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Noun classes and plurality in Bantu languages

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The origin of the grammatical forms of gender and number, the etymology of pronouns, and many other questions of the highest interest to the philologist find their true solution in Southern Africa.
(Bleek 1862: ix)

1. Introduction

Noun classes are one of the most prominent grammatical features of Bantu languages – a large language family of about 350-400 languages spoken over much of central, east, and southern Africa. In most Bantu languages, each noun (or noun stem) is assigned to one of between 15 and 18 noun classes. Class membership is marked morphologically on the noun by a class prefix, and governs complex agreement morphology in the noun phrase and the clause. While it is often impossible to delineate noun classes semantically, semantic tendencies or core meanings of subsets of members can often be established. The main function of noun classes is often seen as an inflectional nominal classification system. However, noun classes also fulfil derivational function through ‘secondary classification’, where, for example, diminutive or locative nouns can be derived (cf. e.g. Crisma et al. 2011, Demuth 2000). Bantu noun class systems have been described extensively – a comprehensive reconstruction is included in Meinhof (1899), while Kadima (1969) and Maho (1999) provide the most extensive studies to date. Katamba (2003) and Rugemalira (to appear) present more concise overviews.

Noun classes are typically analysed as a form of nominal classification system, and as such are often seen as belonging to the same domain as grammatical gender systems found, for example, in many Indo-European languages. Number in Bantu languages is mediated by the noun class system – there is no distinct number morphology, but many noun classes are paired according to number, constituting singular-plural pairings. The intricate interaction between noun class and number in Bantu has given rise to different theoretical analyses, some assuming an independent inflectional number feature or projection, others seeing number as part of a wider set of (derivational) relations between noun classes.

The current chapter presents an overview of Bantu noun classes (Section 2), and then focusses on three different approaches to analysing grammatical number in Bantu languages – approaches based on an inflectional notion of number (Section 3), those which analyse number as a derivational relation (Section 4), and approaches adopting notions of polysemy and paradigms for analysing Bantu noun class systems (Section 5). Section 6 provides a summary and conclusions. The chapter focusses on Swahili, which presents a fairly typical Bantu noun class system, and for which several analyses of the interaction between number, gender, and class have been proposed.

2. Typological overview

Cross-linguistically nominal classification systems are often described as including classifier systems as found in Mandarin or Thai, gender systems as found in Romance languages, and noun class systems as found in Bantu languages (cf. e.g. Senft 2000). In noun class systems, each noun is assigned to a class, and class membership typically has morphological, syntactic (agreement), and semantic dimensions. In the example in (1), from Swahili, *mtu* ‘person’ in (1a) belongs to class 1, and *watu* ‘people’ in (1b) belongs to class 2:¹

- (1) a. M-tu m-moja m-zuri a-me-anguka [Swahili]
 1-person 1-one 1-nice SM1-PERF-fall
 ‘One nice person fell.’
- b. Wa-tu wa-wili wa-zuri wa-me-anguka
 2-person 2-two 2-nice SM2-PERF-fall
 ‘Two nice people fell.’

In (1a), the class 1 noun *mtu* ‘person’ has the class 1 prefix *m-*, and triggers class 1 agreement on the nominal modifiers *mmoja* ‘one’ and *mzuri* ‘nice’, as well as on the verb with the class 1 subject marker *a-*. In (1b), *watu* ‘people’ has the class prefix *wa-* and triggers class 2 agreement.

The number of classes typically reconstructed for Proto-Bantu (PB) is 23, and different Bantu languages have maintained different numbers of classes. By convention, Bantu noun classes are referred to by an (arbitrary) numbering system. Noun class distinctions with their noun class prefixes for seven (Eastern) Bantu languages are given in Table 1:² Luganda (Uganda), Kinyamwezi (Tanzania), Chindamba (Tanzania), Bemba (Zambia), Herero (Botswana, Namibia), Sotho (Lesotho, South Africa) and Zulu (South Africa).

¹ The following abbreviations are used in the glosses of the examples: 1, 2, 3, ... = noun class number, AUG = augment, CONJ = conjunction, COP = copula, FV = final vowel, LOC = locative, PERF = perfect, SM = subject marker.

² Based on Katamba (2003: 109), Maho (1999: 51-61) and Schadeberg (2003: 149), as well as Edelsten and Lijongwa (2010) for Ndamba, Möhlig et al. (2002) for Herero, Schadeberg and Maganga (1992) for Nyamwezi, and Ashton (1947) for Swahili. In class 9/10, N denotes a nasal consonant whose place of articulation is subject to assimilation to the following consonant. Classes with identical noun class prefix (e.g. PB class 1 and class 3) are distinguished by different agreement patterns or different class pairings, as will be discussed in more detail below.

