The locus of parametric variation in Bantu gender and nominal derivation

Zuzanna Fuchs and Jenneke van der Wal
University of Southern California | Leiden University

In this paper, we capture the crosslinguistic variation in Bantu nominal structure in a unified analysis of gender on *n* (Kramer 2014, 2015). We demonstrate that this analysis accounts for the morphosyntactic properties of basic nouns as well as locative and diminutive derivations. Moreover, it allows us to capture intra- and inter-language morphosyntactic variation by reference to just three parameters – one strictly morphological and two structural. The presence of one or two *n* heads, and the size of the complement distinguish between different types of locatives (structural variation); the presence or absence of a spell-out rule of adjacent *n* heads differentiates "stacking" versus "non-stacking" prefixes in diminutive and augmentative derivations (morphological variation only).

Keywords: grammatical gender, Bantu languages, comparative syntax, nominal derivation, locatives, diminutives

1. Introduction

Bantu languages boast a nominal system that is replete with the kind of microvariation that constitutes a particularly promising field of study for comparative syntacticians. In any Bantu language, every noun belongs to a noun class, commonly thought to combine number and gender information (Carstens 1991). These features are realized on nouns as class prefixes, and they index agreement both within the nominal phrase (i.e. concord) and in the clause in the form of subject or object markers on the verb, as illustrated in (1). As explained below, these noun classes can be paired as gender A, B, C etc.

https://doi.org/10.1075/lv.20007.fuc | Published online: 16 July 2021
Linguistic Variation 22:2 (2022), pp. 268–324. ISSN 2211-6834 | E-ISSN 2211-6842

Swahili[1]

(1) a. *Gender A, singular*
M-toto hu-yu a-na-som-a.
1-child DEM-1 1SM-PRS-read-FV
'This child is reading.'

b. *Gender A, plural*
Wa-toto ha-wa wa-na-som-a.
2-children DEM-2 2SM-PRS-read-FV
'These children are reading.'

c. *Gender D, singular*
Ki-tabu hi-ki ki-na-som-w-a.
7-book DEM-7 7SM-PRS-read-PASS-FV
'This book is being read.'

d. *Gender D, plural*
Vi-tabu hi-vi vi-na-som-w-a.
8-books DEM-8 8SM-PRS-read-PASS-FV
'These books are being read.'

The average number of noun classes in any Bantu language ranges from 12 to 21 (Nurse & Philippson 2003: 8), as most Bantu languages have maintained some subset of the noun classes that are reconstructed for proto-Bantu. The noun classes are traditionally labeled according to a number ascribed to its correlate in proto-Bantu (Meinhof 1906). Table 1 provides an illustration of the noun classes in Lugwere. The first vowel preceding the nominal prefix is the so-called augment, which will become relevant in Section 3.1.

As illustrated in Table 1, noun classes in Bantu languages occur with basic nouns,[2] but may also have derivational power, contributing new meaning to the noun to which they affix (see Myers 1987; Ferrari 2005, among others). Broadly speaking, there are three kinds of derived nouns formed using dedicated noun class prefixes: infinitives (class 15), locatives (classes 16-17-18), and diminutives and augmentatives (in Lugwere classes 12/13 and 20/22, respectively).

In the rest of this introduction, we first briefly introduce the derivational properties of locatives and diminutives and demonstrate that they are indeed part of the nominal system, in order to frame the challenges this system presents (more detailed discussions of each type of derived nominal will follow in subsequent sections). We then discuss the approach to these challenges that this paper

1. Where a reference is not given, the data come from the authors.

2. We use the term 'basic noun' to refer to the root plus the first *n* merged to it, and 'basic prefix' to refer to (the spell-out of) that first *n*, i.e. the prefix that a noun occurs in the absence of any further derivation.

Table 1. Noun classes in Lugwere

Noun class	Example	Gloss	n.c.	Example	Gloss
1	o-**mu**-kali	woman	2	a-**ba**-kali	women
3	o-**mu**-saale	tree	4	e-**mi**-saale	trees
5	e-**ri**-iso	eye	6	a-**ma**-iso	eyes
7	e-**ci**-enyaanza	fish	8	e-**bi**-enyaanza	fish (pl)
9	e-**n**-tebe	chair	10	e-**n**-tebe	chairs
11	o-**lu**-gumba	bone			
12	a-**ka**-tale	market	13	o-**bu**-tale	markets
	a-**ka**-guumba	small bone		o-**bu**-guumba	small bones
15	o-**ku**-tumula	to talk			
16	a-**wa**-nsi	underside			
17	o-**ku**-ka-tale	at the market			
18	o-**mu**-n-yumba	in the house			
20	o-**gu**-enyaanza	big fish	22	a-**ga**-enyaanza	big fish (pl)

adopts, presenting them in the broader context of theoretical approaches to nominal structure in Bantu languages and highlighting the paper's contributions to this line of investigation.

1.1 Bantu DPs and derivation

Locative expressions in Bantu languages are typically formed by placing an already well-formed noun into one of classes 16, 17, 18 (and sometimes 23; see Meeussen 1967; Welmers 1973), as in (2). Locatives can be marked by a prefix (as illustrated for the three locative noun classes in Table 1 and in (2)), a suffix *-ni*, or both, as exemplified for Cuwabo in (3):

Bemba (Marten 2012: 433)

(2) a. **pa**-n-gándá
16-9-house
'at the house'

b. **kú**-n-gándá
17-9-house
'to the house'

c. **mu**-n-gándá
18-9-house
'in the house'

Cuwabo (Guerois 2014: 170–171)

(3) Oo-mótt-él-a **mu**-má-ánjé-**ní** kíbííí.
1SM.PFV.DJ.fall-APPL-FV 18-6-water-LOC IDEO
'She fell into the water "splash!"'

Importantly, in the majority of Bantu languages, locative expressions function as nominal phrases rather than prepositional phrases,[3] as visible, for example, in their ability to trigger subject and object marking (4) (see also Bresnan & Kanerva 1989; Carstens 1997).

Chichewa

(4) a. Mu-nyumba **mu**-na-yera.
18-9.house 18SM-PST-white
'Inside the house is clean.' (Ron Simango, p.c.)

b. Ndí-ma-**ku**-kóndá ku San José.
1SG.SM-PRS.HAB-17OM-love 17 San Jose
'I like (it) (in) San José.' (Bresnan 1991: 58)

This syntactic behavior suggests that, although locative noun classes in Bantu languages differ from other noun classes in that they contribute locative semantics, they nevertheless show syntactic behavior consistent with that of basic nouns. Locatives are therefore treated as part of the nominal system, and an analysis of the nominal phrase in Bantu languages ought to extend to locatives.

Similarly, diminutives and augmentatives are derived nouns, formed through the addition of an appropriate prefix contributing additional meaning to the interpretation of the noun to which it is prefixed. This is illustrated for diminutives in (5) and augmentatives in (6).

Chindamba (Edelsten and Lijongwa 2010: 36–38)

(5) a. li-piki
5-tree
'tree'

b. ma-piki
6-tree
'trees'

c. ka-piki
12-tree
'small tree'

3. Marten (2010) shows that some Nguni languages have reanalysed the locative prefixes as prepositions.

d. tu-piki
13-tree
'small trees'

(6) a. mu-twe
3-head
'head'
b. li-twe
5-head
'large head'

Again, in many ways, diminutives and augmentatives behave like basic nouns, including the fact that they determine concord and agreement, as illustrated in (7).

Kîîtharaka (database Kanampiu & Van der Wal)

(7) Arî, ka-rá ka-iy-iré i ka-íyí.
no 12-DEM.DIST 12SM.REL-steal-PFV COP 12-boy
'No, the one who stole is a small boy.'

Like locatives then, diminutives and augmentatives are treated as part of the nominal system and fall within the empirical scope of a morphosyntactic analysis of Bantu nominal structure.

Crosslinguistic variation in the derivation of diminutives and augmentatives is found in whether the derivational prefix can co-occur with the basic prefix. In examples (5)–(7) above, the diminutive and augmentative prefixes appear *instead of* the basic prefix, seemingly replacing it. However, some languages do not replace the base prefix with the derivational prefix but have the diminutive or augmentative *in addition to* the basic prefix (henceforth "stacking" prefixes), as in the Shona diminutives in (8) and the Nsenga augmentatives in (9):

Shona (Déchaine et al. 2014: 35)

(8) a. mu-kómáná
1-boy
'boy'
b. va-kómáná
2-boy
'boys'
c. **ka**-mu-kómáná
12-1-boy
'tiny boy'
d. **tu**-va-kómáná
13-2-boy
'tiny boys'

Nsenga (Simango 2012: 178)

(9) a. mu-nda
3-garden
'garden'

b. mi-nda
4-garden
'gardens'

c. **chi**-mu-nda
7-3-garden
'big garden'

d. **vi**-mi-nda
8-4-gardens
'big gardens'

While diminutives and augmentatives show variation in stacking versus non-stacking of prefixes, derived locatives consistently require stacking of prefixes across Bantu languages, as in (2) above.

1.2 (Questions for) analyses

This brief introduction paints a relatively complex landscape: a nominal system in which both simple and derived nouns occur with noun class prefixes, and in which the process of nominal derivation may vary between stacking and non-stacking noun class prefixes, both across languages and within a single language. There thus are a number of challenges these systems pose for analysis:

1. How can we account for the basic as well as derivational morphological properties of noun classes in Bantu languages (Bresnan & Mchombo 1995; Carstens 1991, 1993, 1997; Caha & Pantcheva 2020; Déchaine et al. 2014; Mletshe 2017; Mugane 1997; Myers 1987)?
2. How can we account for syntactic properties that do not always co-vary with the morphology (Caha & Pantcheva 2020; Carstens 1993, 1997, 2008; Taraldsen et al. 2018)?
3. How can we account for the crosslinguistic variation, especially in the derivations (Caha & Pantcheva 2020; Carstens 1997, 2008; Ferrari-Bridgers 2008; Kihm 2005)?

The current paper aims to address all three challenges, taking into account more crosslinguistic variation than considered previously and applying a unified framework that has recently been further developed (Kramer 2014, 2015, 2017). We propose that the nominal affix system in Bantu languages can be represented as a set of nominalizers *n* that are distinguished by their grammatical gender features –

each associated with a particular noun class pattern (Carstens 1991; see Section 2 for further discussion). Much of the work we build on (see below) proposes that the diminutive/augmentative and locative affixes are either dedicated projections or null heads that merge with the nominal syntactic structure to derive the semantic and syntactic properties of diminutives and locatives. Instead, we centralize the derivational power in a set of elements of the same category. The proposal that basic prefixes, diminutive prefixes, locative prefixes, and the locative suffix are all of the same category allows us to generalize across the morphosyntactic interactions that we see and attribute them to a finite set of morphological and structural parameters concerning the adjacency of *n*s. Note that the parameters proposed in this paper are primarily to be understood as a way to pinpoint variation irrespective of the model of grammar, but can be adapted to theoretical proposals in a recent 'rethinking' of comparative syntax as emerging featural parameters (see Roberts 2019 and references therein).

Furthermore, a comparison of these structures under such an analysis of gender reveals that the wealth of morphosyntactic variation in the nominal system can be explained by just three major parameters mentioned above – two of them syntactic and one morphological. Crucially, capturing this microvariation so straightforwardly and simply is made possible by the fact that the same structure underlies all the different types of nominal affixes (locative, diminutive, and basic affixes).

Previous analyses of nominal structure in Bantu languages typically take a subset of the nominal system as their empirical domain or are restricted to one particular language or subgroup of languages. In order to place our contribution within the existing literature, we briefly mention here the focus of the main previous approaches that we are building on, as they will be pertinent to later exposition of the data and analysis.

Déchaine et al. (2014) provide an in-depth analysis of basic and derived nouns (particularly diminutives) in Shona as well as certain mass/count distinctions. They identify two fixed positions in the syntactic structure where nominal prefixes (which they analyze as syntactic heads) can merge, and the interpretation of a given prefix as derivational or not is a function of which position the prefix occurs in. In spirit, this analysis is similar to what is proposed here, in that it considers basic prefixes and derivational prefixes to be the same syntactic element in structurally different positions. While the authors offer their proposal as applicable across Bantu languages, they do not discuss crosslinguistic variation (focusing on Shona) or how their proposal might extend to locative nouns.

Taraldsen et al. (2018) take data from Zulu as their starting point, and their analysis departs from that of Déchaine et al. (2014) in a number of ways. Their approach places greater emphasis on syntactic rather than morphological data,

considering for instance how agreement is computed with conjoined nominal phrases, as agreement does not always follow expected mathematical logic. For instance, conjoined nouns each of class X might be expected to determine agreement in the corresponding plural class Y, but it is well known that languages can feature a default (different) class for conjoined NP agreement. Taraldsen et al. therefore analyze nominal prefixes – both basic prefixes and derived prefixes – to be associated with silent nouns that merge into the structure as specifiers, yielding a bi-nominal representation of nouns in Zulu, which the authors propose to extend to all Bantu languages.

Their analysis is reminiscent of Carstens (1997, 2008), who maintains that non-derived nouns constitute a single nominal phrase but offers a bi-nominal analysis of locatives in languages such as Chichewa (building on Bresnan & Mchombo 1995). While her analysis accounts for a lot of the crosslinguistic variation, we show that it does not quite make the right predictions for locatives (see Section 3), and we note that the zero nouns in both Carstens' and Taraldsen et al.'s analysis may not be learnable (Section 3).

Finally, van der Spuy (2010, 2014) offers an alternative account couched within Distributed Morphology. Like Taraldsen et al. (2018), van der Spuy takes as his empirical domain data from Zulu, but unlike Taraldsen et al. he extends this domain to include locative nouns. However, locatives in Zulu diverge from the dominant pattern described above, in that the locative prefix in Zulu cannot determine agreement with the locative on verbs or on nominal modifiers (van der Spuy 2014; Doke 1973 – see Marten 2010 for an analysis of locatives as prepositions in languages like Zulu). Accordingly, van der Spuy (2014) analyzes the locative in Zulu as a case on the noun. Further, van der Spuy's analysis does not readily account for stacking of prefixes as it occurs in languages such as Shona, as Déchaine et al. (2014) point out.

In short, we have a decent starting point, but find a challenge in finding a unified theoretical approach while broadening our empirical basis. We suggest that the framework with the most power to capture the rich variation at different levels of the morphology and syntax that forms the core of our empirical domain is Distributed Morphology (Marantz 1997, 2001; Arad 2003, 2005; Embick and Noyer 2007; Embick and Marantz 2008). Central to the proposal presented here is the notion that noun classes are an instantiation of grammatical gender, which under the Distributed Morphology framework is located on the categorizing head *n*, which has derivational properties. Working within this framework allows us to formally encode the fact that some crosslinguistic variation in noun class morphology is just morphological, but other points of variation have structural origins and consequences.

