	2	kartu	nhuwana	nhuwala	
Panytyima	2	njinta	nhupalukuru	nhupalu	
Pitta-Pitta	2	inpa	nura	nula	
Kayardild	3	niya	bilda	birra	
Darling	3	wadulu	gidiga	gidulu	
<b>Austronesian:</b>					
Maori	1	au	mātou	māua	also Hawaiian, Pileni and Rotuman
Sursurunga	1	iau	gim	giur	
Toqabaqita	1	nau	kamiliqa, kamaliqa, kami	kamareqa <sup>44</sup>	
Dehu	2	eö	nyipunie	nyipo	
Sursurunga	2	íáu	gam	gaur	

<sup>44</sup>For conditions on variation in Toqabaqita 1 and 2, see Lichtenberk (2008).

Toqabaqita	2	qoe, qoo	kamuluqa, kamaluqa, kamiu, kamu	kamaroqa	
Hawaiian	3	oia, ia	lakou	laua	Also in Hawaiian, Maori and Sursu- runga.
Manam <sup>45</sup>	3	ɲai	di	diaru	
Mokilese <sup>46</sup>	3	ih	arai/irai	ara/ira	
Toqabaqita	3	nia	kera, ki- iluqa	keeroqa	
<b>Djamindjung:</b>					
Djamindjung	3	dji	burri	burrinji	
<b>Gagadan:</b>					
Gagadu	3	ngaayu	nowooda	nowoomana	
<b>Uralic:</b>					
Kamas	2	tan/t^ən)	šiʔ	šište	
<b>Sino-Tibetan:</b>					
Kham	1	ɲa:	ge:	gin	Also Northern Qiang
Kham	2	nĩ:	je:	jin	
Naga Ao	3	pa	tùŋla/ tùŋ(kh)əla	panət/tuŋət	
<b>Central Solomons:</b>					
Lavukaleve	1	ngai	e	el	
<b>Niger Congo:</b>					
Lega-Shabunda	1	nne	bíswé	íswé	
Lega-Shabunda	2	ugwe	bíɲwé	íɲwé	
Lega-Shabunda	3	gwě	bábo	bo	
<b>Austro-Asiatic:</b>					
Mlabri	2	mɛh	bah jum/ɟum	bah	
<b>Lower Mamberano:</b>					
Warembori	1	iwi	ami	amui	
Warembori	2	awi	mi	mui	
Warembori	3	yi	ti	tui	

<sup>45</sup>Manam also uses *diato* for paucal.

<sup>46</sup>Greater Paucal patterns with dual and plural also.

### B.3 ABC

Unlike the ABC patterns for case, we have not exhaustively listed the patterns in text, so we include them here. Below we list the plausible candidates for ABC patterns in number, with the same disclaimers that were noted for ABB.

Language	Pron	Numbers			Notes
		singular	plural	dual	
<b>Austronesian:</b>					
Dehu	1	ini	eëhun(i)	nyiho	<i>eësho</i> is listed as a variant for the inclusive dual, which would give an ABB pattern for INCL. 1EXCL is firmly ABC.
Beliat	2	naw/no(h), ciw'	unyw, sunyw	beh(-debbëh), sebbëh	
Tiri	2	nrü	wiri	kou	
<b>Austro-Asiatic</b>					
Jehai	2	miʔ, mɔʔ, paj	gin	jih	We only count one of these patterns as an ABC pattern because of the neutralization in the plural form, see note 23.
Jehai	3	ʔoʔ	gin	wih	
<b>Torricelli:</b>					
Bukiyip	1	yek	apak	ohwak	
Bukiyip	2	nyak	ipak	bwiepú	
<b>Pama-Nyungan:</b>					
Flinders Island	3	ŋulu	yada	wula	also Jarnango, Nywaygi and Wikngenchera