	Proto-Bantu	Luganda	Nyamwezi	Ndamba	Swahili	Bemba	Herero	Sotho	Zulu
1	m̩	mu	mu	m(u)	m	mu	mu	mo	mu
2	ba	ba	βa	va	wa	ba	va	ba	ba
3	m̩	mu	mu	m(u)	m	mu	mu	mo	mu
4	m̩	mi	mi	mi	mi	mi	mi	me	mi
5	i	ri	i	li	ji/∅	i	∅	le	li
6	ma	ma	ma	ma	ma	ma	ma	ma	ma
7	kɪ	ki	ki	chi	ki	ci	tji	se	si
8	bi	bi	shi	fi	vi	fi	vi	di	zi
9	N	N	N/∅	N/∅	N/∅	N/∅	(N)	N	N
10	N	N/zi	N/∅	N/∅	N/∅	N/∅	zo(N)	diN	ziN
11	l̩	lu	lu	lu	u	lu	ru		lu
12	ka	ka	ka	ka		ka	ka		
13	t̩	tu	tu	tu		tu	tu		
14	b̩	bu	βu	u		bu	u	bo	bu
15	k̩	ku	ku	ku	ku	ku	ku	ho	ku
16	pa	wa	ha	pa	(pa)	pa	pu		
17	k̩	ku	ku	ku	(ku)	ku	ku	ho	ku
18	m̩	mu	mu	m(u)	(mu)	mu	mu		
19	pi								
20	g̩	gu							
21	gi								
22	ga	ga							
23	ɪ-	e							e

Table 1: Noun classes in different Bantu languages

The comparison shows that, for example, Luganda has 21 classes, Nyamwezi 18, Swahili 15, and Sotho 13. The data also show the close resemblance of noun class prefixes, reflecting the comparative youth of the language family and the comparative conservativeness of the noun class systems. Noun classes can be described along different dimensions: As paradigmatic form classes typically associated with specific noun class morphology, as syntagmatic agreement relations where other elements in the syntactic domain are targets of the noun class agreement controller, and as semantic relations where noun class membership is related to the particular meanings of its members. This will be illustrated in more detail below.

In Swahili, fifteen classes are typically distinguished, based on noun class prefixes, agreement patterns, and, to a lesser extent, semantics. A summary of the classes is provided in Table 2, showing the noun class prefix (which is also used for adjective agreement), an example word, the so-called ‘concord’ marker which is used, for example, in verbal agreement and for demonstrative formation, the referential concord marker used, for example, in demonstratives and relatives, the possessive concord used

in possessive (or ‘connexive’) constructions, and an indication of the core meaning of each class, which is, however, neither predictive nor exhaustive, and which will be discussed in more detail below. The locative prefixes for classes 16-18 are given in brackets as they are no longer used as nominal prefixes in Swahili, but are still found with adjectives and in the agreement system.

Class	Class prefix	Example word	Concord	Referential concord	Possessive concord	Core meanings
1	m	mtu ‘person’	a/yu	ye	wa	People
2	wa	watu ‘people’	wa	o	wa	
3	m	mti ‘tree’	u	o	wa	Trees, plants
4	mi	miti ‘trees’	i	yo	ya	
5	ji/Ø	jicho ‘eye’	li	lo	la	Round things, liquids, masses, augmentatives
6	ma	macho ‘eyes’	ya	yo	ya	
7	ki	kiti ‘chair’	ki	cho	cha	Artefacts, tools, manner, diminutives
8	vi	viti ‘chairs’	vi	vyo	vya	
9	N/Ø	ndege ‘bird’	i	yo	ya	Animals, loanwords
10	N/Ø	ndege ‘birds’	zi	zo	za	
11	u	ubao ‘board’	u	o	wa	Long things, abstracts
15	ku	kuimba ‘to sing’	ku	ko	kwa	Infinitives
16	(pa)	mahali ‘place’	pa	po	pa	Locatives
17	(ku)		ku	ko	kwa	
18	(mu)		mu	mo	mwa	

Table 2: Swahili noun classes

The classification of Swahili noun classes in Table 2 is based on a combination of noun class prefix and agreement. For example, both class 1 and class 3 have the same noun class prefix (prefix *m-*), but differ in agreement pattern – the same is true of class 9 and class 10. Conversely, class 3 and class 11 share the same agreement pattern, but have different noun class prefixes. Class 15 and 17 share the same noun class and agreement morphology – although the locative noun class morphology in Swahili has been much reduced, with locatives being expressed by a suffix *-ni* rather than by noun class

prefixes as is the case in most other Bantu languages. The distinction between class 15 and class 17 rests thus mainly on semantic grounds (and/or on the difference in lexical category) – class 15 includes infinitives, while class 17 includes locatives.³

There are two variants of the classification in Table 2 which have been proposed in the literature, relating to animate nouns, and to class 11.

Nouns referring to humans and (higher) animals have a special status in Swahili, since they take class 1/2 agreement irrespective of their noun class prefix.

- (2) a. *Kalamu* i-me-anguk-a
9.pen SM9-PERF-fall_down-FV
'The pen has fallen down.'
- b. *Askari* a-me-anguk-a
9.police_officer SM1-PERF-fall_down-FV
'The police officer has fallen down.'
- c. *Simba* a-me-anguk-a
9.lion SM1-PERF-fall_down-FV
'The lion has fallen down.'
- (3) a. *M-tume* a-me-anguk-a
3-prophet SM1-PERF-fall_down-FV
'The prophet has fallen down.'
- b. *Ma-baharia* wa-me-anguk-a
6-sailor SM2-PERF-fall_down-FV
'The sailors have fallen down.'
- c. *Vi-ongozi* wa-me-anguk-a
8-leader SM2-PERF-fall_down-FV
'The leaders have fallen down.'