Our proposal builds on previous work by taking into account a broader range of crosslinguistic data than the earlier approaches discussed above, still under a unified morphosyntactic analysis of simple and derived nominals. Whereas previous analyses typically consider non-derived nouns and only one type of derived noun, it is our belief that it is desirable for an analysis of nominal structure in Bantu languages to be able to account for all types of derived nominals – locatives as well as diminutives/augmentatives. We offer analyses of each of these in turn (Section 3 and Section 4, respectively) and also discuss the derivation of deverbal nouns (Section 2). We follow Déchaine et al. (2014) in analyzing class prefixes as heads rather than specifiers, but our approach is structural rather than templatic, with the interpretation of a prefix as basic or derivational arising from its relative position with respect to other features in the structure. The data we consider are predominantly morphological, and we restrict our empirical domain to not include data from conjoined noun phrases, counter to Taraldsen et al. (2018). The resolution of gender agreement as it proceeds in conjoined noun phrases is a matter of syntactic computation (involving gender features, closely linked to the gender assignment rules in a language – Corbett 2006; Wechsler 2009) and is therefore outside the scope of an analysis of the locus of these features based on the morphology of the noun phrase, which is what we aim to account for in this paper.

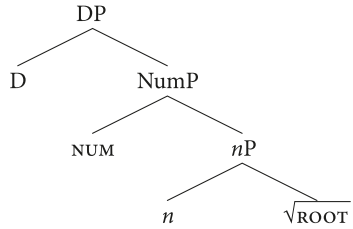
The scope of this work also departs from previous analyses in that we do not provide a detailed analysis of nominal structure in any single Bantu language but rather a comparative overview of data from several languages that are representative of certain morphosyntactic patterns. We aim to show that by taking a step back from some of the idiosyncrasies of each language and by taking seriously the notion that *n* is the locus of the gender feature, we can identify cross-Bantu patterns and correlations in nominal phrases and be better equipped to not only explain the observed variation but also make explicit which points of variation are only at the level of the spell-out and which are encoded in the syntax.

The paper is structured as follows. Section 2 introduces the DM approach to Bantu nominal structure and deverbal derivation, laying the theoretical foundation. Section 3 discusses microvariation within the category of locative DPs and applies the analysis to these structures, introducing the two syntactic parameters at the root of Bantu nominal microvariation. Section 4 follows the same steps for diminutive and augmentative derivations and introduces the final parameter, which is morphological in nature. Section 5 addresses the consequences of the proposed parameters, considering what any combination of parameter settings predicts for locatives and diminutives within a single language, and showing how the systematic structural difference between locatives and diminutives makes two further correct predictions. Section 6 synthesizes the findings and concludes.

2. A DM approach to Bantu nominal structure

In the framework of Distributed Morphology, nouns are formed when a categoryless root merges with a categorizing *n* head. The resulting syntactic element merges with other functional heads such as Number to build up the spine of the nominal phrase, as schematized in (10).

(10)



Number is one of a few agreement features that nominals can carry that determine properties of agreement on nominal modifiers (in languages with concord) and on verbs and predicative adjectives. Grammatical gender is another of these features. We follow much of the literature in taking grammatical gender to be a categorizing feature that groups nouns according to the shape of agreement markers they determine on agreeing elements (Hockett 1958; Corbett 1991; Kramer 2015).

Bantu languages also have grammatical gender, although its gender system has many more categories than the languages in which grammatical gender is typically investigated. A close examination of Table 1 reveals pairings between noun classes that Carstens (1991) captures by proposing that Bantu noun classes in fact combine gender information with number information. To illustrate, *o-mu-ntu* 'person, class 1' and *a-ba-ntu* 'people, class 2' share the same gender, but differ in whether their number feature is singular or plural, respectively. Carstens proposes the following system of genders for Bantu languages:

(11) Gender A: stems of class 1/2
Gender B: stems of class 3/4
Gender C: stems of class 5/6
Gender D: stems of class 7/8
Gender E: stems of class 9/10

In line with the understanding of gender as a categorizing feature that can be observed through distributional evidence and/or syntactic/morphological behavior, gender in Bantu languages determines not only the shape of the nominal

prefix, but also concord morphology on modifiers and verbal agreement,[4] as illustrated in (1) above for Swahili, partly repeated below:

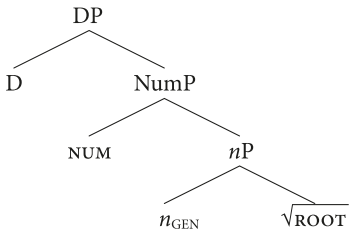
Swahili

(12) a. *Gender A, singular*
M-toto hu-yu a-na-som-a.
1-child DEM-1 1SM-PRS-read-FV
'This child is reading.'

b. *Gender A, plural*
Wa-toto ha-wa wa-na-som-a.
2-children DEM-2 2SM-PRS-read-FV
'These children are reading.'

While the number feature heads its own projection, various theoretical and empirical considerations led Kramer (2014, 2015), building on earlier work, to suggest that, contra Picallo (1991) and Bernstein (1993), the gender feature does not head its own projection (see also Carstens 2008 for the same conclusion for Bantu) but is rather located on the nominalizing *n*, as in (13). Other earlier proposals include that gender is located on the number projection (Ritter 1993; Carstens 2000, 2003), or that gender is a feature in the lexicon (Carstens 2010, 2011). We point the reader to Kramer (2015) for discussion of the empirical and theoretical advantages of the gender-on-*n* proposal over its competitors.

(13)



The structure above is spelled out following two sets of Vocabulary Insertion (VI) rules. The first set of rules allows the spell-out of a given root in the environment of the appropriate gender feature. We illustrate two such rules for Lugwere in (14).

(14) a. $\sqrt{\text{WOMAN}} \rightarrow$ -kali / n_A (o-mu-kali 'woman', class 1)
b. $\sqrt{\text{TREE}} \rightarrow$ -saale / n_B (e-mi-saale 'trees', class 4)

In many languages, there are plenty of stems that are not restricted to a single noun class, resulting in different meanings, as in (15). This suggests that some

4. See Güldemann & Fiedler (2019) for a comparison across Niger-Congo of gender, agreement class, nominal form class, and derivation/inflection.

roots can combine with more than one *n* and that the *n* that merges with the root affects semantic interpretation. We therefore follow Kramer (2014) in implementing encyclopedic licensing conditions that ensure licit *n*+root pairings. Such a pairing is only licensed if there exists an encyclopedic entry for its semantic interpretation. This system thus also elegantly captures the productivity of the noun class system in Bantu: Some roots are only licensed in the presence of one *n*, whereas others are licensed in the presence of more than one *n*, as indicated in the encyclopedic entries in (16).

Swahili

(15) a. ∅-chungwa 'orange, cl. 5' (gender C)
ma-chungwa 'oranges, cl. 6'
b. m-chungwa 'orange tree, cl. 3' (gender B)
mi-chungwa 'orange trees, cl. 4'

(16) a. $\sqrt{\text{ORANGE}} \rightarrow$ 'orange fruit' / n_C
b. $\sqrt{\text{ORANGE}} \rightarrow$ 'orange tree' / n_B

The second set of rules specifies the spell-out of *n* as a noun class prefix in a given context. For Lugwere, we illustrate with the following:

(17) a. $n_A \rightarrow$ ba- / _ PL (class 2)
b. $n_A \rightarrow$ mu- (class 1)

Note that we take number to be a privative feature, following Harley & Ritter (2002), such that what is considered to be the singular is actually the absence of number specification, whereas the plural is the specified number value. In other words, the singular can be represented as [*i*Num:] and the plural as [*i*Num:PL], although for reasons of space we abbreviate as in (17). Although this is a departure from how number in Bantu languages is typically represented, it allows for a context-free rule for noun class prefixes (17), in line with general desiderata for DM (Bobaljik 2012).

One consideration for this analytical choice is that singular is never spelled out separately, whereas plural can be. In some languages class 6 functions (or shows a tendency to function) as a default plural marker. A particular example is the plural of augmentative class 21 in Shona, as noted by Déchaine et al. (2014). Whereas the singular simply spells out the augmentative prefix (18), there is no plural of *zi-* and the plural Num head is spelled out separately as *ma-*, homophonous with class 6 (18). This is in line with positing a separate Number projection, as well as using privative number.

Shona

(18) a. mu-suma
3-suma.tree
'suma tree'

b. mi-suma
4-suma.tree
'suma trees'

c. zi-mu-suma
21-3-suma.tree
'big suma tree'

d. ma-zi-mi-suma
6-21-4-suma.tree
'big suma trees'

There is further evidence of default plural noun classes in the patterns of irregular pairings in some Bantu languages. The singular/plural noun class pairings as discussed to this point are "maximally wide and very dense" (Katamba 2003: 110), making up a majority of noun class pairings. But exceptions are not uncommon, and as Schadeberg (2001) discusses, the exceptions present a problem for any analysis of Bantu noun classes as a combination of number and gender (see Güldemann & Fiedler 2019 for general discussion, and van der Spuy 2010 for an argument from the point of view of SG/PL pairings in Zulu). There are essentially two ways of dealing with the less common noun-class pairings: either they form different genders, essentially assuming homophony in the system (as Carstens 1993 does to account for Swahili class 11/10, and as Kramer 2015 proposes for Romanian SG_F-PL_M combinations); or the system is undergoing a shift to a default plural class, which in many languages seems to be class 6.[5]

A further strength in adopting the *n* analysis of gender within DM is that the derivational role of *n* itself predicts derivational properties of gender (e.g. Armoskaite 2014; Kramer 2015), since the latter is hosted on the former. Under this approach, the categorizing *n* itself merges with some element (in the basic case, this is the root), and outputs a syntactic object that has nominal properties. We saw already in Section 1 that certain noun classes (and hence gender) have derivational properties: they prefix onto basic nouns to form infinitives, locatives, diminutives, and augmentatives. Under an analysis of Bantu nominal structure

5. However, see Devos (2020) for data on the highly complex system of SG/PL pairings in Shangaji, for which neither of these approaches would be sufficient. A more careful investigation of language-specific SG/PL pairings and default plural classes would be required to determine how to capture such a system within this account.

that locates gender on *n*, this derivational ability of noun class prefixes is a direct outcome of general properties of *n*.

Sections 3 and 4 are dedicated to denominal derivations (diminutives and locatives), but here we will illustrate the mechanics of the deverbal derivation of infinitives, since these are perhaps most commonly cited as examples of derived nominals.

Within the framework adopted in this paper, an infinitive is formed by a nominalizer *n* merging with a verbal projection. Just as when *n* merges with a root, the result of this operation is a syntactic object that is a nominal phrase. Above, we followed previous literature in positing that the *n* that merges with roots can carry a gender feature. Accordingly, "if *n* has a gender feature when it combines with roots, there is no *a priori* reason that it could not carry a gender feature when it combines with phrases" (Kramer 2015: 186). Positing gender on *n* then predicts that gender will play a role in derived nominals such as infinitives, and since noun classes are a spell out of gender features, we expect to see noun class prefixes involved in the derivation of infinitives (as well as the other types of derived nominals that will be discussed later).

In fact, the prediction goes one step further. A consequence of the *n* analysis of gender as detailed by Kramer (2015) is that all nominalizations of a particular category will belong to the same gender, because they are derived by the same *n*. Kramer (2015) illustrates this point with Romanian action/state nominals (also known as infinitives), which are always feminine (Iordachioaia and Soare 2008; Alexiadou et al. 2010). This suggests that noun classes will be involved in the formation of infinitives, and furthermore that one and the same *n* takes a verbal projection as its complement and outputs an infinitival phrase. We see the same in Bantu languages, in which infinitives are all in class 15 (see also Hadermann 1999), as illustrated in (19), and function as nouns, triggering class 15 agreement on verbs, as in (20).

Luganda

(19) a. n-a-laba
1SM-PST-see
'I saw.'

b. o-ku-(mu-)laba
AUG-15-(1OM-)see
'to see (him/her)

Swahili

(20) …kw-enda hu-ko **ku**-li-ni-saidia ku-wa Rais…[6]
15-go DEM-17 15SM-PST-1SG.OM-help 15-be 1.president
'…to go/going there helped me to become president…'

This suggests that there is a dedicated *n* in the inventory that derives infinitives. In a few Bantu languages, infinitives are not formed in class 15 but rather by using class 5, as illustrated for Bafia below. Crucially, it is still consistently one marker that is used to derive infinitives and is therefore in line with the predictions of this account: all nominals of a particular type (here, infinitives) that share a certain set of properties are associated with the same gender value on *n*;[7] there is simply cross-Bantu variation as to whether that dedicated *n* is class 15 or class 5 (here represented as n_{INF}).

Bafia (A50, Guarisma 2000, via Bantu Morphosyntax database SOAS)

(19) Prefix: dɨ̀- (class 5) (Guarisma 2000: 90–91)

a. rɨ̀-pés 'to criticize'
rɨ̀-ɓʌ́ʔ 'to break'
rɨ̀-ɗúŋ 'to rot'
rɨ̀-làn 'to flee'
rɨ̀-rám 'to set a trap'
rɨ̀-ʃʌ́ŋ 'to sacrifice'

b. ɓʌ̀-yíp ɓ-íí ɓʌ́-túmɛ̀m mín ɗí-rèn
2-woman 2-POSS.1 2-start then 5-cry
'his wives then start to cry' (Guarisma 2000: 161)

Evidence for the verbal nature of the complement of n_{INF} comes from the availability of the object marker *mu-* between the nominal prefix and the verbal stem in (19), as well as the possibility of marking negation and modality within the infinitive – prefixes *sa* and *ka* in (21) and (22), respectively.

Setswana (Creissels & Godard 2005)

(21) a. ga a leme
χà-á-lìm-í
NEG-1SM-plough-FV
(s)he does not plough / is not ploughing'

6. From https://www.pressreader.com/tanzania/rai/20160428/281797103186970 (accessed 26 September 2018).

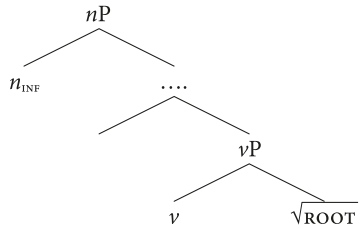
7. Note that this is unidirectional: all infinitives are in one class, but this does not entail that this class is dedicated to infinitives only.

b. go sa leme
χὺ-sà-lìm-í
INF-NEG-plough-FV
'not to plough'

(22) a. o ka lema
ó-ká-lím-à
1SM-POT-plough-FV
'(s)he can/may plough'
b. go ka lema
χὺ-ká-lím-à
INF-POT-plough-FV
'to be able to plough'

Given the availability of aspect and mood marking in the infinitives, we posit that the structure of infinitives in Bantu languages is as in (23), wherein n_{INF} merges with an initially verbal projection. If we assume object markers to reflect ϕ-features on v (Iorio 2014; Van der Wal 2015, a.o.), then this verbal projection may be as small as vP, but it could also be larger, including higher inflectional heads like negation and mood, but not tense.

(23)



The data presented in this section is in line with the expectation that if gender is on *n*, then all derived nominals of a particular category should belong to the same gender. As we have shown, infinitives within a given Bantu language belong to a single noun class (in most Bantu languages this is class 15). We can now explore further implications of this approach.