Pitta-Pitta	3	nuwaka <sup>47</sup>	tanaka	pulaka	Third person pronouns in Pitta-Pitta alternate for Near, Far and General. Here we give the general form. Note that this is the case for singular, plural and dual.
<b>East Papuan:</b>					
Savosavo	2	no	me	pe	
Savosavo	3M <sup>48</sup>	lo	ze(po)	to	
<b>East Sepik:</b>					
Yimas	1	ama	ipa	kapa	
Yimas	2	mi	ipwa	kapwa	
<b>Sino-Tibetan</b>					
Kham	3 POSS	o-/u-	ya-	ni-	
Kham	3 REFL	ol	ya:	ni:	

## References

- Andronov, Mikhail S. (1980) *The Brahui Language*. Moscow: Nauka.
- Arensen, Jonathan E. (1982) *Murle grammar*. Juba, Sudan: Summer Institute of Linguistics and University of Juba.
- Armbruster, Charles Herbert (1960) *Dongolese Nubian: A Grammar*. Cambridge: The University Press.
- Asher, R. E. & T. C. Kumari (1997a) *Malayalam*. London: Routledge.
- Asher, R. E. & T. C. Kumari (1997b) *Malayalam*. New York: Routledge.
- Baerman, Matthew (2014) Suppletive kin terms paradigms in the languages of New Guinea. *Linguistic Typology* **18**(3): 413–448.

<sup>47</sup>This is the masculine form. *Nanpaka* is the feminine form. There are no gender distinctions in the non-singulars.

<sup>48</sup>3F shows the same pattern, with *ko* replacing *lo* in the singular. Gender distinctions are neutralised in the non-singulars.



- Barbiers, Sjef (2007) Indefinite numerals one and many and the cause of ordinal suppletion. *Lingua* **117**: 859–880.
- Bauer, Winifred (1993) *Maori*. London: Routledge.
- Beaton, A. C. (1968) *A Grammar of the Fur Language*. Khartoum: Sudan Research Unit, University of Khartoum.
- Bender, M. Lionel (1996) *Kunama*. MÂynchen: Lincom Europa.
- Berger, Hermann (1998) *Die Burushaski-Sprache von Hunza und Nager*. Wiesbaden: Harrassowitz.
- Bergsland, Knut (1997) *Aleut Grammar*. University of Alaska Fairbanks: Alaska Native Language Center.
- Bhat, D. N. S. & M. S. Ningomba (1997) *Manipuri Grammar*. MÂynchen: Lincom Europa.
- Birk, D. B. W. (1976) *The Malakmalak Language, Daly River (Western Arnhem Land)*. Canberra: Australian National University.
- Blake, Barry J. (1979) Pitta-Pitta. In *Handbook of Australian Languages*, vol. 1, R. M. W. Dixon & Barry J. Blake, eds., John Benjamins Publishing Company.
- Blake, Barry J. (1994) *Case*. Cambridge: Cambridge University Press.
- Bobaljik, Jonathan D. (2000) The Ins and Outs of Contextual Allomorphy. *University of Maryland Working Papers in Linguistics* **10**: 35–71.
- Bobaljik, Jonathan D. (2012) *Universals in Comparative Morphology*. Cambridge, MA: MIT Press.
- Bobaljik, Jonathan D. & Heidi Harley (2013) Suppletion is local: Evidence from Hiaki. *Manuscript, University of Connecticut and University of Arizona* .
- Bobaljik, Jonathan D. & Susanne Wurmbrand (2013) Suspension across domains. In *Distributed Morphology today: Morphemes for Morris*, MIT Press.
- Bobaljik, Jonathan D. & Susi Wurmbrand (2005) The Domain of Agreement. *Natural Language and Linguistic Theory* **23**(4): 809–865.
- Bodomo, Adams (1997) *The Structure of Dagaare*. Stanford: CSLI.
- Bonvillain, Nancy (1973) *A Grammar of Akwesasne Mohawk*. National Museums of Canada.