The examples in (2) show three class 9 nouns – the first, *kalamu* 'pen', takes class 9 agreement, while the other two – *askari* 'police officer' and *simba* 'lion' – take class 1 agreement, as they refer to animate referents. The examples in (3) show animate nouns from different classes, each taking class 1/2 agreement. The traditional analysis of these nouns (e.g. Ashton 1947) is determined by the noun class prefix, and so, for example, *askari* in (2b) would be a class 9 noun due to its zero-prefix, while *mabaharia* with the class prefix *ma-* in (3b) would be a class 6 noun. Other authors (Amidu 1997, Mohamed 2001) argue that in these cases, it is the agreement pattern which determines class membership, and so that any noun taking class 1/2 (verbal) agreement is in fact a class 1/2 noun. Whichever analysis is adopted, it seems fair to say that the data show a conflict between an older, formal classification system, and a more recent semantic one, based on animacy (cf. Schadeberg 2001), which presents an interesting case study in itself.

³ There are also, across Bantu, morphological grounds, in that locative prefixes like class 17 are typically used in secondary classification, and are prefixed to inflected nouns already containing a noun class prefix; cf. example (5b), below. Class 15, in contrast, is mainly used with verbal stems, although a few inherent class 15 nouns are found frequently and have been reconstructed for Proto-Bantu.

The second variant of the classification in Table 2 is the postulation of an additional class 14. Historically (pre-)Swahili distinguished class 11, with prefix **lu-*, and class 14 with prefix **bu-*, inherited from Proto-Bantu (see Table 1). The two classes have merged in (modern) Swahili, due to the loss of the initial consonants in both classes, leaving the prefix *u-* (Nurse and Hinnebusch 1993: 349-351). The reconstructed semantics of the two classes is rather different: Class 11 would have contained concrete nouns, possibly of elongated shape, and with a plural typically in class 10. Class 14, on the other hand, would have contained abstract nouns without singular-plural pairing (cf. the cognate Zulu class 14 noun *ubuntu* ‘humankind’). Under the analysis in Table 2, class 14 has merged with class 11, leaving only class 11. Partly reflecting this historical difference, some Swahili class 11 nouns take a plural in class 10, while others do not take a plural, or take a plural in class 6, and there are also some nouns which have two plural forms (in class 10 and class 6). Some authors (notably Carstens 1991) take this as evidence for maintaining a distinction between class 11 and class 14 in Swahili to explain differences in noun class pairing, even though there is no morphological difference. The point will be discussed further below.

Considerable discussion has been devoted to the semantics of Bantu noun classes. There is overall consensus that there is no clearly definable semantic basis for Bantu noun classes in terms of the extension of members or in terms of necessary and sufficient conditions for class membership. However, apart from this, a variety of analyses have been proposed, ranging from the position that noun classes are simply a formal device without any underlying meaning (e.g. Richardson 1967), to the view that, once an appropriate semantic analysis is developed, noun classes can be shown to be fully semantically motivated (e.g. Contini-Morava 2000). Denny and Creider (1986), for example, provide an analysis of Proto-Bantu noun classes based on semantic criteria such as count vs. mass, consistency (solid, liquid, etc), and shape (small, elongated, etc.). Selvik (2001) develops an analysis of Setswana noun classes based on concepts of polysemy and resemblance. Contini-Morava in a number of publications (1994, 1996, 1997, 2000, 2002) proposes detailed analyses of Swahili noun classes based on Cognitive Linguistics concepts of metonymy and metaphor, and argues that (most) Swahili classes are clearly semantically motivated – for example, class 7/8 contains prototypical members which are ‘small enough to be held in the hand’ and members whose meaning can be related to this prototypical meaning through various processes of semantic extensions.

In addition to the classification of nouns into classes, which can (at least *prima facie*) be seen as a lexical property of each noun, noun classes also have a function which looks more derivational, sometimes called secondary classification. In this derivational function nouns are assigned to a class for expressing specific meaning, often related to size, or evaluative or locative meaning. For example the Swahili class 9/10 noun *ndege* ‘bird’ can also be used in class 7/8 to mean ‘small bird’:

- (4) a. n-dege
9-bird
‘bird’
- b. ki-dege
7-bird
‘small bird’

The class shift in (4) is subtractive in that the original prefix *n-* in (4a) is replaced by the secondary prefix *ki-* in (4b). In additive class shift, shown in (5), the secondary prefix *pa-* in (5b) is added to the original prefix *n-*:⁴

- (5) a. *i-n-ganda* [Bemba]
 AUG9-9-house
 ‘house’
- b. *pa-n-ganda*
 16-9-house
 ‘at the house/at home’

Apart from locatives, secondary classification is often associated with size and with evaluative meaning, in particular diminutive and augmentative meaning. In some analyses, the semantic effects of secondary classification are regarded to follow from the basic meaning of the class – e.g. in Contini-Morava’s model, the fact that class 7/8 derives diminutives in Swahili follows from the semantics of the class – while in others, basic and secondary classification are seen as distinct, or, as in Déchaine et al. (2014), as resulting from underspecified semantics of the relevant prefix and the specific syntactic position it is associated with (see Sections 3-5 for further discussion).

Of particular relevance for the notion of number in Bantu noun class systems is the pairing relation of many classes into singular-plural pairs. In Swahili the first ten classes enter in such pairing relations – that is, classes 1/2, 3/4, 5/6, 7/8 and 9/10 – while, as noted above, a subset of class 11 have corresponding plurals in class 10. Furthermore, in Bantu languages with reduced noun class systems, where many or most class distinctions have been lost, it is number pairings which tend to persist (Maho 2003). For example, in Kako (Cameroon), singular nouns are unmarked, and there are two plural markers, one for animate nouns (based on class 2), and one for inanimate nouns (based on class 4). A further development has occurred in Mbatia (Central African Republic), where there is only one noun class prefix used, namely the plural marker *ba-* which is used with all plural nouns.