The core n_A, n_B, n_C, n_D, etc that were introduced above as merging with roots to form basic nouns can also productively derive a non-infinitival nominal from a verbal projection. This should not be surprising. It is certainly the case in languages like Romanian and Spanish, where a deverbal noun is assigned one of the genders that typical non-derived nouns take (like feminine in Romanian; Iordachioaia and Soare 2008; Alexiadou et al. 2010). If indeed gender is on *n*, and noun classes are a spell-out of gender in the context of number, and *n* has derivational properties, then we would expect at least some subset of noun classes 1–14

to also be able to derive deverbal nominals that have properties consistent with the other types of nouns that are formed using a given gender feature.

To illustrate, recall that class 1 is typically associated with human nouns. When the class 1 marker is prefixed onto a verbal projection (evidence for the verbal status of this projection may come from verbal morphology such as the passive, see also the evidence for the infinitives), the resulting deverbal noun shares some properties common to other nouns in that category, in this case humanness, as shown in (24).

Tshivenda (Poulos 1990, as cited in Mletshe 2017: 32)

(24) class 1 nominalizations

a.	*-fun-w-*	> *mu-fun-w-a*
	love-PASS	1-love-PASS-FV
	'be loved'	'beloved one'
b.	*-run-w-*	> *mu-run-w-a*
	send-PASS	1-send-PASS-FV
	'be sent'	'messenger'

This example shows that the selectional properties of n_A are such that it can merge with a root or with a verbal projection; the output in both cases is a noun whose referent is a human.

Although we cannot explore the full details of nominalizations in Bantu, we briefly mention that deverbal nominalizations may also feature a different final vowel (FV in (19) above). Mletshe (2017) provides ample discussion of nominalization in Xhosa and provides the overview in *Table 2*. For a detailed syntax of nominalizations in Bantu languages to be complete, the status of these final vowels needs to be further investigated.[8] In our discussion of grammatical gender, we focus on properties of the nominal prefixes rather than the final vowels in nominalizations, and we refer the reader to Valinande (1984) and Mletshe (2017), and references therein, for further information. For now, we note that all nominal prefixes that form basic nouns can also combine with verbal projections to form deverbal nouns, and that deverbal nouns formed with a given prefix tend to share

8. In the spirit of DM, our null hypothesis is that this is not just a quirk of the stem, but reflects a syntactic structure or process (but see Ferrari-Bridgers 2005 for an alternative). The question is thus what part of the structure this final vowel represents. We speculate that a layered *n* structure as proposed in (47) may work here as well, the suffix *-o* or *-i* being the spell out of a first *n*, possibly resulting in suffixation by head movement; an alternative is that the suffix spells out a nominal projection in parallel with Aspect or Mood in the verbal projection (which is taken to be the locus of the final vowel, see Julien 2002).

Table 2. Nominalizations in IsiXhosa (Mletshe 2017: 34)

	Class 1	Class 3	Class 5	Class 7	Class 8	Class 9	Class 11	Class 14
lamba 'be hungry'	*umlambi* 'hungry person'	*umlambo* 'state of becoming hungry'	*ilamba* 'chronically hungry person'	*isilambi* 'severely hungry / poor person'	*izilambi* 'severely hungry / poor people'		*ulambo* 'hunger'	*ubulambo* 'quality of hunger'
godola 'shiver'	*umgodoli* 'shivering person'			*isigodoli* 'extremely shivering person'	*izigodoli* 'extremely shivering people'	*ingodoli* 'expert shiverer'		
khuthala 'be diligent'	*umkhuthali* 'diligent person'			*isikhuthali* 'extremely diligent person'	*izikhuthali* 'extremely diligent people'	*inkuthalo* 'act of being diligent'		
tyeba 'be fat'			*ityeba* 'rich person'	*isityebi* 'extremely rich person'	*izityebi* 'extremely rich people'			
bhitya 'be thin'			*ibhityo* 'thin person'					
luphala 'be old'	*umluphali* 'old person'		*iluphala* 'old person'	*isiluphali* 'old person'	*iziluphali* 'old people'			
bola 'rot'	*umboli* 'rotten person'			*isiboli* 'extremely rotten person'	*iziboli* 'extremely rotten people'		*ubolo* 'state of rot'	*ububolo* 'quality of rot'
phakama 'rise'	*umphakami* 'conceited person'			*isiphakami* 'extremely conceited person'	*iziphakami* 'extremely conceited people'	*impakamo* 'act of being conceited'	*uphakamo* 'state of being conceited'	
thula 'quiet'	*umthuli* 'quiet person'			*isithuli* 'extremely quiest person'	*izithuli* 'extremely quiet people'	*intulo* 'act of being quiet'	*uthulo* 'state of being quiet'	

some set of properties, although we leave open the question of how the assignment of these properties proceeds.[9]

In this section we have explained the theoretical assumptions of our approach and how it works for basic nouns. Having demonstrated that this can be applied to the derivation of *deverbal* nominalizations, we now turn to the first of two types of *denominal* noun derivations that serve as testing grounds for the analysis: locatives (with the second, diminutives, following in Section 4).

3. Locatives

As shown in Section 1, locatives function as DPs in (most) Bantu languages, and they can be derived in the same way as other nouns, using an *n* head. We posit three values of gender features of locative *n* (see Bresnan 1991 on Bantu locatives as genders):

(25) n_{16} forms locative nouns, interpretation 'at'[10]
n_{17} forms locative nouns, interpretation 'to'
n_{18} forms locative nouns, interpretation 'in'

This works in a straightforward way for inherently locative nouns[11] (26) and general nouns meaning 'place', as in (27) and (28), where the basic prefix is locative and merged to a root.

Makhuwa (Van der Wal 2009: 118)

(26) a.

va-thí	o-thí	n-thí
16-down	17-down	18-down
'down'		

9. The fact that derived nominals share a semantic core does not entail that genders necessarily have a semantic core (compare Kramer 2015 for assignment of interpretable gender features in Amharic) – such an approach has been notoriously unsatisfactory for Bantu noun classes (see e.g. Denny & Creider 1976, Contini-Morava 1997) and is unnecessary if the root + first *n* constitutes the domain for idiomatic interpretation (see Section 4.2). However, outside of this domain the semantic feature(s) associated with a particular gender will be interpreted systematically, for gender G (diminutives, see Section 4) just as well as for gender H (abstract entities). The matter is far from simple, however, and we leave the details of interpretable features associated with gender for further research.

10. The exact interpretation as location, goal, direction etc. is language-specific and also dependent on the lexical semantics of the verb in the sentence that the locative noun is used in.

11. Some of these, such as 'up' and 'near', are called *paralocatif* by Gregoire (1975).

b. wa-tsulú o-tsulú n-tsulú
16-top 17-top 18-top
'up, on top'
c. ekaáshá e-rí wá-tsulú w-a meétsá ma-kháani
9.box 9SM-be 16-top 16-CONN 6.table 6-small
'the box is on top of the small table'

Ciluba-Kasai (Kuperus & Mpunga wa Ilunga 1990: 37)

(27) a. pá-ntú
16-place
'on a place'
b. kú-ntú
17-place
'somewhere, elsewhere'
c. mú-ntú
18-place
'somewhere inside'

Suku (Grégoire 1975: 16, via Zeller to appear)

(28) a. hó-ma hâ-ma
16-place 16.CONN-POSS.1SG
b. kú-ma kw-â-ma
17-place 17-CONN-POSS.1SG
c. mú-ma mw-â-ma
18-place 18-CONN-POSS.1SG
all: 'at my place'

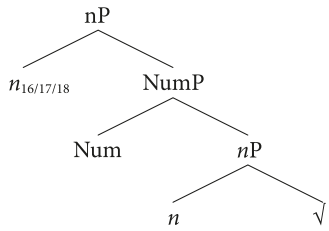
Most prefixal locatives, however, are formed by adding locative morphology to an existing noun that retains its basic noun class prefix, resulting in stacked prefixes, as in (29).

Bemba (Marten 2012: 433)

(29) a. pa-n-gándá
16-9-house
'at the house'
b. kú-n-gándá
17-9-house
'to the house'
c. mu-n-gándá
18-9-house
'in the house'

We propose that locatives in languages like Bemba have the structure in (30), where the lower *n* spells out as the basic prefix, and the higher $n_{16/17/18}$[12] as the locative prefix:

(30)



Our proposal thus maintains a single root and two steps of nominal derivation. This differs from previous accounts proposing a binominal structure (Bresnan & Mchombo 1995; Carstens 1991, 1997, 2008; Caha & Pantcheva 2020, compare to Taraldsen et al. 2018), where the basic noun is a complement to a Place noun, which never has an overt realization. Although agreement and concord may provide enough input to deduce this null noun, it is unexpected that *all* Bantu locatives show a consistent covert realization of such a Place noun, and we thus consider a mono-nominal account more attractive. Furthermore, our analysis accounts for two points of parametric variation in Bantu locatives: the complement of $n_{16/17/18}$, and the suffixal marking of locatives. These are discussed in turn.

3.1 Complement of $n_{16/17/18}$

So far, we have seen $n_{16/17/18}$ take a root complement (inherently locative nouns like in (27)), or a NumP complement (stacked prefixes as in (29)). In some languages, however, there is evidence that the complement must be bigger, specifically that it is a DP (more on earlier analyses positing a DP complement follows below). The evidence comes from the presence of the augment – the initial vowel or pre-prefix attached to nouns and often also to nominal modifiers. Not all Bantu languages have retained the augment, but a subset shows it, as illustrated for Kwanyama in (31) and Lugwere in (32). For most classes in Kwanyama the augment is an invariable *o-*.

Kwanyama (Halme 2004: 34, 37)

(31) a. **o**-mu-nhu
aug-1-person

12. We use 16/17/18 as a stand-in for the classes that behave in this way in a given language, considering that not all three are equally productive in each language.

b. **o**-shi-pundi
AUG-7-chair

Lugwere

(32) a. **á**-ka-tále
aug-12-market
b. **ó**-mu-sáále
AUG-3-tree

We first discuss the augment and its syntactic status, before returning to the structure of locatives comparing Lugwere and Kwanyama.

For Zulu and Xhosa, respectively, de Dreu (2008) and Visser (2008) have argued that the augment is a determiner element, located in D (and similarly see Ndayiragije et al. 2012 for Kirundi, Asiimwe 2014 on Runyakore-Rukiga, and Ngoboka 2016 for Kinyarwanda). Despite the lack of a one-to-one correlation between a definite interpretation and the augment, positing the augment in D is plausible for Kwanyama and Lugwere too, as the augment is omitted in contexts where not a DP but an NP structure would be expected (cf. Taraldsen 2010; Buell & de Dreu 2013, among others). The augment is omitted in Lugwere, for example, for nominal predication (33) and for a free-choice reading under negation (34).

Lugwere

(33) Oogwo __-mu-sáále.
3.DEM.DIST __-3-tree
'That is a tree.'

(34) Tí-n-a-gúl-íre __-cíí-ntu cóóncóna.
NEG-1SG.SM-PST-buy-PFV __-7-thing 7.any
'I didn't buy anything.'

In Kwanyama, augmentless nouns are used, for example, for vocatives and negative predicative nouns. Similarly, the augment is absent on the "inner" nouns in words derived via the associative *na-*, where only the prefix (not the augment) of the original noun appears, as shown in (35).

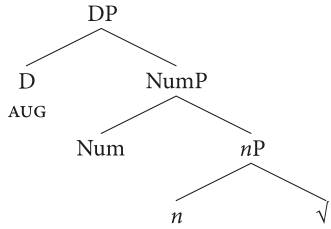
Kwanyama (Halme 2004: 37)

(35) a. o-shi-pundi
AUG-7-chair
'chair' (7)
o-mu-na-shi-pundi
AUG-1-IND-7-chair
'chairperson' (1)

b. o-ma-pya
AUG-6-fields
'fields' (6)
o-mu-na-ma-pya
AUG-1-IND-6-field
'farmer' (1)

The augment in Lugwere and Kwanyama thus functions separately from the prefix, and is proposed to be located in D in both languages, as represented in (36).

(36)



With this background we can return to the locatives, where Lugwere and Kwanyama interestingly differ in the absence vs. presence of the augment on the basic noun: in Lugwere the augment cannot appear in the complement to the locative prefix (37), whereas in Kwanyama it does intervene (38).

Lugwere

(37) a. ó-mú-(*a-)ka-tále
AUG-18-(*AUG-)12-market
'on the market'
b. ó-mu-(*o-)mu-sáále
AUG-18-(*AUG-)3-tree
'in the tree'

Kwanyama (Halme 2004: 29,31)[13]

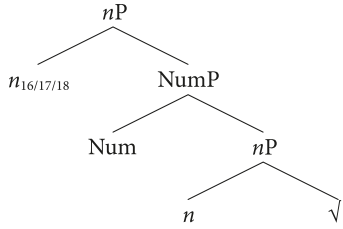
(38) a. pu+omuti > p**o**muti 'beside the tree'
b. ku+oshipundi > k**o**shipundi 'on the chair'
c. mu+eumbo > m**e**umbo 'inside the house'

In Lugwere, the fact that the augment cannot appear between the inner basic prefix (*ka-*, *mu-*) and the outer locative prefix (*mu-*) suggests that the complement of $n_{16/17/18}$ cannot be a DP but must be a NumP in this language (as the basic noun

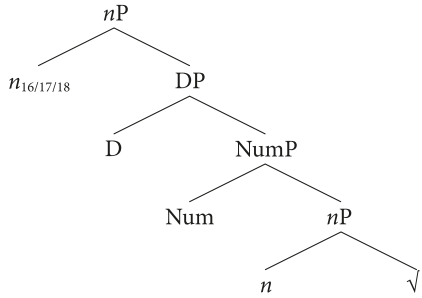
13. Note that the locative prefixes in Kwanyama are indeed ***pu-***, ***ku-***, and ***mu-***, not ***po-***, ***ko-***, and ***mo-***, as can be seen in locatives of nouns that never take an augment (Halme 2004: 65, 66):
i. ku+Europa > kuÉúropa 'to Europe'
ii. pu+ina > puíná/pwiíná 'beside his/her mother'

can be plural). The presence of the augment in Kwanyama locatives suggests the opposite, that $n_{16/17/18}$ takes a DP complement. Languages thus differ in the size of the complement of $n_{16/17/18}$.[14]

(39) Structure of locatives in Lugwere



(40) Structure of locatives in Kwanyama



This is where our analysis crucially differs from earlier proposals, notably Carstens (1997),[15] but also Caha & Pantcheva (2020). Both propose an analysis

14. For languages that no longer have the augment, such as Chichewa, it is more difficult to establish what the size of the complement is, because there is no segmental marking of a presumed D head. A reviewer suggests that demonstratives can be indicative of a DP complement, but this only works if the status of demonstratives is clear: Carstens (1997) suggests for Chichewa that they "seem to be adjoined like adjectives, rather than D°s".