- Boretzky, Norbert (1994) *Romani. Grammatik des Kalderas-Dialektes mit Texten und Glossar*. Wiesbaden: Harrassowitz.
- Bowe, Heather (1990) *Categories, Constituents, and Constituent Order in Pitjantjatjara, an Aboriginal Language of Australia*. London: Routledge.
- Breeze, Mary J. (1990) *A Sketch of the Phonology and Grammar of Gimira (Benchnon)*. London: School of Oriental and African Studies, University of London.
- Broadbent, Sylvia M. (1964) *The Southern Sierra Miwok Language*. Berkeley: University of California Press.
- Bromley, H. Myron (1981) *A Grammar of Lower Grand Valley Dani*. Canberra: Australian National University.
- Burling, Robbins (1961) *A Garo Grammar*. Pune: Deccan College Postgraduate and Research Institute.
- Bye, Patrik (2007) Allomorphy - selection, not optimization. In *Freedom of analysis?*, Sylvia Blaho, Patrik Bye, & Martin Krämer, eds., Berlin: Mouton de Gruyter, 63–92.
- Caha, Pavel (2009) *The nanosyntax of case*. Ph.D. thesis, University of Tromsø.
- Calabrese, Andrea (2005) *Markedness and Economy in a Derivational Model of Phonology*. Berlin: Mouton de Gruyter.
- Calabrese, Andrea (2008) On absolute and contextual syncretism: Remarks on the structure of case paradigms and how to derive them. In *Inflectional Identity*, Asaf Bachrach & Andrew Nevins, eds., Oxford Studies in Theoretical Linguistics, Oxford University Press, 156 – 205.
- Campbell, George L. (2000) *Compendium of the World's Languages*, vol. 2: Ladakhi to Zuni. London: Routledge.
- Carlson, Robert (1994) *A Grammar of Supyire*. Berlin: Mouton de Gruyter.
- Charney, Jean Ormsbee (1993) *A Grammar of Comanche*. Lincoln: University of Nebraska Press.
- Chirikba, Viacheslav (2003) *Abkhaz*. Lincom Europa.
- Clark, Larry (1998) Chuvash. In *The Turkic Languages*, Lars Johansen & Eva A. CsatÛ, eds., London: Routledge, 434–452.

- Cole, Peter (1982) *Imbabura Quechua*. Amsterdam: North-Holland.
- Corbett, Greville (2000) *Number*. Cambridge: Cambridge University Press.
- Corbett, Greville (2007) Canonical typology, suppletion and possible words. *Language* 83(1): 8–42.
- Coupe, Alexander Robertson (2007) *A Grammar of Mongsen Ao*. Berlin: Mouton de Gruyter.
- Courtz, Henk (2008) *A Carib grammar and dictionary*. Toronto: Magoria Books.
- Crowley, Terry (1982) *The Paamese Language of Vanuatu*. Australian National University: Pacific Linguistics.
- Curnow, Timothy J (1997) *A Grammar of Awa Pit (Cuaiquer): An Indigenous Language of South-western Colombia*.
- Cyffer, Norbert (1998) *A Sketch of Kanuri*. KÈÈIn: KÈÈEpe.
- de Rijk, Rudolf P. G. (2007) *Standard Basque: A progressive grammar*. Cambridge, MA: MIT Press.
- Dench, Alan Charles (1995) *Martuthunira: A Language of the Pilbara Region of Western Australia*. Canberra: Australian National University.
- Dimmendaal, Gerrit Jan (1982) *The Turkana Language*.
- Dixon, R. M. W. (1989) *Australian Languages: Their Nature and Development*. Cambridge: Cambridge University Press.
- Dixon, Robert (1988) *A Grammar of Boumaa Fijian*. Chicago, Il: University of Chicago.
- Dixon, Robert (2010) *A Grammar of Yidiñ*. Cambridge: Cambridge University Press.
- Dixon, Robert M. W (1972) *The Dyirbal Language of North Queensland*. Cambridge Studies in Linguistics. Cambridge: Cambridge University Press.
- Dol, Philomena (2007) *A Grammar of Maybrat*. Pacific Linguistics.
- Donaldson, Bruce C. (1993) *A Grammar of Afrikaans*. Berlin: Mouton de Gruyter.
- Donaldson, Tamsin (1980) *Ngiyambaa: the Language of the Wangaaybuwan*. Cambridge: Cambridge University Press.