However, there are aspects of the noun class system which do not fit easily into these pairing relations. For example, the infinitive class 15 and the locative classes 16-18 are not related in this way, not all members of the paired classes take part in the pairing, and a number of nouns have plurals in more than one class. This ambiguous status of the noun class system with respect to number has led to a number of different analyses which can be grouped into those which analyse number as an inflectional category in Bantu noun classes, and those which analyse number as part of a more complex set of derivational relations between noun classes (including paradigmatic relations). These approaches are discussed in the next three sections.

3. Number as inflection

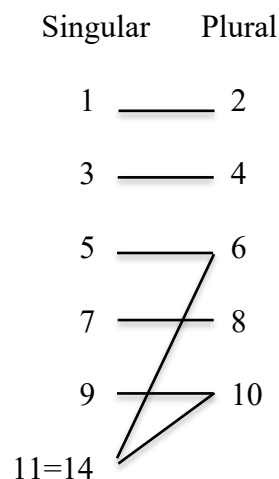
As noted above, several Swahili noun classes can be represented as singular-plural pairing. In the prototypical case, a given singular noun in, for example, class 3 has a corresponding plural noun in class 4:

⁴ Locative noun class morphology has largely been lost in Swahili, and has been replaced by an innovative locative suffix *-ni*, so additive class shift is illustrated from Bemba here. The initial vowel before the prefix in (5a) is an ‘augment’ or ‘pre-prefix’ whose presence is governed by complex morpho-syntactic and semantic criteria (cf. Halpert *fmng.*).

- (6) a. m-ti b. mi-ti
 3-tree 4-tree
 'tree' 'trees'

Based on these regular relations, many analyses assume that number and gender are distinct categories in languages like Swahili, and that their combination results in the different noun classes. From this perspective, grammatical number is encoded as an inflectional property, while gender is a lexical property, even though the morphological expression is mediated by the class system. The inflectional analysis of number in Bantu is consistent with typological approaches which view number and gender as distinct categories (e.g. Corbett 1991). It is also the more traditional analysis, and underlies the established representation of Bantu nouns as a system of (paired) noun classes. Meinhof (1948: 42), for example, defines class 8 as regular plural of class 7, and Maho (1999) provides an extensive discussion of singular-plural pairings in different Bantu languages, and shows how they can be represented by association lines between different classes:

- (7) Swahili noun class pairings (excluding single classes) (adapted from Maho 1999: 53)



In a number of papers, Carstens (1991, 1993, 2005, 2008, 2011) develops an analysis of Swahili classes from this overall perspective, couched in generative terms. She proposes that classes consist of gender and number. Gender features are idiosyncratic lexical features which are part of individual nouns' lexical information. There are seven genders in Swahili, each gender corresponding to a singular-plural pair except for gender G which consists of non-countable abstract nouns (corresponding to class 14 in Carstens's analysis).

- (8) Swahili genders (Carstens 2008: 136)

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

Gender F: stems of Classes 11/10
 Gender G: stems of Class 14

Class prefixes are then derived via spell-out rules, where each gender is associated with a number feature [singular] or [plural]. In (9) this is illustrated with reference to Gender D, deriving the class 7 prefix *ki-* and the class 8 prefix *vi-*:

(9) Examples of spell out rules for Swahili class prefixes (Carstens 2008: 136)

[Singular]	/ki-/	/_ N	Gender D
[Plural]	/vi-/	/_ N	Gender D

Carstens (2011) notes that semantic regularities in class relations other than singular-plural pairing can be explained by lexical default mapping rules, similar to those proposed by Harris (1991) for Romance. For example, nouns referring to humans are mapped into class 1/2, and those referring to languages into class 7/8, and mapping rules can also be used to explain loanword assignment, for example the fact that the Arabic loan *msikiti* ‘mosque’ becomes a class 3/4 noun:

(10) Gender mapping rules (Carstens 2011: 727)

[human] → classes 1/2
 [language name] → classes 7/8
 [borrowed word for inanimate beginning with [m]] → classes 3/4

With this system, Carstens claims that the (assumed) general arbitrariness of the noun class system (i.e. genders) can be maintained, while semantically motivated groups of nouns can be expressed by mapping rules. The parallelism with Romance of this solution is not accidental. In Carstens’s analysis Bantu noun classes are reduced to a system with lexical gender and inflectional number as is typically assumed for Romance languages. This corresponds well to observed empirical similarities between Bantu and Romance (cf. Ferrari-Bridgers 2008, Crisma et al. 2011), as well as to the typological analysis of Bantu noun classes as a kind of gender system by e.g. Corbett (1991).

The common thread uniting the approaches discussed in this section so far is that they analyse number as a grammatical, inflectional category in Bantu. From this perspective, class can be decomposed into a lexical gender element, and a morphological number element. This analysis focusses on the regularity of number pairing of the noun class system, and aligns Bantu noun classes with the wider typological group of gender languages in that number is treated no differently than number in, for example, European gender languages. However, the analysis fares less well with noun classes which are not paired in this way (e.g. infinitive and locative classes), as well as with irregularity, e.g. where a given noun fails to have a regular plural, or is paired with more than one form, or where the pairing is semantically different from a difference in number. Critics of this approach have argued that in several respects, noun classes in Bantu display more derivational than inflectional properties, and so that an analysis which maintains standard assumptions about class as an inflectional category is problematic. Most responses to this challenge then propose that the clear division between gender and number proposed in this section cannot be maintained, and that number should be analysed in more derivational terms. Such

alternative analyses to the “number as inflection” approach are discussed in the next section.