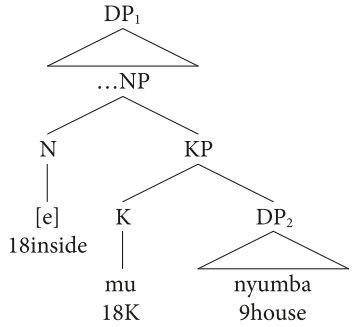
Chichewa (Botne & Kulumeka 1995: xxvi)

a.	m-sika	ku-m-sika
	3-market	17-3-market
	'a/the market'	'on/at the market'
b.	chi-tsime	mu-chi-tsime
	7-well	18-7-well
	'a/the well'	'in a/the well'

15. For further discussion of the drawbacks of Carstens' (1997) analysis of locatives in Chichewa, see Lee (in prep).

with a full DP complement to, respectively, a K(ase) node (hosting the locative prefix) or a Place node.

(41) Structure of Bantu locatives according to Carstens (1997, 2008)



'inside the house'

If the augment is indeed a reflection of D, we would expect to see the augment between the locative prefix and the inner noun's prefix in many more (if not all) languages with augments. This is not the case, and neither does the presence of the augment vary by noun class, suggesting that the complement must in many languages be smaller than a DP, as expected under our proposal. The different size of the complement that our analysis allows is the first of three parameters that capture the crosslinguistic variation introduced in Section 1.

Parameter A: Does $n_{16/17/18}$ take NumP or DP as its complement?

3.2 Locatives with suffix -(i)ni

A second point of variation in Bantu locatives concerns the prefixal and/or suffixal marking of locative nouns. In a subset of Bantu languages, locatives are not derived by a prefix, but by the suffix -(*i*)*ni*, especially in Bantu zones E and (south) G (Gregoire 1975), as illustrated in (42).

Gikuyu (Mugane 1997: 33)

(42) a. mũ-twe
3-head
'a/the head'

b. mũ-twe-**inĩ**
3-head-loc
'by/on the head'

c. ma-nyũmba
6-9.house
'houses (collective)'

d. ma-nyũmba-**inĩ**
6-9.house-loc
'by/on/in the houses (collective)'

Nevertheless, even for locatives derived by suffixation of *-(i)ni*, in some languages verbal agreement reveals the same distinction for classes 16/17/18 (43). This suggests that the three locative gender categories are still present but not overt (but see Section 5.1 for discussion of further variation).

Swahili (Carstens 1997: 402)

(43) Nyumba-ni pa-/ku-/m-na wa-tu w-engi.
9.house-LOC 16-/17-/18-have 2-people 2-many
'In/at the house are many people.'

Carstens (1997) proposes for Swahili that the *-(i)ni* suffix spells out the same head (K) as locative prefixes in other languages. However, this analysis predicts a complementary distribution of locative prefixes and suffixes, which is not borne out in all languages: a look at a broader range of Bantu languages reveals that there are some in which derived locatives are marked by both a prefix and a suffix. In Cuwabo and Makhuwa, the locative prefix is obligatory, and the suffix is omitted in case the noun has a locative meaning inherently (Gregoire 1975; Guerois 2014).[16,17] Thus, in Cuwabo (44) the locative 'in the water' is marked by both the prefix *mu-* and the suffix *-ni*, but in (44) the locative 'the river bank' only shows the prefix *óo-* but no suffix.

Cuwabo (Guerois 2015: 170–171)

(44) a. Oo-mótt-él-a **mu**-má-ánjé-**ní** kíbííí.
1SM.PFV.DJ.fall-APPL-FV 18-6-water-LOC IDEO
'She fell into the water "splash!"'

16. Guerois (2014: 175) suggests that "a word [that is] inherently locative may not require to carry further locative information, and vice versa". A similar generalisation is made for Zulu by Taylor (1996: 292) stating that locatives not taking *-ini* "denote entities which are, in a sense, already locative in character".

17. Note that locatives in Cuwabo are not PPs (i.e. the prefix is not a preposition), as locatives can trigger subject marking in inversion:

i. Mmúrúddání muufíya álêddo. (Guerois 2014: 61)
mu-múrúddá-ní mu-Ø-hí-fíya álêddo
18-3.village-LOC 18SM-PRS-PFV.DJ-arrive 2.guest
'At the village arrived the guests.'

b. Rāpáási oo-vény' **óo**-kobélâ …
1a.boy 1SM.PFV.DJ-leave 17-9a.bank
'The boy left the river bank …'

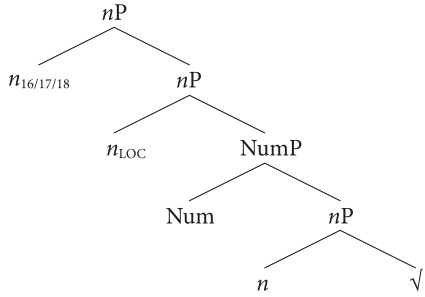
Similarly in Makhuwa, some locative nouns show both a prefix and a suffix, and others just the prefix with an optional suffix, as exemplified in (45).

Makhuwa (Van der Wal 2009: 42)

(45) a. e-kisírwa 'island' **wa**-kisírwa 'on the island'
9-island 16-island
b. n-téko 'work' **o**-n-tékó-**ni** 'at work'
3-work 17-3-work-LOC
c. m-aátsi 'water' **m**-m-aátsí-**ni** 'in the water'
6-water 18-6-water-LOC
d. e-mátta 'field' **m**-máttá(-**ni**) 'on the field'
9-field 18-field-LOC

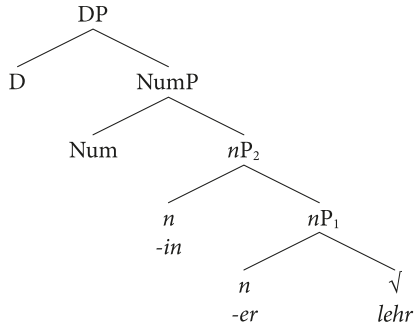
The cooccurrence of the overt prefix and suffix suggests that the two must be separated in the structure. Concretely, we propose that locatives have a double *n* structure, as in (46). Considering that the *-(i)ni* suffix derives a locative noun, we deduce that it too is an *n* head. We label this n_{LOC} and we posit that it derives a locative noun with no further gender specification. This is reminiscent of Svenonius' (2007, 2010) proposals for a split projection in the PP; the only difference being that in Bantu we find heads referring to general location (what could be parallel to K) and specific location (presumably parallel Place) within the *DP*, not the PP. The suffixal status of *-(i)ni* can be understood either as a morphological specification, or as head movement of the basic *n*P to n_{LOC}, with left-adjunction (Kayne 1994). Subsequently, the structure is merged with another *n* that provides the interpretable gender features of locative 'on, near' (class 16), 'at, to' (class 17), or 'in' (class 18).

(46) Structure of locatives (when *-(i)ni* is present)



Considering that locatives are denominal nouns, it stands to reason that they involve *n* selecting for *n*P. Such stacking of multiple *n*s can be seen crosslinguistically, for instance in English nouns like *father-hood* and *own-er-ship*, Italian *pizz-eria*, and German *Lehr-er-in* 'female teacher'; for the latter Kramer (2015: 208) proposes the structure in (47). See also the derivation of Bantu diminutives in Section 4.

(47)



Summarizing, in languages that mark locatives with both a prefix and a suffix, the lower n_{LOC} is spelled out by *–(i)ni* (unless the noun is locative already), and the higher locative *n*, providing the interpretable gender features, is spelled out as the prefix of class 16/17/18, with the VI rules as in (48).

(48) Selected Vocabulary Insertion Rules for pre- and suffixal locatives in Makhuwa
n_{LOC} → -ni
n_{16} → wa-
n_{17} → o-
n_{18} → N- (homorganic nasal)

The proposed structure for Bantu locatives in (46) forms our starting point to explain two main points of crosslinguistic variation: For a language L,

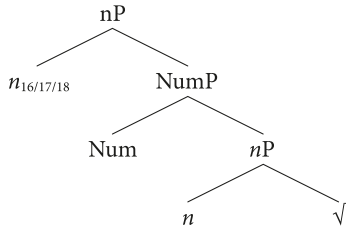
1. Can locatives in L be marked by a suffix?
2. If yes, are locatives in L also marked by a prefix?

We discuss these in turn, concluding that the first point concerns syntactic variation (presence vs. absence of the n_{LOC} head), whereas the second point is based in morphological variation (different VI rules).

Concerning the first point, we have seen languages with the locative suffix *-(i)ni* (e.g. Swahili, Cuwabo, Gikuyu), and languages without a locative suffix (e.g. Chichewa, Lugwere, Kwanyama). For the second group of languages, which never show a suffix, we find it implausible that acquirers would receive enough input to postulate an n_{LOC} head that is never spelled out. We therefore assume that

languages that form locatives just by prefixing (such as Lugwere or Chichewa) only have the head $n_{16}/n_{17}/n_{18}$ (specified for certain locative semantics) that can directly select a NumP as the complement. The structure is as represented in (49), repeated from above:

(49)



The second parameter, then, can be formulated as follows:

Parameter B: Do locatives involve a head n_{LOC} in addition to $n_{16/17/18}$? (to be adjusted)

This parameter distinguishes between the first row in Table 3 'n_{LOC} absent' and the second row 'n_{LOC} overt'.

Table 3. (Preliminary) points of variation in Bantu locatives

	$n_{16/17/18}$ overt	**$n_{16/17/18}$ null**
n_{LOC} absent	Chichewa e.g. *pa-nyanja (16-9.lake)*	(unlearnable?)
n_{LOC} overt	Cuwabo e.g. *mu-máánjé-ni (18-6.water-LOC)*	Swahili e.g. *nyumba-ni (9.house-LOC)*

The second point of crosslinguistic variation is found within the languages that show a locative suffix: some also spell out a locative prefix (Makhuwa, Cuwabo), whereas others never show such a prefix (Swahili, Chaga). We argue that this variation is only superficial in some languages: encoded in the VI rules, but not in the syntax. Locatives in these types of languages are proposed to have the underlying syntactic structure as in (46), with an n_{LOC} head as well as a higher locative head $n_{16}/n_{17}/n_{18}$, but whether the higher head is spelled out or remains silent distinguishes between the two columns in Table 3, '$n_{16/17/18}$ overt' vs. '$n_{16/17/18}$ null'. However, the presence of this null head depends on the evidence the language provides, and this varies.

For languages without overt locative prefixes, there may still be compelling reasons to argue for a null presence of the higher head, rather than its absence.

Consider again Swahili, where the n_{LOC} head is spelled out as the suffix *-ni*, and the higher head $n_{16/17/18}$ is systematically null, as specified in the VI rules in (50). Although all three locative genders in such a language have the same phonological form, the differences in concord and agreement patterns (cf. (43) above), as well as the semantic specification between classes 16-17-18, show that the higher *n* head is present and specified as $n_{16}/n_{17}/n_{18}$, but simply lacks phonological realization. Additionally, this evidence will be sufficient for the Swahili acquirer to posit different gender features.

(50) Sample Vocabulary Insertion Rules for non-prefixal locatives
$n_{\text{LOC}} \rightarrow$ -ni
$n_{16} \rightarrow \emptyset$
$n_{17} \rightarrow \emptyset$
$n_{18} \rightarrow \emptyset$

However, in Kîîtharaka such evidence is difficult to obtain. Class 18 has disappeared, class 16 only occurs in one noun (*ba-ntu* 'place') and the pronominal demonstrative 'here/there' (51), and class 17 functions as a default subject marker also used in expletive constructions as in (53) (and also on *kwarî* in (51)). Locatives, which are derived by *-ini*, thus cannot trigger subject agreement or concord, shown in (52) and (53).

Kîîtharaka (database Kanampiu & Van der Wal)

(51) Káuma águ káathi bantû kwarí́ na ngaraí́ ímbííthu.
ka-um-a **a-gu** ka-a-thi **ba-ntu** **kû**-a-ri na n-garaî
12SM-leave-FV 16-DEM 12SM-PST-go 16-place EXPL.SM-PST-be and 9-charcoal
î-bîth-u
9-burn-STAT
'He left that place and went to a place that had charcoal.'

(52) mbaasi-iní î-rá / *a-rá / *kû-rá
5.bus-LOC 5-DEM.DIST 16-DEM.DIST 17-DEM.DIST
'in that bus'

(53) (Ndúkáaní) í kűthűűngîîré műntû.
n-duka-ini ni **kû**-thûûngîr-ire mû-ntû
9-shop-LOC FOC EXPL.SM-enter-PFV 1-person
'(In the shop) there entered somebody.'

This suggests that Kîîtharaka does not have a head $n_{16}/_{17}/_{18}$, but can still form its general locatives through n_{LOC}, spelling out as *-ini*. The variation is thus as in Table 4:

Table 4. (Preliminary) points of variation in Bantu locatives

	$n_{16/17/18}$ **absent**	$n_{16/17/18}$ **overt**	$n_{16/17/18}$ **null**
n_{LOC} absent	(unlearnable?)	Chichewa e.g. *pa-nyanja*	(unlearnable?)
n_{LOC} overt	Kîîtharaka e.g. *mbaásí-ini*	Cuwabo e.g. *mu-máánjé-ní*	Swahili e.g. *nyumba-ni*

The syntactic parameter can be adjusted to the following, leaving purely morphological variation (i.e. the null spell-out) to the VI rules:

Parameter B': Do locatives involve n_{LOC}, $n_{16/17/18}$, or both?

A third point of variation is language-internal, and concerns which locatives in a language require the suffix *-(i)ni* – this provides further evidence that the double layer of locative *n*s is on the right track. In languages with a locative suffix, there is an additional small class of inherently/semantically locative nouns that are derived without the *-(i)ni* marker but which appear in environments where other locative nouns do require the suffix, and which show locative behavior otherwise, e.g. in concord and agreement.[18] Example (54) from Chaga shows the unmarked locative *sangazra* '(at the) market' in (54b), and the marked *mesa-nyi* 'on the table' in (54a), both triggering locative subject marking on the verb (in class 16 or 17).

Kivunjo-Chaga (Moshi 1995: 131)

(54) a. Mesa-nyi ha-wozre shitapu na ma-karitasi.
9.table-LOC 16SM-have 8.books and 6-papers
'On the table, there are books and papers.'
Lit. 'On the table has books and papers.'

b. Sangazra ha/ku-wozre soko na malruwu.
9.market 16SM/17SM-have 9.beans and 6.bananas
Lit. 'At the market has beans and bananas.'

The existence of such semantically as well as functionally locative nouns without *-(i)ni* suggests that the function of n_{LOC} (the suffix) is to derive an underspecified

18. While a detailed investigation of the proposed inherent [loc] feature is outside the scope of this paper, we suggest that an approach in the spirit of Steriopolo's (2018) split representation of semantic gender and grammatical gender may be applied to formalize this notion. Semantic gender – or in this case a general [loc] feature – is present on the root in semantically locative nouns, while grammatical gender occurs on *n*. Under such a proposal, the set of roots that has an inherent semantic [loc] feature would be language-specific.

locative noun, and that the higher head contributes one of the three interpretable locative genders.[19] Note, again, that the higher head may or may not be spelled out, as the same is seen in Cuwabo ***mu***-*má-ánjé-**ní*** 'in the water' vs. ***óo***-*kobélâ* 'on the riverbank' in (44).