- Donohue, Mark & Lila San Roque (2004) *I'saka*. Australian National University: Pacific Linguistics.
- Douglas, Wilfred H. (1981) Watjarri. In *Handbook of Australian Languages: Vol 2*, R. M. W. Dixon & Barry J. Blake, eds., Australian National University.
- Embick, David (2010) *Localism versus Globalism in Morphology and Phonology*. Cambridge, MA: MIT Press.
- Embick, David & Alec Marantz (2008) Architecture and Blocking. *Linguistic Inquiry* 39(1): 1–53.
- Evans, Nicholas D. (1995) *A Grammar of Kayardild*. Berlin: Mouton de Gruyter.
- Everett, Daniel L (1986) Pirahã. In *Handbook of Amazonian Languages 1*, Desmond C. Derbyshire & Geoffrey K. Pullum, eds., Berlin: Mouton de Gruyter, 200–325.
- Fedden, Olcher Sebastian (2007) *A Grammar of Mian*. Ph.D. thesis, University of Melbourne.
- Foley, William A. (1991a) *The Yimas Language of Papua New Guinea*. Stanford: Stanford University Press.
- Foley, William A. (1991b) *The Yimas Language of Papua New Guinea*. Stanford: Stanford University Press.
- Forchheimer, Paul (1953) *The Category of Person in Language*. Walter de Gruyter.
- Fortescue, Michael (1984a) *West Greenlandic*. London: Croom Helm.
- Fortescue, Michael (1984b) *West Greenlandic*. London: Croom Helm.
- Frajzyngier, Zygmunt (2001) *A Grammar of Lele*. Stanford: CSLI.
- Frajzyngier, Zygmunt, Eric Johnston, & Adrian Edwards (2005) *A Grammar of Mina*. Berlin: Mouton de Gruyter.
- Franklin, Karl James (1971) *A Grammar of Kewa, New Guinea*. Canberra: Australian National University.
- Furby, Edward S. & Christine E. Furby (1977) *A preliminary analysis of Garawa phrases and clauses*. Pacific Linguistics.
- Gair, James W. & John C. Paolillo (1997) *Sinhala*. München: Lincom Europa.

- Genetti, Carol (2007) *A grammar of Dolakha Newar*, Mouton Grammar Library, vol. 40. Mouton de Gruyter.
- Gordon, Lynn (1986) *Maricopa Morphology and Syntax*. Berkeley: University of California Press.
- Graczyk, Randolph (2007) *A Grammar of Crow*. Lincoln, Nebraska: University of Nebraska Press.
- Greenberg, Joseph H. (1963) Some universals of grammar with particular reference to the order of meaningful elements. In *Universals of language*, Joseph H. Greenberg, ed., Cambridge, MA: MIT Press, 73–113.
- Guillaume, Antoine (2008) *A Grammar of Cavineña*. Berlin: Mouton de Gruyter.
- Guirardello, Raquel (1999) *A Reference Grammar of Trumai*.
- Haas, Mary R. (1940) *Tunica*. New York: J. J. Augustin.
- Haiman, John (1980) *Hua: A Papuan Language of the Eastern Highlands of New Guinea*. Amsterdam: John Benjamins.
- Halle, Morris & Alec Marantz (1993) Distributed Morphology and the Pieces of Inflection. In *The View from Building 20*, Ken Hale & Samuel Jay Keyser, eds., Cambridge, MA: MIT Press, 111–176.
- Harðarson, Gísli Rúnar (2014) Against the strong Case Contiguity hypothesis, ms. UConn.
- Harbour, Daniel (2007) *Morphosemantic number: From Kiowa noun classes to UG number features*. Springer.
- Harbour, Daniel (2011) Valence and Atomic Number. *Linguistic Inquiry* 42(4): 561–594.
- Harbour, Daniel (2014) Paucity, abundance, and the theory of number. *Lingua* 90(1): 185–229.
- Harms, Philip Lee (1994) *Epena Pedee Syntax*. Dallas / Arlington: Summer Institute of Linguistics and University of Texas.
- Haspelmath, Martin (1993) *A Grammar of Lezgian*. Berlin: Mouton de Gruyter.
- Haugen, Jason D. & Daniel Siddiqi (2013) Roots and the derivation. *Linguistic Inquiry* 44(3): 493–517.