However, a different response is to maintain number as an inflectional category, but to give up on gender as a lexical property of noun stems. Building on earlier work in Taraldsen (2010), Taraldsen et al. (2018) develop a formal analysis of noun classes which takes Carstens’s (1991) analysis as a starting point, but then ends up with a very different solution, where the derivational aspect of the class system is located in the treatment of gender, which is re-conceptualised as a lexical property of the prefix, while number is maintained as an inflectional category.

Based mainly on evidence from Southern Bantu languages like Xhosa and Rhonga, Taraldsen et al. (2018) note different agreement patterns with conjoined subjects (cf. Corbett and Mtenje 1987, De Vos and Mitchley 2012, Diercks et al. 2015, Marten 2000, 2005, Riedel 2009, and Simango 2012) and point out the relevance of this for the analysis of noun class systems. They observe that not all classes permit the expected plural subject agreement with conjoint NPs of the same singular class, showing that in these cases the presumed plural class cannot be analysed as the same gender as the corresponding singular class plus a plural feature, as was proposed in Carstens’s (1991) analysis.

- (11) a. I-mi-bhinqo i-se-tafile-ni [Xhosa]
 AUG4-4-skirt SM4-LOC.COP-table-LOC
 ‘The skirts are on the table.’
- b. U-m-bhinqo no-m-nqathe zi/*i-se-tafile-ni
 AUG3-3-skirt CONJ.AUG3-3-carrot SM8/SM4-LOC.COP-table-LOC
 ‘A skirt and a carrot are on the table.’
 (Taraldsen et al. 2018: 11)

In (11b), for example, the verb shows default class 8 subject marking, rather than class 4 subject marking as illustrated in (11a), and so class 4 cannot be analysed as the plural form corresponding to class 3. Rather, in Taraldsen et al.’s (2018) analysis, all noun class prefixes contain an empty, silent nominal head N, and it is this N which accounts for the differences in agreement. In some classes the same nominal head is contained in singular and plural classes, but crucially not in others – in classes which do not allow agreement with the plural class in conjunction, the singular and plural classes contain a (semantically) different N. Interestingly, it is precisely these classes, like Xhosa or Rhonga class 3/4, in which a singular prefix is retained with plurals of monosyllabic stems, resulting in stacked prefixes.

- (12) a. mu-twa b. mi-mu-twa [Rhonga]
 3-thorn 4-3-thorn
 ‘thorn’ ‘thorns’
- (13) a. mu-nhu b. va-nhu c. *va-mu-nhu [Rhonga]
 1-person 2-person 2-1-person
 ‘person’ ‘people’
 (Taraldsen et al. 2018: 23/24)

In (12b), the class 4 prefix *mi-* is added to the class 3 prefix *mu-* with the monosyllabic stem *-twa* ‘thorn’. In contrast, the class 2 prefix *va-* in (13b) replaces the class 1 prefix,

even with monosyllabic stems such as *-nhu* ‘person’. In Taraldsen et al.’s (2018) analysis, this follows from the fact that only prefixes with two different N heads can be stacked. Based in part on specific – nanosyntactic (e.g. Starke 2009) – theoretical assumptions, Taraldsen et al. (2018) propose that in fact all noun class prefixes and all subject agreement prefixes contain such an empty N. In the case of plural classes, the noun class prefixes are then spell-outs of two syntactic heads – the lexical, empty N and the Number/Plural head. From this perspective, gender does not play a role in the noun class system at all, and noun classification in Bantu is more akin to classifier systems as found, for example, in Mandarin. Nouns are paired with prefixes based either on semantic compatibility or by being listed as phrasal idioms in the lexicon (Taraldsen et al. 2018: 54), and the whole system is characterised more in derivational-semantic terms, than in inflectional-grammatical ones, while maintaining an analysis of number as inflectional category. However, a number of analyses of Bantu noun classes develop an alternative to this inflectional view, and are discussed in the next section.

4. Number as derivational relation

While the approaches treating number as an inflectional category capture the singular-plural pairing of Bantu classes, they are less well suited to analysing classes which are not so paired, or to analysing exceptions to the singular-plural pairings within classes which are otherwise regular. Based on this observation, several authors (e.g. Contini-Morava 2000, Hendrikse 2001, Schadeberg 2001) develop analyses of number in Bantu as a derivational category.

It is well known that noun classes fulfil derivational functions, sometimes called ‘secondary classification’ (Maho 1999: 88). Through these derivational functions, many noun stems enter into a wide set of derivational relations. The examples in (14) and (15) show common derivational uses of noun classes, deriving diminutives, augmentatives, and qualities (14), and slightly more complex semantic relations in (15) (Schadeberg 2001, Crisma et al. 2011: 258).