A remaining question in these languages concerns the presence of n_{LOC} in locatives that do not show the suffix. There are two options. Either the locative complement of $n_{16/17/18}$ is *always* formally derived by a lower n_{LOC} but receives a null spell-out when the noun is inherently locative (compare the analysis that an Appl(icative) head is present but invisible in lexically ditransitive verbs like 'give', Pylkkänen 2008). Alternatively, we may speculate that $n_{16/17/18}$ requires a locative noun as its complement, which may be derived by n_{LOC} (spelled out as *-ini*) or inherently specified as locative (no *-ini*).

We thus see that Bantu locatives may be analyzed using a layered-*n* nominal structure. Within Bantu locatives, we can identify several points of variation, summarized in Table 5.

Table 5. Variation in Bantu locatives

	$n_{16/17/18}$ **absent**	$n_{16/17/18}$ **overt**	$n_{16/17/18}$ **null**
n_{LOC} absent	(unlearnable?)	Chichewa e.g. *pa-nyanja*	(unlearnable?)
n_{LOC} overt	Kîîtharaka *e.g. mbaásíni*	Cuwabo e.g. *mu-máánjé-ni*	Chaga, Swahili e.g. *nyumba-ni*
n_{LOC} null	(unlearnable?)	Cuwabo e.g. *óo-kobélâ*	Chaga e.g. *sangazra*

In summary, so far we have discussed the behavior of gender on *n* in infinitives and other deverbal derivations, as well as in locative denominal derivations. We have also provided an account of the parametric variation encountered in locative derivation. Having demonstrated the ways in which the present analysis allows us to capture intra- and inter-language variation in one major type of derived nouns, we now turn our attention to another area of nominal derivation: diminutives and augmentatives.

19. This is reminiscent of preposition drop for general locative nouns in languages such as Greek, but the analyses proposed in, for example, Ioannidou & Den Dikken (2009); Terzi (2010); Gehrke and Lekakou (2013) cannot be applied here for the simple reason that we are dealing with DPs here, not PPs.

4. Derived diminutives and augmentatives

In languages such as German and Russian, diminutives have been analysed as resulting from merger of *n* with an *n*P (Wiltschko 2006; Wiltschko and Steriopolo 2007; Kramer 2015; Steriopolo 2017). This double *n* layer was already introduced for locatives (based on the German *Lehrerin* example in (47) above), and we argue that the same structure underlies diminutives and augmentatives in Bantu languages. As mentioned in the introduction, diminutives and augmentatives can be derived by replacing the basic prefix, or stacking the derivational prefix onto the basic prefix.[20] Despite this cross-Bantu morphological variation found in diminutive and augmentative derived nominals, we contend that their underlying structure is the same across the board, and that variation is in the spell-out.

4.1 Stacking prefixes

The first pattern for diminutives and augmentatives shows transparent stacking of nominal morphology. Consider the data from Shona, in (55), in which the addition of a second prefix onto an already well-formed prefix-noun combination changes the interpretation of the noun, yielding diminutive semantics.

Shona (Déchaine et al. 2014: 35)

(55) a. **mu**-kómáná
1-boy
'boy'

b. **va**-kómáná
2-boy
'boys'

c. **ka**-mu-kómáná
12-1-boy
'tiny boy'

d. **tu**-va-kómáná
13-2-boy
'tiny boys'

The most widespread strategy for deriving diminutives is to use class 12/13 (gender G), as in (55), but this is language-specific (Gibson et al. 2017). A restricted number of languages use class 19; class 7/8 (Gender D) also takes on diminutive

20. A further Bantu diminutive strategy is the suffix *-ana* (from *muana* 'child'); we refer to Gibson et al. (2017) for further data.

or augmentative semantics in some languages when used derivationally (Gibson et al. 2017).

Augmentatives are derived in a similar fashion, a widespread strategy being the use of class 5/6 (Gender C) or class 7/8 (gender D) to contribute augmentative meaning when stacked onto an already well-formed prefix + noun, as in (56).

Nsenga (Simango 2012: 178)

(56) a. mu-nda
3-garden
'garden'

b. chi-mu-nda
7-3-garden
'big garden'

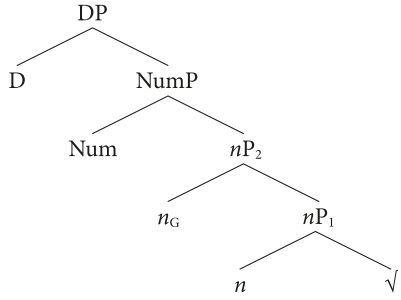
c. mi-nda
4-gardens
'gardens'

d. vi-mi-nda
8-4-gardens
'big gardens'

Other strategies employed for deriving augmentatives include using a dedicated class 21 or 22. For ease of exposition, we henceforth restrict the discussion to diminutives, but the same structural analysis should be applicable to augmentatives.

Considering the morphology of diminutives and augmentatives as illustrated in (55) and (56), we propose that the syntactic structure of a diminutive in a language like Shona is as in (57), inspired by Kramer (2015), Wiltschko (2006), Wiltschko & Steriopolo (2007), Steriopolo (2008). Here, we illustrate this for gender G, i.e. classes 12/13.

(57)



The lower *n* is spelled out as the basic prefix, and the higher *n* as the diminutive prefix, according to the VI rules in (58).

(58) Sample Vocabulary Insertion Rules for stacking diminutives
n_G → tu- / …PL (class 13)
n_A → va- / …PL (class 2)
n_G → ka- (class 12)
n_A → mu- (class 1)

We want to discuss three aspects of the proposed structure and VI rules.

First, the notation in (58) indicates that the diminutive prefix is n_G (rather than a specialized or dedicated prefix that might be labeled n_{DIM}). This reflects that notion that the prefix that can be interpreted as diminutive does not differ in nature from a basic prefix (in line with Déchaine et al.'s 2014 analysis). It is its position relative to other elements on the nominal spine – specifically the fact that it merges with an *n*P rather than a root – that determines its interpretation. This is a departure from Carstens (2008), who posits a specialized null morpheme with diminutive semantics and a gender specification, but it is in line with the fact that in many Bantu languages, diminutivizing prefixes can also occur as basic prefixes, without introducing diminutive interpretation to the nominal (see the end of Section 4.2 for further discussion and analysis).

Second, as already mentioned, we assume Number to be privative, i.e. singular is the absence of a plural feature, and hence the context-free VI rules suffice to spell out the singular of both *n* in Shona, resulting in *ka-mu-komana* 'little boy'.

Third, the analytical choice to have only a single Num projection in the diminutive structure is a departure from the analysis put forth in Déchaine et al. (2014).[21] There are two primary reasons to prefer the structure with a single NumP. The first reason is that it accounts for the fact that the lower and higher

21. The structure we propose here with one NumP is not universal. In Yiddish, for example, evidence from double plural marking in diminutives (Lowenstamm 2007) suggests that the derivation of diminutives in this language proceeds via a diminutivizing *n* merging with (at least) NumP, putting it more line with the locative *n*s in Bantu languages.

i. der xazər
the pig
'the pig'
ii. di xazeyr-əm
the pig-PL
'the pigs'
iii. di xazeyr-əm-l-əx
the pig-PL-DIM-PL
'the little pigs'

(Lowenstamm 2007)

n have the same value for Number, e.g. gender D-B combination can be noun classes 7-3 (both singular) or 8-4 (both plural) for the stacked augmentatives but never 7-4 or 8-3 (mixed number). This also entails that spell-out can be sensitive not just to the adjacent NumP but to any nearest NumP, as in (24) (see Moskal 2015; Moskal and Smith 2016, and papers in Kastner and Moskal 2018 for sensitivity to non-adjacent heads). This is indicated by '…' in the conditioning environment of the plural VI rules in (58). The proposal introduces a structural difference between diminutives/augmentatives (one NumP) and locatives (two NumPs) that will have desirable outcomes for alternative agreement and predictions regarding the presence or absence of stacking prefixes, as will be discussed in Section 5.

A second reason is that, following Wiltschko & Steriopolo (2007), this structure predicts that the features on the outer head should determine the formal properties of the noun as a whole. In German, in which the diminutive also functions as a head, this prediction is borne out: diminutivized nouns are always neuter, regardless of the gender of the basic noun (Wiltschko & Steriopolo 2007). This entails that the diminutive *n* in German carries a neuter gender feature, as in (59).

(59) der Baum (M) → das Bäum-chen (N)
die Flasche (F) → das Fläsch-chen (N)

In Bantu, when a derivational prefix is attached to a noun, this outer prefix determines the formal properties of the derived noun, regardless of the gender of the basic noun. This is for example visible in agreement on the verb. As illustrated in (60) for Shona, when a diminutive noun is the subject, only the gender of the higher *n* can determine agreement on the verb.

Shona (Déchaine et al. 2014, adapted)

(60) Chì-mù-kómáná chì-/*à-nò-fámbá.
7-1-boy 7SM-/*1SM-HAB-walk
'(The) slim boy walks.'

With this simple structure and already existing VI rules, we can understand stacking diminutives. However, as mentioned, there is a second pattern for diminutive formation.

4.2 Non-stacking prefixes

In some Bantu languages, a diminutive or augmentative is not formed by stacking an additional nominal prefix onto the well-formed basic prefix + noun, but rather by "replacing" the basic prefix with the diminutive or augmentative prefix, as in (61), repeated from (5).

Chindamba (Edelsten and Lijongwa 2010: 36–38)

(61) a. li-piki
5-tree
'tree'
b. ma-piki
6-tree
'trees'
c. ka-piki
12-tree
'small tree'
d. tu-piki
13-tree
'small trees'

This raises the question of whether the surface distinction between stacking and non-stacking noun class morphology reflects a difference in syntactic structure. To our knowledge, there is no evidence that stacking diminutives behave differently from non-stacking diminutives in the syntax. The lack of a syntactic correlate of stacking vs. non-stacking diminutive morphology suggests that the variation is not structural but only morphophonological. We therefore propose that the structure for these non-stacking diminutives is the same as for stacking diminutives, and the difference between the two should be captured in VI rules: non-stacking languages include a VI rule whereby *n* is spelled out as null in the context of a higher adjacent *n*, as in (62) (compare the VI rules for suffixal locatives in (50)). This rule may apply generally in a language, or only to specific genders (as shown below for Rangi, and in Section 5.1 for new data on Swahili).

(62) Sample Vocabulary Insertion Rules for non-stacking diminutives
$n_X \rightarrow$ Ø / *n*
$n_G \rightarrow$ tu- / …PL (class 13)
$n_A \rightarrow$ va- / …PL (class 2)
$n_G \rightarrow$ ka- (class 12)
$n_A \rightarrow$ mu- (class 1)

A strong argument that the variation between stacking vs. non-stacking derivation is in the VI rules – and not in the structure – comes from "mixed" languages in which both stacking and non-stacking diminutives are attested. This is illustrated for Rangi below, but includes also Herero (Kavari and Marten 2009), Bemba (Hoch, n.d.), and other languages (see Gibson et al. 2017). In Rangi, nouns in class 1, 5, and 9 form diminutives by non-stacking prefixes (63a)), while nouns in all other classes are form diminutives by stacking prefixes (63b)).

Rangi (Gibson 2012: 32–33)

(63) a. mw-aana 'child' (cl. 1) > ka-ana 'small child' (cl. 12)
mw-iivi 'thief' (cl. 1) > k-iivi 'small thief' (cl. 12)
mʊ-hiinja 'girl' (cl. 1) > ka-hiinja 'small girl' (cl. 12)
i-baanda 'hut' (cl. 5) > ka-baanda 'small hut' (cl. 12)
n-joka 'snake' (cl. 5) > ka-joka 'small snake' (cl. 12)
nyenyeeri 'star' (cl. 9) > ka-nyenyeeri 'small star' (cl. 12)

b. mw-iiwi 'arrow' (cl.3) > ka-mw-iiwi 'small arrow' (cl. 12)
mʊ-ti 'tree' (cl. 3) > ka-mʊ-ti 'small tree' (cl. 12)
kɪɪ-ntʊ 'thing' (cl. 7) > ka-kɪɪ-ntʊ 'small thing' (cl. 12)
ʊ-loongo 'lie' (cl. 11) > ka-ʊ-loongo 'small lie' (cl. 12)
kʊ-lʊ 'foot' (cl. 15) > ka-kʊ-lʊ 'small foot' (cl. 12)

Both types of derived nouns are proposed to include two *n*Ps as in (57), the lower one of which has an overt form in some classes and is spelled out as null for other classes. Such variation is a typical case that can be captured by variation in VI rules, where spell-out of the lower *n* is gender-specific. The VI rules for Rangi genders A (class 1/2) and D (class 7/8) would thus be as follows, with only the former including a null spell-out in the context of an adjacent *n*.[22]

(64) Sample Vocabulary Insertion Rules for mixed diminutives
$n_A \rightarrow$ Ø / *n*
$n_A \rightarrow$ va- / …PL (class 2)
$n_A \rightarrow$ mu- (class 1)
$n_D \rightarrow$ VI – / …PL (class 8)
$n_D \rightarrow$ kɪ (class 7)
$n_G \rightarrow$ ka- (class 12)

A reasonable question for this analysis is whether the underlying double *n*P structure can be acquired in the languages that have partial or no stacking for derived nouns, considering that one *n*P is a null morpheme (similar to Carstens's 1991 Zero-morpheme Licensing Principle). In languages like Rangi, where only some of the noun classes have a null morpheme in diminutive derivation, the other classes provide evidence for the language acquirer to postulate a second *n* in the derivation. Additionally, the consistent and very clear semantics of the derived

22. The null spell out takes precedence over the context-free rule because it is more specified. We assume that it takes precedence over the plural context rule presumably because *n* is directly adjacent whereas PL is more remote, or potentially merely because pruning rules that bleed other insertion rules are thought to apply first.

nouns (diminutive, in these cases) is likely sufficient to distinguish them from non-derived nouns.[23]

To illustrate the latter point, and to provide another argument in favor of the proposed Num-*n*-*n* structure across the board, consider the primary versus secondary use of the same prefix: While classes 12/13 (and sometimes 7/8) in many languages derive diminutive meaning, these classes also contain nouns which occur with this noun class prefix as their basic prefix, without triggering any diminutive interpretation of the noun, for example in (65a). This is in contrast to the diminutive interpretation that is required when class 12/13 replaces the basic prefix of other nouns (65b). Thus, the surface morphology does not differ between the two, but under the current analysis the basic nouns in (65a) involve only one *n*P and NumP, whereas the diminutives in (65b) have a layered underlying structure involving two *n*Ps.[24]

Luganda (Judith Nakayiza, p.c.)

(65) a. aka-tale 'market' (class 12)
aka-saale 'arrow' (class 12)
b. aka-solo 'small animal' (cl.12)[25]
cf. eci-solo 'animal' (cl.7)
aka-sajja 'small man' (cl.12)
cf. omu-sajja 'man' (cl.1)

We can think of this as follows: the root and the first *n*P constitute the domain for idiomatic interpretation (see Marantz 1996); a secondly merged *n* will contribute predictable meaning (diminutive). This is captured if diminutives (and augmentatives) have the same structure across the board, regardless of their non-stacking or stacking spell-out. We think that this is preferable over the alternative view,

23. It is unlikely, though, that multiple *silent n*Ps can be postulated by the acquirer on the basis of input containing a single prefix.