- Heath, Jeffrey (1984) *A Functional Grammar of Nunggubuyu*. Atlantic Highlands N. J. / Canberra: Humanities Press / Australian Institute of Aboriginal Studies.
- Heath, Jeffrey (1999) *A Grammar of Koyraboro (Koroboro) Senni: the Songhay of Gao, Mali*. Köln: R. Köppe.
- Heath, Jeffrey (2005) *A Grammar of Tamashek*. Berlin: Mouton de Gruyter.
- Hewitt, B. G. (1995) *Georgian: A Structural Reference Grammar*. Amsterdam: John Benjamins.
- Iwasaki, Shoichi & Preeya Ingkaphirom (2005) *A reference grammar of Thai*. Cambridge: Cambridge University Press.
- Jacobson, Steven A. (1995) *A Practical Grammar of the Central Alaskan Yup'ik Eskimo Language*. Fairbanks: Alaska Native Language Center.
- Joseph, Umbavu Varghese (2007) *Rabha*. Leiden: Brill.
- Kaiser, Stefan, Yasuko Ichikawa, Noriko Kobayashi, & Hilofumi Yamamoto (2001) *Japanese: A Comprehensive Grammar*. London / New York: Routledge.
- Karlsson, Fred (1999) *Finnish: an essential grammar*. London: Routledge.
- Katz, Joshua (1998) *Topics in Indo-European Personal Pronouns*. Ph.D. thesis, Harvard University.
- Kayne, Richard (2005) *Movement and silence*. Oxford: Oxford University Press.
- Kenesei, István, Robert M. Vago, & Anna Fenyvesi (1998) *Hungarian*. London: Routledge.
- Kibrik, A. E. & S. V. Kodzasov (1990) *Sopostavitel'noe izuhenie dagestanskix jazzykov. Imja. Fonetika*. Moscow: Moscow University Press.
- Kilian-Hatz, Christa (2008) *A Grammar of Modern Khwe (Central Khosian)*. Köln: R. Köppe.
- Kimball, Geoffrey (1991) *Koasati Grammar*. Lincoln, Nebraska: University of Nebraska Press.
- Kiparsky, Paul (1973) "Elsewhere" in phonology. In *A Festschrift for Morris Halle*, New York: Holt, Reinhart and Winston, 93–106.