- (14) a. *mtoto/watoto*
 ‘child, off-spring’ (class 1/2)
 b. *kitoto/vitoto*
 ‘small child, baby; also childish manner’ (diminutive/manner) (class 7/8)
 c. *toto/matoto*
 ‘big, fine child; object resembling offspring’ (augmentative) (class 5/6)
 d. *utoto*
 ‘childhood, dependence’ (quality) (class 11)
- (15) a. *kivuli/vivuli*
 ‘shadow, shady place; also sometimes ghost, apparition’ (class 7/8)
 b. *jivuli/mavuli*
 ‘big, large shadow etc.’ (augmentative) (class 5/6)
 c. *mvuli/mivuli*
 ‘shady place, shade of a tree, &c.’ (class 3/4)
 d. *uvuli*
 ‘shade, shadiness in general’ (quality) (class 11)

In addition, subsets of lexical items enter into more specific derivational relations, for example the relation between trees (class 3/4) and fruits (class 5/6) (16), and between people (class 1/2), language/custom (class 7) and place (class 14) (17):

- (16) a. chungwa/machungwa
 ‘orange fruit’ (class 5/6)
 b. mchungwa/michungwa
 ‘orange tree’ (class 3/4)
- (17) a. Mswahili/Waswahili (class 1/2)
 ‘Swahili person’
 b. Kiswahili (class 7)
 ‘Swahili language/customs’
 c. Uswahili (class 14)
 ‘Swahili land’
- d. Mjerumani/Wajerumani (class 1/2)
 ‘German person’
 e. Kijerumani (class 7)
 ‘German language/customs’
 f. Ujerumani (class 14)
 ‘Germany’

Against this background, the pertinent question with respect to number is whether number is grammatically different from these derivational uses, or whether the expression of number in Bantu is part of the derivational system. In this section I discuss approaches which explore this latter option.

Schadeberg (2001) uses Plank’s (1994) framework for describing inflection and derivation for an analysis of Swahili noun classes. While Plank (1994) notes that there is no categorical distinction between derivation and inflection, he lists a range of criteria whose values are more or less typical for derivation or inflection (e.g. applying to all relevant bases is more characteristic of inflection, while being sensitive to lexical restrictions is more characteristic of derivation). Based on six such criteria Schadeberg finds that Swahili noun classes behave more like typical derivation than typical inflection. Among the salient relevant characteristics are the presence of one-gender classes, which are not paired with a plural (or any other) class, in particular locative and infinitive classes (18),⁵ the presence of words in each of the paired classes which are members of only one class, without having a corresponding ‘plural’ or ‘singular’ form (19), the availability for some singular forms of more than one ‘plural’ form (20), and idiosyncratic semantic relationships between ‘singular’ and ‘plural’ forms (21):

- (18) Swahili infinitive class (class 15)
 a. kusoma ‘to read’
 b. kuendelea ‘to progress, develop’

⁵ Class 15 nouns behave like other nouns in several respects, e.g. in terms of triggering agreement. In many Bantu languages, though not in Swahili, class 15 also contains a small set of non-infinitive nouns. On the other hand, class 15 nouns can be inflected for negation, object marking, and, in some Bantu languages, for aspect, and so also display verbal properties (cf. Visser 1989, Creissels and Godard 2005, Crisma et al. 2011). Locative classes are much reduced in Swahili, but are part of the noun class system in most Bantu languages, and are not in an obvious sense paired (cf. Grégoire 1975).

c. kudai 'to claim'

(19) Unpaired words in different classes

- a. mchana 'daytime, daylight' (class 3)
- b. mikambe 'kicking game played in water' (class 4)
- c. joto 'heat' (class 5)
- d. mauti 'death' (class 6)
- e. mafuta 'fat' (class 6)
- f. kiu 'thirst' (class 7)
- g. vidondo 'small chips of wood' (class 8)
- h. virugu 'anger' (class 8)
- i. njaa 'hunger' (class 9)
- j. ufalme 'kingdom' (class 11)
- k. udongo 'clay' (class 11)
- l. kuimba 'to sing' (class 15)
- m. mahali 'place' (class 16/17/18)

(20) Several 'plural' forms

- a. simba 'lion' (class 9)
- b. simba 'lions' (class 10)
- c. masimba 'pride of lions' (class 6)

- a. ushanga 'bead' (class 11)
- b. shanga 'beads' (class 10)
- c. mishanga 'string of beads' (class 6) (Contini-Morava 2000: 8)

(21) Semantically irregular 'singular-plural' pairings

- a. uvumbi 'dust, grain of dust' (class 11)
- b. vumbi 'dust' (class 10)

- c. ukuni 'a piece of firewood' (class 11)
- d. kuni 'firewood' (class 10)

- e. usoka 'brass wire' (general, small piece) (class 11)
- f. masoka 'thick brass/iron wire' (class 6)

- g. pesa 'piece, money' (class 9)
- h. mapesa 'small change' (class 6)

- l. moshi 'smoke' (class 3)
- m. mioshi 'plumes of smoke' (class 4)

These examples show that the singular-plural pairing of Bantu noun classes is just one aspect of a wider and more complex set of semantic relations between classes and that the system of these relations is, according to Schadeberg (2001), better analysed as a system of derivation than of inflection. Since singular-plural pairings are part of this system, these, and accordingly grammatical number, should be analysed as a derivational category in Bantu languages. Rather than defining class as a combination of gender and number, as is typically assumed in approaches which treat number as an inflectional category, in this derivational approach, class is the primitive notion from

which gender (for example, a noun class pairing) and number (as a derivational category) can be derived.⁶

A similar approach is pursued in Contini-Morava (2000), who furthermore points out how wide-spread unpaired words are in the Swahili lexicon. Based on a lexical database, Contini-Morava (2000: 6/7) notes that out of 142 class 6 nouns, 109 denote liquids, masses and collectives, and so are not easily aligned with singular-plural pairings, while 143 out of 278 class 11 nouns are single-class nouns. More generally, Contini-Morava notes that out of all Swahili classes, only six constitute regular, reciprocal pairings: Classes 1/2, 3/4, and 7/8. In the remaining classes the singular-plural relation is more complex, as illustrated in the examples in (18) to (21), above: some classes – even disregarding locative and infinitive classes – are not paired or contain numerous words which are not, for others a more complex three-way pairing exists, while in class 9/10, while there is a pairing relationship, this is formally expressed only in the agreement morphology, as the noun class prefixes of the two classes are identical, and are only found on a subset of nouns in any case (those of Bantu origin which are monosyllabic or begin with a voiced obstruent or a vowel), a blurring which is matched by semantic heterogeneity of the class.