24. Note that a noun that is already in class 12 cannot be derived in class 12 (see (i)). This may be due to haplology (cf. Kinyalolo's Constraint, Carstens 2005), preventing two identical prefixes from appearing in sequence. The result of the logically possible derivation will thus appear with one prefix, which is interpreted as its basic class and never as a diminutive. See Déchaine et al. (2014) for a different analysis of these facts in terms of prefix raising.

i. *akakasaale int. 'small arrow'
*akakatale int. 'small market'

25. This can also refer to a man's private parts.

where basic and secondary prefixes need to be seen as homophonous classes/genders.[26]

This brings us to the third parameter to capture the variation in Bantu DP structure:

Parameter C: Do the VI rules feature a rule dictating null spellout of the lower *n* in the presence of an adjacent *n*?

In summary, diminutives (and augmentatives) are proposed to have the same underlying structure across Bantu languages, involving two *n* heads. The variation consists in whether VI rules feature a rule for zero spell out of the lower of two adjacent *n* heads; the consequences for this rule are further discussed in Section 5.1.

5. Combining and comparing locatives and diminutives

With the structures and VI rules for locatives and diminutives as proposed in the previous sections, we can make various predictions. One concerns the combination of the VI rules for each derivation within a language, and a second is the crosslinguistically valid difference between the structures for locatives and diminutives. We discuss these in turn.

5.1 Adjacent *n*s and null spell-out

Languages in which the diminutive prefix replaces the basic prefix are proposed to feature a VI rule as in (62), repeated below as (66), whereby a *n* is zero if it is adjacent to a higher *n*.

(66) $n \rightarrow \emptyset$ / n

The VI rule makes strong predictions if we look at diminutives and locatives together. If the rule holds for the whole language, then it affects not just diminutives but locatives as well. As we have seen in Section 3.2, locatives can also have two *n* heads: n_{LOC} for the suffix *-(i)ni* and $n_{16/17/18}$ for the prefix. If diminutives in

26. In their analysis of class prefixes in Shona, Déchaine et al. (2014) also reject a homophony analysis of these prefixes, but they argue that differences in meaning when a prefix occurs as a primary rather than a secondary/stacked prefix are due to the semantics of a dedicated set of projections on the nominal spine. In their proposal, each projection corresponds to a particular interpretation, and the semantics that a prefix contributes are determined by the projection at which it merges.

a given language are non-stacking, this means that the VI rules contain a rule for zero spell out of the lower *n* in the context of adjacent *n* heads. This in turn entails that the rule should also apply in locatives, that is, the lower n_{LOC} should spell out as zero. As a consequence, we expect non-stacking diminutives only in languages where locatives do not have two *n*s at all, such as Chichewa (only $n_{16/17/18}$) or Kîîtharaka (only n_{LOC}).[27]

Vice versa, our proposal predicts that languages with a bipartite locative, showing the suffix and evidence for $n_{16/17/18}$ such as Cuwabo and Swahili, do not feature a zero spell-out rule as in (66) (or else the *-(i)ni* suffix would not be spelled out), and hence they are predicted to only have stacking diminutives. This is summarized in (67):

(67) Predictions of rule (66):
   a. If a language shows evidence for $n_{16/17/18}$ and n_{LOC}, then it cannot have non-stacking diminutives.
   b. If a language has non-stacking diminutives, then it has either $n_{16/17/18}$ or n_{LOC} but not both.

In our limited sample, these predictions seem to be borne out. Of the languages that show evidence for a bipartite locative, Chaga-Rombo indeed has stacking diminutives, Makhuwa does not form derived diminutives, and Cuwabo forms diminutives via a compound with *mwáná*, derived from the word for 'child'. As mentioned in Section 3.2, Kîîtharaka (which derives locatives by suffixing *-ini*) shows evidence for n_{LOC} but not for $n_{16/17/18}$ and hence the spell-out of n_{LOC} is not affected by the presence of (66). Indeed, Kîîtharaka has non-stacking diminutives, as seen in the comparison between (68) and (69).

Kîîtharaka (database Kanampiu & Van der Wal)

(68) Téne mûnó, n-gûkű̂ na n-káánga ci-a-rî a-cooré na
long very 9-chicken and 9-guineafowl 10SM-PST-be 1-friend and
ci-a-karág-á **kî-thakáa-ní**.
10SM-PST-stay-FV 7-bush-LOC
'Long ago chicken and guinea fowl were friends and were living in the bush.'

27. Or alternatively locatives do have two *n*s, the lower of which would never be visible, nor have any influence on the semantics… this would presumably be impossible to acquire.

(69) M-bítí na ka-yűgű bá-á-kámat-a n-káánga î-rá bá-űrag-iré,
9-hyena and 12-hare 2SM-PST-carry-FV 9-guinea.fowl 9-DEM.DIST 2SM-kill-PFV
bá-a-thí n'-yó bá-ntû **ka-thakáa-ní**
2SM-PST-go and-9.PRO 16-somewhere 12-bush-LOC
'Hyena and Hare carried the guinea fowl that they had killed, to some place in a small bush.'

One apparent counterexample is Swahili, which also derives locatives by suffixing *-ni* but shows evidence for $n_{16/17/18}$ too (see (70), repeated from above) and is described as having non-stacking diminutives, whether in class 7/8 or the colloquial 12/13, as illustrated in (71) and (72).

Swahili (Carstens 1997: 402)

(70) Nyumba-ni pa-/ku-/m-na wa-tu w-engi.
9.house-LOC 16-/17-/18-have 2-people 2-many
'In/at the house are many people.'

(71) Standard Swahili (Kihore et al. 2001, via Gibson et al. 2017)
a. m-toto 'child' (class 1)
b. ki-toto 'small child' (class 7)
c. wa-toto 'children' (class 2)
d. vi-toto 'small children' (class 8)

(72) Colloquial Swahili (King'ei 2000: 86, via Gibson et al. 2017: 374)
a. ka-toto 'small child' (class 12)
b. tu-toto 'small children' (class 13)

However, a closer look reveals a more finegrained pattern, where crucially not all noun phrases behave alike – much like Rangi. The four Swahili native speakers we consulted all provided stacking diminutives and augmentatives for nouns in classes 3/4 and 9/10, and three out of four gave non-stacking diminutives and augmentatives for classes 1/2 (the fourth speaker had stacking throughout):

Importantly, the same split between classes 1/2 and the other classes was present in locatives: only the noun classes that form diminutives by stacking form locatives in *-ni*; classes 1/2 form periphrastic locatives using a preposition.

This follows from our proposal if, like in Rangi, the VI rules in Swahili for gender A (classes 1/2) do include a zero VI rule (responsible for the absence of the basic prefix in diminutive derivations and the impossibility of *-ni* in attempted locatives) whereas such a VI rule is not present for other noun classes (resulting in spell-out of the lower n in both diminutives and locatives).

Table 6. Diminutive derivations in Swahili

Noun class	Basic		Diminutive		
3/4	m-kono mi-kono	hand(s)	ki/ka-m-kono vi/tu-mi-kono	small hand(s)	stack
3/4	m-chezo mi-chezo	game(s)	ki/ka-m-chezo vi/tu-mi-chezo	small game(s)	stack
9/10	n-doto	dream(s)	ki-/ka-n-doto vi/tu-n-doto	small dream(s)	stack
1/2	mw-oga wa-oga	coward(s)	ki/ka-oga vi/tu-oga	small coward(s)	replace
1/2	m-toto wa-toto	child(ren)	ki-toto vi-toto	small child(ren)	replace

Table 7. Locative derivations in Swahili

Noun class	Basic		Locative		
3/4	m-kono mi-kono	hand(s)	m-kono-ni mi-kono-ni	on/in the hand(s)	
3/4	m-chezo mi-chezo	game(s)	m-chezo-ni mi-chezo-ni	in the game(s)	
9/10	n-doto	dream(s)	n-doto-ni	in a dream	
1/2	mw-oga wa-oga	coward(s)	*mw-oga-ni *wa-oga-ni	at/on/near the coward(s)	kwa/karibu na mwoga
1/2	m-toto wa-toto	child(ren)	*m-toto-ni *wa-toto-ni	at/on/near the child(ren)	kwa/karibu na mtoto

5.2 One vs. two Number projections

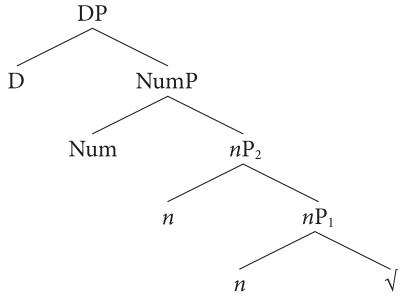
An important difference between the proposed structures for diminutives (73) and locatives (74) is the presence of two NumPs in the locative nominal projection, versus only one NumP in the diminutive.[28] We argue that this structural dif-

28. Borrowing/code-switching is interesting in this respect: in Gikuyu (and surrounding languages), the diminutive prefix can be added to English words, as in (i) and (ii). The plural takes the class 13 prefix as expected, but the English plural -s must also be present. This indicates that one language (English) must be closed off by NumP before the other language (Gikuyu) can be switched to. We leave this for further research.

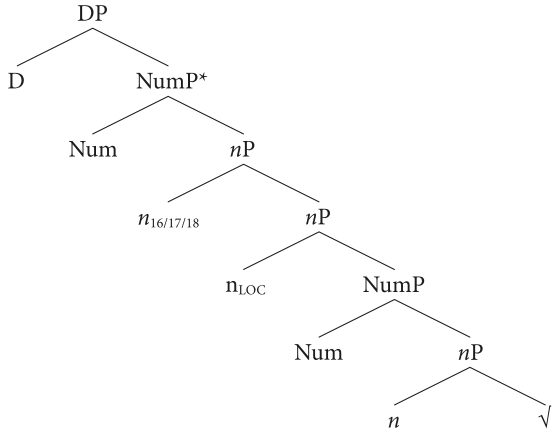
Gikuyu (E51, Mary Karuri, p.c.)

ference holds explanatory power, in that it accounts for two differences between diminutives and locatives that hold across the Bantu languages.

(73) Structure of diminutive



(74) Structure of locatives[29]



The first difference has been mentioned above: whereas diminutives show variation in whether the diminutive prefix is stacking or non-stacking, as far as we know, derived prefixal locatives always take stacking prefixes, regardless of whether diminutives in a given language are stacking or non-stacking. The combination of non-stacking diminutives (75) and stacking locatives (76) is found in Fwe, for example. Note that Fwe only has prefixal locatives, thus being different from the suffixing languages in Section 5.1.

---

i. ka-monsta 'little monster'

ii. tu-monstaz 'little monsters'

29. We may wonder whether there is a high NumP present in locatives. Apart from reasons of general parsimony, the fact that derived locatives can be interpreted as plural (e.g., the tops of the tables) argues in favor of the presence of a high NumP.

Fwe (Gunnink 2018: 125)

(75) a. cì-púrà 'chair' (7)
kà-púrà 'stool' (12)
b. n-jûò 'house' (9)
ka-jûò 'small house' (12)

(Gunnink 2018: 127)

(76) a. mù-nzì 'village' (3)
kù-mù-nzì 'at the village' (17-3)
b. mú-twí 'head' (3)
há-mù-twí 'on the head' (16-3)

The proposal we put forth is that this asymmetry can be attributed to the fact that *n* with a locative gender (be that n_{LOC}, or $n_{16/17/18}$ where n_{LOC} is absent) selects a NumP rather than an *n*P. Due to the presence of this NumP, the lower *n* will never be adjacent to the locative *n*. Therefore, even in a language in which diminutives are non-stacking and therefore have a general VI rule for *n* being spelled out as null when adjacent to another *n* (see (66) above), in a locative, the lower *n* will never be in the conditioning environment that leads to the null spell-out of that *n*. The proposed structures thus correctly capture the fact that locatives are crosslinguistically always stacking.

The second property that varies between diminutives and locatives is what is referred to as *alternative concord*, wherein modifiers of locatives may exhibit concord with either the basic noun class (in the present analysis this corresponds to the gender feature on the innermost *n*) or the outer noun class (corresponding to the gender feature on the highest *n*). Alternative concord is often available for locatives[30] (77) but never for diminutives (78).

Karanga-Shona (Myers 1987: 104, adapted)

(77) a. pa-mu-shá apo p-ósé pa-káchéna
16-3-home 16.DEM 16-all 16-white
'at that whole white home'
b. pa-mu-shá uyo p-ósé pa-káchéna
16-3-home 3.DEM 16-all 16-white
'at that whole white home'

30. The body of literature on alternative concord in Bantu languages shows more variation than we can do justice to here, as for instance variation in which types of modifiers can participate in alternative concord. For a recent overview, see Zeller (To appear).

c. pa-mu-shá uyo w-ósé pa-káchéna
16-3-home 3.DEM 3-all 16-white
'at that whole white home'
d. *pa-mu-shá apo w-ósé pa-káchéna
16-3-home 16.DEM 3-all 16-white
Intended: 'at that whole white home'

Shona (own data)

(78) a. mu-suma mu-refu
3-tree 3-tall
'tall suma tree'
b. zi-mu-suma zi-refu
21-3-tree 21-tall
'tall big suma tree'
c. *zi-mu-suma mu-refu
21-3-tree 3-tall
Intended: 'tall big suma tree'

We suggest that this difference in the availability of alternative concord between diminutives and locatives is again explained by the presence of the additional NumP. If we assume that modifiers attach to NumP,[31] then locatives allow for two loci of attachment for modifiers, resulting in two options for concord. In contrast, the structure of diminutives only allows for a single locus of attachment, corresponding to the availability of agreement with only the highest gender feature in diminutives. Note also that concord with the general locative n_{LOC} is unattested, as expected.

Bresnan & Mchombo (1995: 205, 206) also discuss data on coordination of locatives and diminutives, exemplified in (79) and (80): locatives allow coordination whereas diminutives do not. In our analysis, this contrast would be due to the locative coordinating two NumPs but the diminutive failing to coordinate two *n*Ps.

Chichewa (Bresnan & Mchombo 1995: 205, 206)

(79) Mu-ku-pít-á ku [m-sika kapéná m-zinda]?
2PL.SM-PROG-go-FV 17 3-market or 3-city
'Are you going to the market of the city?'

31. In order to account for the modifiers' linearization we may assume that adjuncts are right-branching, or that there is head movement within the DP, or that there is a morphological adjacency requirement for the prefixes, preventing the adjoined modifiers from being linearized "between morphemes".

(80) *A-na-b-á ka- [m-pando kapéná m-tŏndo]?[32]
1SM-REC.PST-steal-FV 12- 3-chair or 3-mortar
int. 'Did he steal a little chair or a little mortar?'