- Kirton, Jean F. (1996) *Further aspects of the grammar of Yanyuwa*. Australian National University: Pacific Linguistics.
- Kornfilt, Jaklin (1997) *Turkish*. London: Routledge.
- Koshal, Sanyukta (1979) *Ladakhi Grammar*. Motilal Banarsidasa.
- Kozintseva, Natalia A. (1995) *Modern Eastern Armenian*. MÂynchen: Lincom Europa.
- Kratochvil, Frantisek (2007) *A Grammar of Abui*. Utrecht: LOT Dissertations in Linguistics.
- Kruspe, Nicole (1999) *A Grammar of Semelai*.
- Kumar, Pramod (2012) *Descriptive and typological study of Jarawa*. Ph.D. thesis, Jawaharlal Nehru University.
- Lee, Iksop & Robert Ramsey (2000) *The Korean Language*. Albany: State University of New York Press.
- Lichtenberk, Frantisek (1983) *A Grammar of Manam*. Honolulu: University of Hawaii Press.
- Lichtenberk, František (2008) *A Grammar of Toqabaqita*. Berlin: Mouton de Gruyter.
- Macauley, Monica (1996) *A Grammar of Chalcatongo Mixtec*. University of California Press.
- Marantz, Alec (2000) *Words*. Manuscript, MIT.
- Marantz, Alec (2007) *Phases and words*. In *Phases in the theory of grammar*, Sook-Hee Choe, ed., Seoul: Dong In, 199–222.
- Maslova, Elena (1999) *A Grammar of Kolyma Yukaghir*.
- Mathiassen, Terie (1996) *Mathiassen, Terie*. Columbus: Slavica Publishers.
- McFadden, Thomas (2014) *Why nominative is special: stem-allomorphy and case structures*. Talk given at GLOW 37, Brussels.
- McGregor, William (1990) *A Functional Grammar of Gooniyandi*. Amsterdam: John Benjamins.
- McGregor, William (1994) *Warrwa, Languages of the World/Materials*, vol. 89. München, Newcastle: Lincom Europa.

- McLendon, Sally (1975) *A Grammar of Eastern Pomo*. Berkeley, CA: University of California Press.
- Merlan, Francesca C. (1982) *Mangarayi*. Amsterdam: North-Holland.
- Merlan, Francesca C. (1994) *A Grammar of Wardaman, a language of the Northern Territory of Australia*. Berlin: Mouton de Gruyter.
- Moshinsky, Julius (1974) *A Grammar of Southeastern Pomo*. Berkeley / Los Angeles, CA: University of California Publications in Linguistics.
- Moskal, Beata (2013) On some suppletion patterns in nouns and pronouns. Talk given at PhonoLAM, Meertens Instituut.
- Moskal, Beata (2014) The role of morphological markedness in exclusive/inclusive pronouns. In *The proceedings of the 40th Berkeley Linguistics Society*, 354–368.
- Moskal, Beata (2015a) *Domains on the border: Between Morphology and Phonology*. Ph.D. thesis, University of Connecticut, Storrs, CT.
- Moskal, Beata (2015b) Limits on allomorphy: A case-study in nominal suppletion. *Linguistic Inquiry* 46(2): 363–375.
- Moskal, Beata & Peter W. Smith (2016) Towards a theory without adjacency: Hyper-contextual VI-rules. *Morphology* 26(3-4): 295–312.
- Murane, Elizabeth (1974) *Daga Grammar: From Morpheme to Discourse*. SIL.
- Nedjalkov, Igor (1997) *Evenki*. London / New York: Routledge.
- Nekes, Hermann & Ernest Worms (2006) *Australian Languages*. Berlin: Mouton de Gruyter.
- Nevins, Andrew (2010) *Locality in Vowel Harmony*. Cambridge, MA: MIT Press.
- Nevins, Andrew (2011) Marked Targets versus Marked Triggers and Impoverishment of the Dual. *Linguistic Inquiry* 42(3): 413–444.
- Newman, Stanley (1944) *The Yokuts Language of California*. New York: The Viking Fund Publications in Anthropology.
- Newmark, Leonhard (1982) *Standard Albanian: a reference grammar for students*. Stanford: Stanford University Press.