Based on these observations, Contini-Morava proposes that the semantics of number in Swahili is more complex than a simple singular-plural distinction. Rather, in Contini-Morava's analysis, number in Swahili encodes scales of individuation, where individuation can be defined as comprising 'relative discreteness, homogeneity, boundedness in space' (2000: 18). In this analysis, different classes encode different degrees of individuation. Classes 1/2, 3/4 and 7/8 are the most individuated classes, and so their members can be one or more than one. These classes are reciprocally paired. Class 11 is less individuated, and class 6 the least individuated class, containing mass nouns, liquids, and collectives. Class 9/10 is outside of this classification as members of the class can be located anywhere on the scale, with their degree of individuation determined partly lexically and partly contextually:

(22) System of degree of individuation (Contini-Morava 2000: 18)

MOST INDIVIDUATED	[ONE m_1 - (1), m_2 - (3), ji - ~ \emptyset (5), ki - (7)
		MORE THAN ONE wa - (2), mi - (4), vi - (8)
LESS INDIVIDUATED u - (11)		
LEAST INDIVIDUATED ma - (6)		

Contini-Morava (2000) concludes that number in Swahili is semantically complex, and morphologically part of an intricate set of lexico-grammatical relations. As such, number can be seen as part of the relations encoded by the noun class system, and as more derivational than inflectional. From this perspective, number and gender are more intricately intertwined than would appear from more traditional accounts.

I noted above that the inflectional approach to Bantu noun classes, discussed in Section 3, draws on a parallel with typical gender systems as found, for example, in Romance languages. However, on closer inspection it turns out that derivational relations similar to those identified for Swahili noun classes are also found in Romance

⁶ Schadeberg (2001) notes, however, that grammatical number does play a role in Swahili grammar, namely in the agreement system of animate nouns, which, as noted above, constitute a different, innovative classification system of Swahili.

languages (cf. e.g. Ferrari-Bridgers 2008, Crisma et al. 2011), for example in terms of irregular semantic plurals, nouns which only have one (singular or plural) form, so-called ‘lexical plurals’ (Acquaviva 2008) of masculine singular nouns with feminine plural forms, or fruit-tree relations marked by change in gender. Indeed, similar relations can be found in inflectional number systems cross-linguistically showing that derivational or lexical-inferential relations are an important property of number systems more generally (cf. Chapter 12 of this volume). The question of how to best analyse Bantu noun class systems, and the relation between gender, number, and class within this analysis thus has wider typological and theoretical relevance, also for the study of the relation between individuation and plurality (see e.g. Grimm 2012, and Chapter 2 of this volume).

5. Polysemy and paradigm approaches

A final approach to the analysis of number and class in Bantu languages is an approach based on polysemy or semantic underspecification of noun class prefixes, which become fully interpretable only through embedding in a context, for example through paradigmatic relations with other classes. The idea that the meaning of individual noun classes is based on polysemy, and that individual members of a class are related through metaphorical and metonymic semantic relations, is adopted, for example, in Contini-Morava’s work, discussed above. It is also explicitly developed in Selvik’s (2001) analysis of Setswana noun classes, where the meaning of noun classes is analysed by semantic networks and abstract cognitive features such as shape, animacy or individuation.

However, another development of polysemous approaches is to view noun class prefixes themselves as underspecified or polysemous, rather than, or in addition to, members of each class. This means that noun class prefixes are not fully interpretable in isolation, but rather need to be seen in a specific context. Hendrikse’s (2001) analysis of Southern Bantu noun classes develops this view and proposes that noun class prefixes in Southern Bantu provide a complex web of related meanings. Adopting a Cognitive Linguistics perspective, Hendrikse proposes that the noun class systems of (Southern) Bantu languages are organised around an abstract category ‘class prefix’, and specific prefixes are instantiations of this abstract category, related to the total set of prefixes through semantic notions of concreteness, attribution, spatial orientation, and abstraction, as well as, specifically for ‘number’ relations, boundedness and divisiveness (cf. Talmy 1988). These basic semantic features are then extended by metaphorical and metonymic relations, for example in the use of secondary classification.

A similar approach is developed by Déchaine et al. (2014) for Shona, although this is couched in generative terms, adopting an ‘Interface Syntax’ model, and so the analysis assumes a more elaborate formal structure. Like Hendrikse (2001), Déchaine et al. (2014) note the polysemy of several noun class prefixes in Shona, and specifically include the evaluative functions of secondary classification. They propose that the different functions and meanings a prefix can express are related, and so are instances of polysemy rather than homonymy, but that the meaning of prefixes is lexically underspecified, and is developed through association with different syntactic positions. The formalisation assumes articulated syntactic projections in the nominal domain, including (‘inner’ and ‘outer’) aspect, evaluation and a determiner projection, associated with honorific meaning. The specific interpretation of a given noun class prefix (and hence the noun it is part of) thus depends on the one hand on the lexical

value of the prefix, but also, crucially, on the syntactic projection in which it is projected.