The significance of the presence or absence of NumP for the availability of alternative concord leads us to speculate that the NumP projection may be responsible for individuation (in the sense of Harley & Ritter 2002). In diminutives, the inner and outer *n* refer to the same individual; in other words, a diminutive individual is still the same individual (e.g, a small table is a table). In contrast, locatives have two points of individuation: the entity itself (e.g., a table) and the location relative to that entity (e.g., the location on the table).

Evidence from nominalizations other than diminutives and locatives suggests this may be on the right track. In Shona, the derived nouns in (81) and (82) each have two points of individuation: the children and their manner in (81), and the district and the head in (82). Therefore, under the suggested correlation between individuation and Num, we would expect two NumPs, which in turn allow for alternative concord. This is borne out, as shown for the different demonstratives in (82).

Shona

(81) chi-hw-aná u-díki
7-14-child 14-little
'the ways of small children' (Fortune 1985: 93, cited in Myers 1987: 102)

(82) a. sá-Ø-dunhu uyu
1a-5-district DEM.1
'this district head'
b. sá-Ø-dunhu iri
1a-5-district DEM.5
'this head of this district'
(Myers 1987: 105)

In this light, we repeat that in diminutives, both prefixes have the same value for number (as discussed in Section 4.1), whereas for locatives, the location can be singular but the referent plural, thus requiring separate Number projections. This can be seen in (42) above, and is again illustrated in (83), where the place where the pot is put (namely on the cooking stones) is necessarily just one, but the cooking stones are three.

32. This is presumably grammatical under the reading 'a little chair or a mortar', but this possibility is not discussed in the source.

Rukiga (database Asiimwe & Van der Wal)

(83) á-ha-ma-héga
AUG-16-6-cooking.stones
'on the cooking stones' (='on the fire')

In summary, the proposal that diminutives feature one NumP whereas locatives feature two NumPs makes some interesting predictions, which are so far borne out.

6. Implications & conclusion

At the outset of this paper we laid out an empirical domain that consisted of several types of nominals common to Bantu languages: basic nouns, infinitives, diminutives/augmentatives, and locatives. We introduced a mechanism for locating grammatical gender on *n* in the Distributed Morphology framework; a consequence of this analytical choice is that grammatical gender is associated with derivational power in the system. While the infinitives served as a proof-of-concept for this approach, the goal of subsequent discussion was to further explore the range of morphosyntactic variation within locatives and diminutives and to draw comparisons across Bantu languages that motivate a unified analysis of the structure of noun phrases in the Bantu language family.

The comparative overview and analysis presented above demonstrate that unifying locatives, diminutives, and basic nouns as derived by *n* with certain (gender) features not only is possible but allows us to capture the intra- and inter-language morphosyntactic variation evident in denominal nouns in Bantu languages by reference to just three parameters – one strictly morphological and two structural – and their interactions:

Parameter A: Does $n_{16/17/18}$ take NumP or DP as its complement?
Parameter B: Do locatives involve n_{LOC}, $n_{16/17/18}$, or both?
Parameter C: Do the VI rules feature a rule dictating null spellout of the lower *n* in the presence of an adjacent *n*?

Parameter C encodes a sensitivity – or lack thereof – to the presence of a higher adjacent *n* in the syntactic structure of the derived noun. In other words, the rule applies uniformly to the *n*s that surface as basic prefixes, diminutive prefixes, and locatives. Bantu languages that do not have the VI rule dictating null spellout of *n* in the environment of a higher adjacent *n* are expected to spell out basic prefixes in diminutives (hence what surfaces as stacking diminutives) and are expected to allow for the spellout of any *n* involved in the derivation of locatives. If the lan-

guage does have the VI rule listed in Parameter C, then any *n* that is adjacent to a higher *n* will be spelled out as null. This leads to what on the surface appears to be "replacing" of basic prefixes with diminutive prefixes in the derivation of diminutives in languages like Fwe.

Locatives are also formed by a derivational *n* with gender features selecting a nominal projection, but we argue in Section 3.1 that the size of this complement (except for inherently locative nouns) is at least NumP and at most DP. In either case, the size of this projection ensures that n_{LOC} is not adjacent to the basic prefix, and therefore bleeds the environment for the VI rule in Parameter C that would spell out the basic prefix in such a structure as null. In other words, the fact that n_{LOC} selects for NumP (or DP) correctly accounts for the fact that locatives are consistently stacking, i.e. that the basic prefix is always overt, regardless of the presence or absence of the VI rule in Parameter C. Diminutives, on the other hand, lack the intervening NumP and thus vary according to this parameter. The stacking versus non-stacking nature is on the surface a morphological difference that is rooted in the interaction of a structural parameter and a morphological one. But the structural parameter also has syntactic reflexes. As we argue in Section 5.2, assuming that adjectives must attach at least at NumP, the structural difference between locatives and diminutives may explain the availability of alternative concord in the former but not the latter.

Finally, Parameter B concerns whether locatives in a given language are derived by a combination of a general n_{LOC} and a higher *n* with a specific locative gender feature (16/17/18), or by only a single *n* projection with locative features (Section 3.2). Languages that have a layered *n* structure create an environment in which the condition for the rule in Parameter C – if the language has that rule – is met. In these languages, the lower *n* (usually realized as *-(i)ni*) would never be spelled out, and in fact we argue in Section 3.2 that such a language would not be learnable. Therefore, we expect only stacking languages (those without the null spellout rule) to allow for the spellout of n_{LOC} as *-(i)ni* in the presence of a (null or overt) higher $n_{16/17/18}$. Although the status of *-(i)ni* as the only *n* spelled out as a suffix remains stipulative, analyzing it as an *n* (with a [loc] gender feature) makes the correct predictions regarding cross-Bantu patterns in locative morphology. These predictions were discussed and met in Section 5.2.

This brings us back to the power of unifying basic and derivational affixes as gender on *n*. Much of the work we build on (see Section 1.2) proposes either dedicated projections or null heads that merge with the nominal syntactic structure to derive the semantic and syntactic properties of diminutives and locatives. We take a different approach, instead centralizing the derivational power in a set of elements of the same category. The proposal that basic prefixes, diminutive pre-

fixes, locative prefixes, and the locative suffix are all of the same category allows us to generalize across the morphosyntactic interactions that we see and attribute them to a finite set of morphological and structural parameters concerning the adjacency of *n*s.

We hope to have shown that representing grammatical gender as a feature on *n*, realized as nominal affixes, allows us to conceptualize nouns in Bantu languages – including basic nouns, infinitives, diminutives/augmentatives, and locatives – within one system. As previously stated, we do not claim to provide an analysis that represents any single Bantu language. Instead, we propose this comparative approach to nominal morphosyntax as evidence of the explanatory power of locating gender features on *n*, and we offer the mechanisms proposed here as a toolbox for further study of individual languages or phenomena. Indeed, as Msaka (2019: 55) warns, referring to Amidu (1997: 15), "some important language-specific properties are sometimes glossed over in the interest of creating a coherent comparative picture". Our proposal can and should be leveraged to provide analyses of individual languages, and it is our hope that future work in this vein will investigate the language-specific properties that have been glossed over here in pursuit of determining to what extent this framework can capture the details of microvariation in Bantu nominal structure.

Funding

Jenneke's work was partly funded by NWO Vidi grant 276-78-001.

Acknowledgements

We would like to thank Saul Bichwa, Emmanuel Ilonga, Mary Karuri, Magreth Kibiki, Amani Lusekelo, Netsai Mhlanga, Judith Nakayiza, Ron Simango, and Oliver Stegen for data and judgements; Jonathan Bobaljik, Vicki Carstens, Lisa Cheng, Laura Kalin, Ruth Kramer, Ivona Kucerova, Peter Msaka, Masha Polinsky, Omer Preminger, Patricia Schneider-Zioga, Jochen Zeller, and audiences at CALL, LSA, LUCL, NYU, UCL, Stanford, ThEGen, CamCoS 8 for helpful discussion of earlier versions of the analysis, as well as three anonymous Syntax reviewers and two reviewers for Linguistic Variation, and editor Claire Halpert for constructive feedback. The points of view expressed here and any errors are ours only.

Symbols and abbreviations

Numbers refer to noun classes except when followed by SG/PL, in which case they indicate person. High tones are marked by an acute accent; low tones are unmarked.

APPL	applicative	NEG	negation
AUG	augment	OM	object marker
COP	copula	PASS	passive
DEM	demonstrative	PFV	perfective
DIST	distal	PL	plural
DJ	disjoint verb form	PRO	pronoun
F	feminine	PROG	progressive
FOC	focus	PRS	present tense
FV	final vowel	PST	past tense
HAB	habitual	REC.PST	recent past tense
IDEO	ideophone	REL	relative
IND	associative index	SG	singular
LOC	locative	SM	subject marker
M	masculine	STAT	stative
N	neuter		

References

Alexiadou, Artemis, Gianina Iordachioaia & Elena Soare. 2010. Number/aspect interactions in the syntax of nominalizations: A Distributed Morphology approach. *Journal of Linguistics 46*. 537–574. https://doi.org/10.1017/S0022226710000058

Amidu, Assibi A. 1997. *Classes in Kiswahili*. Cologne: Rüdiger Köppe Verlag.

Arad, Maya. 2003. Locality constraints on the interpretation of roots: the case of Hebrew denominal verbs. *Natural Language and Linguistic Theory 21*. 737–778. https://doi.org/10.1023/A:1025533719905

Arad, Maya. 2005. *Roots and patterns: Hebrew morpho-syntax*. Dordrecht: Springer.

Armoskaite, Solveiga. 2014. Derivation by GENDER in Lithuanian. In Ileana Paul (ed.), *Cross-linguistic Investigations of Nominalization Patterns*, 169–188. Amsterdam: John Benjamins. https://doi.org/10.1075/la.210.07arm

Asiimwe, Allen. 2014. Definiteness and specificity in Runyankore-Rukiga. Stellenbosch: Stellenbosch University of South Africa dissertation.

Bernstein, Judy. 1993. The syntactic role of word markers in null nominal constructions. *Probus 5*. 5–38. https://doi.org/10.1515/prbs.1993.5.1-2.5

Bobaljik, Jonathan D. 2012. *Universals in comparative morphology*. Cambridge, MA: MIT Press. https://doi.org/10.7551/mitpress/9069.001.0001

Botne, Robert & Andrew T. Kulumeka. 1995. *A learner's Chichewa and English dictionary*. Cologne: Rüdiger Köppe Verlag.

Bresnan, Joan. 1991. Locative case vs. locative gender. *Proceedings of the Seventeenth Annual Meeting of the Berkeley Linguistics Society*, 53–68. https://doi.org/10.3765/bls.v17i0.1615

Bresnan, Joan & Jonni M. Kanerva. 1989. Locative inversion in Chichewa – a case-study of factorization in grammar. *Linguistic Inquiry 20*(1). 1–50.
Bresnan, Joan & Sam Mchombo. 1995. The lexical integrity principle: Evidence from Bantu. *Natural Language and Linguistic Theory 13*. 181–254. https://doi.org/10.1007/BF00992782
Buell, Leston C. & Merijn de Dreu. 2013. Subject raising in Zulu and the nature of PredP. *The Linguistic Review 30*(3). 423–466. https://doi.org/10.1515/tlr-2013-0013
Caha, Pavel & Marina Pantcheva. 2020. Locatives in Shona and Luganda. In Jacopo Garzonio & Silvia Rossi (eds.), *Variation in P. Comparative approaches to adpositional phrases*, 19–55. Oxford: Oxford University Press. https://doi.org/10.1093/oso/9780190931247.003.0002
Carstens, Vicki. 1991. The Morphology and Syntax of Determiner Phrases in Kiswahili. PhD dissertation, University of California, Los Angeles.
Carstens, Vicki. 1993. On nominal morphology and DP structure. In Sam Mchombo (eds.), *Theoretical Aspects of Bantu Grammar*, 151–180. Stanford: Stanford University Press.
Carstens, Vicki. 1997. Empty nouns in Bantu locatives. *The Linguistic Review 14*. 361–410. https://doi.org/10.1515/tlir.1997.14.4.361
Carstens, Vicki. 2000. Concord in Minimalist theory. *Linguistic Inquiry 31*(2). 319–355. https://doi.org/10.1162/002438900554370
Carstens, Vicki. 2003. Rethinking complementizer agreement: Agree with a Case-checked goal. *Linguistic Inquiry 34*(3). 393–412. https://doi.org/10.1162/00243890332247533
Carstens, Vicki. 2005. Agree and EPP in Bantu. *Natural Language and Linguistic Theory 23*(2). 219–279. https://doi.org/10.1007/s11049-004-0996-6
Carstens, Vicki. 2008. DP in Bantu and Romance. In Katherine Demuth & Cécile de Cat (eds.), *The Bantu-Romance Connection*, 131–165. Amsterdam: John Benjamins. https://doi.org/10.1075/la.131.10car
Carstens, Vicki. 2010. Implications of grammatical gender for the theory of uninterpretable features. In Michael T. Putnam (ed.), *Exploring Crash-Proof Grammars*, 31–57. Amsterdam: John Benjamins. https://doi.org/10.1075/lfab.3.03car
Carstens, Vicki. 2011. Hyperactivity and hyperagreement in Bantu. *Lingua 121*(5). 721–741. https://doi.org/10.1016/j.lingua.2010.11.001
Contini-Morava, Ellen. 1997. Noun classification in Swahili. In Robert K. Herbert (ed.), *African Linguistics at the Crossroads*, 599–623. Cologne: Rudiger Koppe Verlag.
Corbett, Greville. 1991. *Gender*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9781139166119
Corbett, Greville. 2006. *Agreement*. Cambridge: Cambridge University Press.
Creissels, Denis & Danièle Godard. 2005. The Tswana infinitive as a mixed category. *The Proceedings of the 12th International Conference on Head-Driven Phrase Structure Grammar, Department of Informatics, University of Lisbon*, 70–90.
Déchaine, Rose-Marie, Raphaël Girard, Calisto Mudzingwa & Martina Wiltschko. 2014. The internal syntax of Shona class prefixes. *Language Sciences 43*. 18–46. https://doi.org/10.1016/j.langsci.2013.10.008
de Dreu, Merijn. 2008. The internal structure of the Zulu DP. Leiden: Leiden University MA thesis.
Denny, Peter & Chet Creider. 1976. The semantics of noun classes in Proto-Bantu. *Studies in African Linguistics 7*. 1–30.
Devos, Maud. 2020. Plural number in Shangaji nominal morphology. In Jenneke van der Wal, Heleen Smits, Sara Petrollino, Victoria Nyst & Maarten Kossmann (eds.), *Essays on African languages and linguistics, in honour of Maarten Mous*, 289–334. Leiden: ASCL.