- Nichols, Johanna (2011) *Ingush Grammar*. Berkeley, CA: University of California Press.
- Nickel, Klaus Peter (1994) *Samisk grammatikk*. Karasjok: Girji.
- Nikolaeva, Irina (1999) *âĂŃOstyak*. MĂynchen: Lincom Europa.
- Nikolaeva, Irina & Maria Tolskaya (2001) *A Grammar of Udihe*. Berlin: Mouton de Gruyter.
- Noonan, Michael (1992) *A Grammar of Lango*. Berlin: Mouton de Gruyter.
- Nordlinger, Rachel (1998) *A Grammar of Wambaya, Northern Territory (Australia)*. Canberra: Australian National University.
- Noyer, Rolf (1992) *Features, positions and affixes in autonomous morphological structure*. Ph.D. thesis, MIT.
- Obata, Kazuko (2003) *A Grammar of Bilua*. Pacific Linguistics.
- Okell, John (1969) *A Reference Grammar of Colloquial Burmese (two volumes)*. London: Oxford University Press.
- Olawsky, Knut (2006) *A Grammar of Urarina*. Berlin: Mouton de Gruyter.
- Osada, Toshiki (1992) *A Reference Grammar of Mundari*. Tokyo: Institute for the Study of Languages and Cultures of Asia and Africa.
- Osborne, C. R. (1974) *The Tiwi Language*. Canberra: Australian Institute of Aboriginal Studies.
- Owens, Jonathan (1985) *A Grammar of Harar Oromo (Northeastern Ethiopia)*. Hamburg: Helmut Buske Verlag.
- Pandharipande, Rajeshwari V. (1997) *Marathi*. London: Routledge.
- Pensalfini, Robert J. (2003) *A grammar of Jingulu: An aboriginal language of the Northern Territory*. Australian National University: Pacific Linguistics.
- Penzl, Herbert (1955) *A grammar of Pashto; a descriptive study of the dialect of Kandahar*. Washington: American Council of Learned Societies.
- Pitman, Donald (1980) *Bosquejo de la gramĂntica araona*. Riberalta, Bolivia: Instituto LingĂstico de Verano.
- Polinsky, Maria, Nina Radkevich, & Marina Chumakina (In press) Agreement between arguments? Not really.

- Poppe, Nikolaus (1951) *Khalkha-Mongolische Grammatik*. Wiesbaden: Franz Steiner Verlag GmbH.
- Poulos, George & Christian T. Msimang (1998) *A Linguistic Analysis of Zulu*. Cape Town: Via Afrika.
- Priestly, T. (1993) Slovene. In *The Slavonic languages*, vol. 1, Bernard Comrie & Greville Corbett, eds., London: Routledge, 388–451.
- Radkevich, Nina (2010) *On Location: The Structure of Case and Adpositions*. Ph.D. thesis, University of Connecticut, Storrs, CT.
- Reesink, Ger P. (1987) *Structures and Their Functions in Usan: a Papuan Language of Papua New Guinea*. Amsterdam: John Benjamins.
- Reh, Mechthild (1985a) *Die Krongo-Sprache (Nĩnò Mó-Dì)*. Berlin: Dietrich Reimer Verlag.
- Reh, Mechthild (1985b) *Die Krongo-Sprache (NĩnÚ MÚ-DĪ)*. Berlin: Dietrich Reimer Verlag.
- Reichle, Verena (1981) *Bawm Language and Lore. Tibeto-Burman Area*. Bern: Peter Lang.
- Rennison, John R. (1997) *Koromfe*. London: Routledge.
- Robins, R. H. (1958) *The Yurok Language, Grammar, Texts, Lexicon*. Berkeley / Los Angeles: University of California Press.
- Romero-Figueroa, A. (1997) *A reference grammar of Warao*. MÃynchen: Lincom Europa.
- Rood, David S. (1976) *Wichita Grammar*. New York: Garland.
- Rude, Noel E. (1985) *Studies in Nez Perce Grammar and Discourse*.
- Rumsey, A. (1982) *An Intra-Sentence Grammar of Ungarinjin, North-Western Australia*. Canberra: Australian National University.
- Saeed, John I. (1999) *Somali*. Amsterdam and Philadelphia: John Benjamins.
- Salminen, Tapani (1998) Nenets. In *The Uralic Languages*, Daniel Abondolo, ed., London: Routledge, 516–547.
- Saltarelli, Mario, Miren Azkarate, DavidFarwell, Jon de Urbina, & Lourdes O nederra (1988) *Basque*. London: Croom Helm.