A different development of this idea is to assume paradigms of prefixes, which has been adopted for several analyses of related Niger-Congo, and in particular Atlantic languages (e.g. Kihm 2005, Pozdniakov 2009, Cobbinah 2013, Cobbinah and Lüpke 2014, Creissels 2015, Watson 2015). The paradigm approach does not view noun classes, or noun class prefixes, as self-standing formatives with their own meaning, but relates sets of classes to each other through the establishment of paradigms. The meaning of a class is then only determined through the participation of the class in a specific paradigm, but since a given class may be part of several paradigms, there is no unique meaning for a class as such. Based on examples such as (23) to (28), which are similar to examples (11-14), above, noun class paradigms for Swahili would include, for example, unary and binary paradigms such as *u* or *m-wa*, but also more complex paradigms such as *m-wa-ki-u*, *ji-ma-m-mi*, *n_i-n_{zi}-ma*, or *u-n_{zi}-ma*:⁷

(23) Paradigm Unindividuated Referents: *u*

- a. uhuru ‘freedom’
- b. usingizi ‘sleepiness’
- c. wali ‘cooked rice’

(24) Paradigm Singular, Plural: *m-wa*

- a. mwalimu ‘teacher’ (class 1)
- b. walimu ‘teacher/s’ (class 2)

(25) Paradigm Singular, Plural, Collective: *n_i-n_{zi}-ma*

- a. simba ‘lion’ (class 9)
- b. simba ‘lions’ (class 10)
- c. masimba ‘pride of lions’ (class 6)

(26) Paradigm Singulative, Plural, Collective: *u-n_{zi}-ma*

- a. unyasi ‘blade of grass’ (class 11)
- b. nyasi ‘blades of grass’ (class 10)
- c. manyasi ‘grass’ (collective) (class 6) (Contini-Morava 2000: 8)

(27) Paradigm Fruit, Plant: *ji-ma-m-mi*

- a. embe ‘mango’ (class 5)
- b. maembe ‘mangos’ (class 6)
- c. mwembe ‘mango tree’ (class 3)
- d. miembe ‘mango trees’ (class 4)

(28) Paradigm People, Customs, Place: *m-wa-ki-u*

- a. Mwingereza ‘British person’ (class 1)
- b. Waingereza ‘British people’ (class 2)
- c. Kiingereza ‘English language/customs’ (class 7)
- d. Uingereza ‘Britain’ (class 11)

⁷ The subscripts in *n_i* and *n_{zi}* are added to distinguish class 9 (‘i’) and class 10 (‘zi’) by using their subject agreement prefixes.

The paradigm approach shows explicitly the complex semantic relations between different class prefixes. The labelling of the paradigms is tentative – a more thorough and comprehensive analysis would be needed for a more definitive analysis. However, it is clear that relations between noun classes are based on a range of semantic qualities, including those pertaining to number. However, even with respect to number, four notions can be distinguished – singular, plural, collective and singulative, the latter is used in (26) to express the individuating function of (26a) with respect to (26b) (cf. Contini-Morava 2001: 17, Cobbinah and Lüpke 2014, Creissels 2015: 25). Under this approach, number is part of wider semantic relations, and more complex than the division between singular and plural. Furthermore, the number value of a given noun is not an inherent function of the noun, or the noun class prefix, but rather depends on the place of its prefix in a specific paradigm (Cobbinah and Lüpke 2014: 214).

6. Conclusion

Noun classes are a fundamental part of the grammar of Bantu languages, and as such have been subject to considerable research. This research has adopted a variety of theoretical perspectives and produced a wealth of empirical data. However, fundamental questions remain about semantic, morphological, syntactic and discourse aspects of noun classes. In terms of the overall structure of the system, the relevance of number and gender for the analysis of noun classes, as well as of the status of noun class systems with respect to inflection and derivation remain outstanding questions.

Several analyses assume that noun classes can be underlyingly analysed as a combination of gender and number. Gender in these analyses is an idiosyncratic quality of noun stems, while number is an inflectional category assigning singular or plural values to these stems. In this way, Bantu noun classes can be described with comparatively standard assumptions about number and gender.

However, alternative analyses have pointed out that while the distinction between singular and plural does play a role in Bantu noun class systems, there are numerous other semantic relations between noun classes, and number can also be seen as part of this wider system of derivational relationships. From this perspective, semantic distinctions relating to number can be characterised more fine-grainedly by assuming, for example under the analysis of Contini-Morava (2001), a notion of individuation. The derivational approach also provides a way of addressing the underspecification of noun class prefixes, by viewing noun class prefixes as polysemous and so as only fully interpretable within the context of the whole class system. This idea can be expressed explicitly by postulating class paradigms within which individual classes become meaningful.

Stepping back from the inflection-derivation dichotomy, and from the meaning of individual noun classes and noun class prefixes, many researchers have posed the question of the cognitive or functional motivation of noun class systems. A common idea, developed across different frameworks, is that noun classes function to license or facilitate reference to entities – a linguistic means to create, identify, and individuate ‘things’ or different kinds of ‘things’. Because of this, number is an essential part of noun classes, and so intricately ingrained in it, as we have seen. While differing in detail, it can be said that all analyses of number and noun class in Bantu aim to address and explain this fundamental relation between classification on the one hand, and individuation on the other.

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