Doke, Clement M. 1973. *Textbook of Zulu grammar*, 6th edn. Johannesburg: Longmans.
Edelsten, Peter & Chiku Lijongwa. 2010. *A grammatical sketch of Chindamba, a Bantu language (G52) of Tanzania*. Cologne: Rudiger Koppe Verlag.
Embick, David & Alec Marantz. 2008. Architecture and blocking. *Linguistic Inquiry 39*. 1–53. https://doi.org/10.1162/ling.2008.39.1.1
Embick, David & Ralph Noyer. 2007. Distributed morphology and the syntax/morphology interface. In Gillian Ramchand & Charles Reiss (eds.), *The Oxford Handbook of Linguistic Interfaces*, 289–324. Oxford: Oxford University Press.
Ferrari, Franca. 2005. A syntactic analysis of the nominal systems of Italian and Luganda: how nouns can be formed in the syntax. New York: New York University dissertation.
Ferrari-Bridgers, Franca. 2008. A unified syntactic analysis of Italian and Luganda nouns. In Cécile de Cat & Katherine Demuth (eds.), *The Bantu–Romance Connection*, 239–58. Amsterdam: John Benjamins. https://doi.org/10.1075/la.131.13fer
Fortune, George. 1985. *Shona grammatical constructions*. Harare: Mercury Press.
Gehrke, Berit & Marika Lekakou. 2013. How to miss your preposition. *Studies in Greek Linguistics 33*. 92–106.
Gibson, Hannah. 2012. Auxiliary placement in Rangi: A Dynamic Syntax perspective. London: SOAS University of London dissertation.
Gibson, Hannah, Rozenn Guérois & Lutz Marten. 2017. Patterns and developments in the marking of diminutives in Bantu. *Nordic Journal of African Studies 26*(4). 344–383.
Grégoire, Claire. 1975. *Les locatifs en bantou*. Tervuren: Musée royal de l'Afrique centrale.
Guarisma, Gladys. 2000. *Complexité morphologique, simplicité syntaxique. Le cas du Bafia, langue bantoue périphérique (A50) de l'ouest du Cameroun*. Paris: Peeters.
Guérois, Rozenn. 2014. Locative inversion in Cuwabo. *ZAS Papers in Linguistics 57*. 49–71. https://doi.org/10.21248/zaspil.57.2014.419
Guérois, Rozenn. 2015. A grammar of Cuwabo. Lyon: Université Lumière Lyon 2 dissertation.
Güldeman, Tom & Ines Fiedler. 2019. Niger-Congo "noun classes" conflate gender with deriflection. In Francesca Di Garbo, Bruno Olsson & Bernhard Wälchli (eds.), *Grammatical gender and linguistic complexity: Volume I: General issues and specific studies*, 95–145. Berlin: Language Science Press.
Gunnink, Hilde. 2018. A grammar of Fwe. Ghent: Ghent University dissertation.
Hadermann, Pascale. 1999. Les formes nomino-verbales de classes 5 et 15 dans les langues bantoues du Nord-Ouest. In Jean-Marie Hombert & Larry Hyman (eds.), *Bantu Historical Linguistics: Theoretical and Empirical Perspectives*, 431–471. Stanford: CSLI.
Halme, Riikka. 2004. *A Tonal Grammar of Kwanyama*. Cologne: Rüdiger Köppe Verlag.
Harley, Heidi & Elizabeth Ritter. 2002. Person and number in pronouns: A feature-geometric analysis. *Language 78*(3): 482–526. https://doi.org/10.1353/lan.2002.0158
Hoch, Ernst. No date. *A Bemba grammar with exercises*. Chinsali, Zambia: Ilondola Language Centre.
Ioannidou, Alexandra & Marcel den Dikken. 2009. P-drop, D-drop, D-spread. In Claire Halpert, Jeremy Hartman & David Hill (eds.), *Proceedings of the 2007 Workshop in Greek Syntax and Semantics*, 393–408. Cambridge MA: MIT Press.
Iordachioaia, Gianina & Elena Soare. 2008. Two kinds of event plurals: Evidence from Romanian nominalizations. *Empirical Issues in Syntax and Semantics 7*: 193–216.
Iorio, David. 2014. Subject and object marking in Bembe. Newcastle upon Tyne: Newcastle University dissertation.
Julien, Marit. 2002. *Syntactic heads and word formation*. Oxford: Oxford University Press.

Kastner, Itamar & Beata Moskal (eds.). 2018. *Snippets: Special issue on non-local contextual allomorphy*. https://doi.org/10.7358/snip-2018-034-intr

Katamba, Francis. 2003. Bantu nominal morphology. In Derek Nurse & Gérard Philippson (eds.), *The Bantu Languages*, 103–120. London: Routledge.

Kavari, Jekura & Lutz Marten. 2009. Multiple noun class prefixes in Otjiherero. In Peter Austin, Oliver Bond, Monik Charette, David Nathan & Peter Sells (eds.), *Proceedings of the 2nd Conference on Language Documentation and Linguistic Theory*, 165–173. London: SOAS.

Kayne, Richard. 1994. *The antisymmetry of syntax*. Cambridge, MA: MIT Press.

Kihm, Alain. 2005. Noun class, gender, and the lexicon-syntax-morphology interfaces: A comparative study of Niger-Congo and Romance languages. In Guglielmo Cinque & Richard Kayne (eds.), *The Oxford Handbook of Comparative Syntax*, 459–512. Oxford: Oxford University Press. https://doi.org/10.1093/oxfordhb/9780195136517.013.0011

Kihore, Yared M., David P. B. Massamba & Yohana P. Msanjila. 2001. *Sarufi maumbo ya Kiswahili Sanifu*. Dar es Salaam: Taasisi ya Uchunguzi wa Kiswahili.

King'ei, Kitula. 2000. Problems of acceptability of standard Swahili forms by non-Kiunguja native Kiswahili speakers. In Kulikoyela Kahigi, Yared M. Kihore & Maarten Mous (eds.), *Lugha za Tanzania. Languages of Tanzania*, 81–88. CNWS Publications, Universiteit Leiden.

Kramer, Ruth. 2014. Gender in Amharic: a morphosyntactic approach to natural and grammatical gender. *Language Sciences 43*. 102–115. https://doi.org/10.1016/j.langsci.2013.10.004

Kramer, Ruth. 2015. *The morphosyntax of gender*. Oxford: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199679935.001.0001

Kramer, Ruth. 2017. General number nouns in Amharic lack NumP. In Jason Ostrove, Ruth Kramer & Joseph Sabbagh (eds.), *Asking the Right Question: Essays in Honor of Sandra Chung*, 39–54. Santa Cruz: Linguistics Research Center.

Kuperus, Julianna & Antoinette Mpunga wa Ilunga. 1990. *Locative markers in Luba*. Tervuren: Musée royal de l'Afrique centrale.

Lee, Soo-Hwan. in prep. Swahili DP-internal locatives.

Lowenstamm, Jean. 2007. On little n, √, and types of nouns. In Jutta Hartmann, Veronika Hegedus, and Henk van Riemsdijk (eds.), *Sounds of Silence: Empty Elements in Syntax and Phonology*, 105–144. Amsterdam: Elsevier.

Marantz, Alec. 1996. *"Cat" as a phrasal idiom: Consequeces of late insertion in Distributed Morphology*. Ms. MIT, Cambridge, MA.

Marantz, Alec. 1997. No escape from syntax. *University of Pennsylvania Working Papers in Linguistics 4*. 201–25.

Marantz, Alec. 2001. *Words*. Ms. MIT, Cambridge, MA.

Marten, Lutz. 2010. The great siSwati locative shift. In Anne Breitbarth, Christopher Lucas, Sheila Watts & David Willis (eds.), *Continuity and Change in Grammar*, 249–267. Amsterdam: John Benjamins. https://doi.org/10.1075/la.159.12mar

Marten, Lutz. 2012. Agreement in locative phrases in Luganda. In Matthias Brenzinger & Anne-Maria Fehn (eds.), *Proceedings of the 6th World Congress of African Linguistics*, 433–443. Cologne: Rüdiger Köppe Verlag.

Meeussen, Achille E. 1967. Bantu grammatical reconstruction's. *Africana Linguistica III*: 79–121. https://doi.org/10.3406/aflin.1967.873

Meinhof, Carl. 1906. *Grundzüge einer vergleichenden Grammatik der Bantusprachen*. Berlin: Reimer.
Mletshe, Loyiso. 2017. Deverbal nominals derived from intransitive state verbs in isiXhosa: A generative lexicon approach. *South African Journal of African Languages 37*(1). 29–39. https://doi.org/10.1080/02572117.2017.1316924
Moshi, Lioba. 1995. Locatives in Kivunjo-Chaga. In Akinbiyi Akinlabi (ed.), *Theoretical Approaches to African Linguistics*, 129–145. Trenton, NJ: Africa World Press, Inc.
Moskal, Beata. 2015. Limits on allomorphy: A case study in nominal suppletion. *Linguistic Inquiry 46*(2). 363–375. https://doi.org/10.1162/LING_a_00185
Moskal, Beata & Peter W. Smith. 2016. Towards a theory without adjacency: hyper-contextual VI-rules. *Morphology 26*(3–4). 295–312. https://doi.org/10.1007/s11525-015-9275-y
Msaka, Peter K. 2019. Nominal classification in Bantu revisited: The perspective from Chichewa. Stellenbosch: Stellenbosch University dissertation.
Mugane, John M. 1997. Bantu nominalization structures. Tucson, AZ: University of Arizona dissertation.
Myers, Scott. 1987. Tone and the structure of words in Shona. Amherst, MA: University of Massachusetts, Amherst dissertation.
Ndayiraije, Juvénal, Emmanuel Nikiema & Parth Bhatt. 2012. The augment in Kirundi: when syntax meets phonology. In Michael Marlo, Nikki Adams, Christopher Green, Michelle Morrison & Tristan Purvis (eds.), *Selected proceedings of the 42nd Annual Conference on African Linguistics*, 112–121. Somerville, MA: Cascadilla Proceedings Project.
Ngoboka, Jean P. 2016. Locatives in Kinyarwanda. Durban: University of KwaZulu Natal dissertation.
Nurse, Derek & Gerard Philippson. 2003. Introduction. In Derek Nurse & Gerard Philippson (eds.), *The Bantu languages*, 1–12. London: Routledge.
Picallo, Carme. 1991. Nominals and nominalizations in Catalan. *Probus 3*(3). 279–316. https://doi.org/10.1515/prbs.1991.3.3.279
Poulos, George. 1990. *A linguistic analysis of Venda*. Pretoria: Via Afrika Limited.
Pylkkänen, Liina. 2008. *Introducing arguments*. Cambridge, MA: MIT Press. https://doi.org/10.7551/mitpress/9780262162548.001.0001
Ritter, Elizabeth. 1993. Where's gender? *Linguistic Inquiry 24*. 795–803. https://doi.org/10.2307/4178843
Roberts, Ian. 2019. *Parameter hierarchies & Universal Grammar*. Oxford: Oxford University Press. https://doi.org/10.1093/oso/9780198804635.001.0001
Schadeberg, Thilo C. 2001. Number in Swahili grammar. *Afrikanistische Arbeitspapiere 68*. 7–16.
Simango, Silvester R. 2012. Subject marking, coordination and noun classes in ciNsenga. *Southern African Linguistics and Applied Language Studies 30*(2). 171–183. https://doi.org/10.2989/16073614.2012.737595
Spuy, Andrew van der. 2010. Generating Zulu noun class morphology. *Language Matters: Studies in the Languages of Africa 41*(2). 294–314. https://doi.org/10.1080/10228190903213787
Spuy, Andrew van der. 2014. The morphology of the Zulu locative. *Transactions of the Philological Society 112*(1). 61–79. https://doi.org/10.1111/1467-968X.12004
Steriopolo, Olga. 2008. Form and function of expressive morphology: A case study of Russian. Vancouver: University of British Columbia dissertation.

Steriopolo, Olga. 2017. Nominalizing evaluative suffixes in Russian: The interaction of declension class, gender, and animacy. *Jenom7: The 7th Workshop on Nominalizations*. Université de Fribourg. https://doi.org/10.7557/6.4141

Steriopolo, Olga. 2018. Morphosyntax of gender in Russian sex-differentiable nouns. *Journal of Slavic Linguistics 26*(2). 307–335. https://doi.org/10.1353/jsl.2018.0010

Svenonius, Peter. 2007. Adpositions, particles, and the arguments they introduce. In Eric Reuland, Tanmoy Bhattacharya & Giorgos Spathas (eds.), *Argument Structure*, 63–103. Amsterdam: John Benjamins. https://doi.org/10.1075/la.108.08sve

Svenonius, Peter. 2010. Spatial P in English. In Guglielmo Cinque & Luigi Rizzi (eds.), *Mapping Spatial PPs*, 127–160. Oxford: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780195393675.003.0004

Taraldsen, Knut T. 2010. The nanosyntax of Nguni noun class prefixes and concords. *Lingua*, *120*(6). 1522–1548. https://doi.org/10.1016/j.lingua.2009.10.004

Taraldsen, Knut T., Lucie Taraldsen Medová & David Langa. 2018. Class prefixes as classifiers in Southern Bantu. *Natural Language & Linguistic Theory 36*. 1339–1394. https://doi.org/10.1007/s11049-017-9394-8

Taylor, John R. 1996. The syntax and semantics of locativised nouns in Zulu. In Martin Pütz & René Dirven (eds.), *The Construal of Space in Language and Thought*, 287–306. Berlin: De Gruyter. https://doi.org/10.1515/9783110821611.287

Terzi, Arhonto. 2010. On null spatial Ps and their arguments. *Catalan Journal of Linguistics 9*. 167–187. https://doi.org/10.5565/rev/catjl.99

Valinande, Nzama. 1984. The structure of Kinande. Washington, D.C.: Georgetown University dissertation.

Visser, Marianna W. 2008. Definiteness and specificity in the isiXhosa determiner phrase. *South African Journal of African Languages* (28)*1*. 11–29. https://doi.org/10.1080/02572117.2008.10587298

Wal, Jenneke van der. 2009. *Word order and information structure in Makhuwa-Enahara*. Utrecht: LOT.

Wal, Jenneke van der. 2015. Bantu object clitics as defective goals. *Revue Roumaine de Linguistique LX*(2–3). 277–296.

Wechsler, Stephen. 2009. Agreement features. *Language and Linguistics Compass 3*(1). 384–405. https://doi.org/10.1111/j.1749-818X.2008.00100.x

Welmers, William E. 1973. *African Language Structures*. Berkeley: University of California Press.

Wiltschko, Martina. 2006. Why should diminutives count? In Hans Broekhuis, Norbert Corver, Riny Huijbregts, Ursula Kleinhenz & Jan Koster (eds.), *Organizing Grammar. Linguistic Studies in Honor of Henk van Riemsdijk*, 669–679. Berlin: Walter de Gruyter.

Wiltschko, Martina & Olga Steriopolo. 2007. Parameters of variation in the syntax of diminutives. *Proceedings of the 2007 Annual Conference of the Canadian Linguistic Association*, 1–12.

Zeller, Jochen. To appear. Locatives in Bantu. *Oxford Guide to the Bantu Languages*. Oxford University Press.

Address for correspondence

Zuzanna Fuchs
Department of Linguistics
University of Southern California
3601 Watt Way
Grace Ford Salvatori 301
Los Angeles, California 90089-1693
United States
zfuchs@usc.edu

Co-author information

Jenneke van der Wal
Leiden University
Centre for Linguistics
g.j.van.der.wal@hum.leidenuniv.nl