- Seiler, Hansjakob (1977) *Cahuilla Grammar*. Banning, CA: Malki Museum Press.
- Seiler, Walter (1985) *Imonda, a Papuan Language*. Canberra: Australian National University.
- Smeets, Inke (2008) *A Grammar of Mapuche*. Berlin: Mouton de Gruyter.
- Smith, Norval (2011) Free Personal Pronoun System Database. Online at <http://languagelink.let.uu.nl/fpps/>.
- Smith, Peter W., Beata Moskal, Jungmin Kang, Ting Xu, & Jonathan D. Bobaljik (2015) Case and number suppletion in pronouns, manuscript.
- Tamura, Suzuko (2000) *The Ainu Language*. Tokyo: Sanseido.
- Tauberschmidt, Gerhard (1991) *A Grammar of Sinaugoro*. Pacific Linguistics.
- Teng, Stacy Fang-Ching (2008) *A Reference Grammar of Puyuma*. Australian National University: Pacific Linguistics.
- Terrill, Angela (2003) *A Grammar of Lavukaleve*. Berlin: Mouton de Gruyter.
- Thráinsson, Hoskuldur, Hjalmar P. Petersen, Jógvan Jacobsen, & Zakaris Svabo Hansen (2004) *Faroese: An Overview and Reference Grammar*. Foroya Fródska-parfelag.
- Traill, Anthony (1994) *A !Xóõ Dictionary*. Köln: Rüdiger Köppe Verlag.
- Tryon, Darrell T. (1970) *An Introduction to Maranungku*. Canberra: Australian National University.
- Uççida, Norihiko (1970) *Der Bengali-Dialekt von Chittagong: Grammatik, Texte, Wörterbuch*. Wiesbaden: Harrassowitz.
- Valentine, Randy (2001) *Nishnaabemwin Reference Grammar*. Toronto: University of Toronto Press.
- Valenzuela, Pilar M. (1997) *Basiv Verbs Types and Argument Structures in Shipibo-Conibo*. Master's thesis, University of Oregon.
- van den Berg, Helma (1995) *A Grammar of Hunzib*. MÄynchen: Lincom Europa.
- van der Voort, Hein (2004) *A Grammar of Kwaza*. Berlin: Mouton de Gruyter.
- van Driem, George (1992) *The Grammar of Dzongkha*. Dzongkha Development Commission.

- van Driem, George (1993) *A Grammar of Dumi*. Berlin: Mouton de Gruyter.
- van Driem, George (1998) *Languages of the Greater Himalayan Region*. Leiden: Brill.
- Veselinova, Ljuba N. (2006) *Suppletion in verb paradigms*. Amsterdam: John Benjamins.
- Viitso, Tiit-Rein (1998) Estonian. In *The Uralic Languages*, Daniel Abondolo, ed., London / New York: Routledge, 115–148.
- Vogt, Hans (1940) *The Kalispel Language*. Oslo: Norwegian Academy of Sciences / Jacob Dybwad.
- Wade, Terence L. B. (1992) *A Comprehensive Russian Grammar*. Oxford: Blackwell.
- Wali, Kashi & Omkar N. Koul (1997) *Kashmiri: A Cognitive-Descriptive Grammar*. London: Routledge.
- Waren, Olivia Ursula (2007) Possessive pronouns in Maybrat: A Papuan language. *Linguistika* 14.
- Watkins, Laurel J (1984) *A Grammar of Kiowa*. Lincoln: University of Nebraska Press.
- Watters, David E. (2002) *A grammar of Kham*. Cambridge: Cambridge University Press.
- Werner, Heinrich (1997) *Die Ketische Sprache*. Harrassowitz Verlag.
- Westrum, Peter N. (1988) A Grammatical Sketch of Berik, MA Thesis, University of North Dakota.
- Wilson, Darryl (1974) *Suena Grammar*. Workpapers in Papua New Guinea Languages 8, Summer Institute of Linguistics.
- Winkler, Eberhard (2001) *Udmurt*. MÄynchen: Lincom Europa.
- Zaicz, Gábor (1998) *Mordva*. London: Routledge.