

# A Construction Grammar Account of Zulu Singular/Plural Inflection<sup>1</sup>

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## ABSTRACT

Construction Grammar is a linguistic framework which postulates that all grammar is based on a single entity, the construction, defined as ‘an arbitrary and conventional pairing of form... and meaning’ (Hoffmann and Trousdale 2013:1). This article presents a Construction Grammar account of Zulu nouns and their singular/plural inflection. It describes the canonical singular/plural paradigms for Zulu nouns, and also those that are aberrant in terms of their morphology or their expected pairing. Finally, it presents the forms that arise owing to phonological alternations, thus suggesting how phonology might be handled in the framework of Construction Grammar.

*Keywords:* Bantu, Construction Grammar, noun class, Zulu, singular/plural, phonology.

## 1. INTRODUCTION

In the linguistic framework of Construction Grammar (CG)<sup>2</sup> (Fillmore et al. 1988, Goldberg 1995, 2006, 2013, Michaelis 2012, Hoffmann & Trousdale 2013), it is postulated that all grammar is based on a single entity, the construction, which consists of a conventional mapping between a phonological

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<sup>1</sup> I would like to express my gratitude to the anonymous reviewers of an earlier version of this article (submitted elsewhere but withdrawn), whose constructive comments have helped to improve it immensely. I would also like to thank my colleague Lwazi Mjiyako, who supplied the data regarding class 14 count nouns, and Sandra Linton, who read and edited the manuscript. All errors remain, of course, my own.

<sup>2</sup> The following abbreviations and symbols are used in this article:

A – adjectival prefix; agr – agreement; aug – augment, augmented; blb – bilabial; /C/ – consonant; cl – class; CG – Construction Grammar; [F] – a set of features; hum – human; LDC – locative demonstrative copulative; N – noun prefix; /N/ – nasal consonant; rel – relative prefix; SEM – variable over lexical meanings; sub – subclass; V – verb; /V/ – vowel; X<sub>n</sub> – a morpheme/word X of class n; /X/ – any sequence of phonemes; /Y/ – any sequence of phonemes, such that /X/ ≠ /Y/; X ↔ Y – ‘X (a form) maps onto Y (a meaning)’; X ≈ Y – ‘X and Y are in a paradigmatic relationship’; X ~ Y – ‘X and Y are “alloconstructions”’; /X/ ↔ [Y] – ‘X (a phonological form) maps onto Y (a phonetic form)’; X → Y – ‘X becomes Y’; \*X – ‘X is a presumed historical form’ or ‘X is a form that does not occur’; X\* – X is a canonical member of a particular noun class; [´] – high tone on a vowel; [ˆ] – falling tone on a vowel.

or phonetic form and a meaning (Croft 2001; Booij 2010; Hoffmann and Trousdale 2013; Goldberg 2013). This mapping can be formally represented as in (1). A concrete example is given in (1a), and a more abstract one in (1b). The formalism used here is based on that in Van der Spuy (2017). There is no single agreed-on formalism in Construction Grammar – see Hoffmann and Trousdale (2013:1–2).

(1a) [i<sup>nts</sup>'izwǎ]<sub>[N aug:+ cl:9]</sub> ↔ ‘young man’

(1b) /i-N-X/<sub>[N aug:+ cl:9]</sub> ↔ ‘SEM’

Example (1a) shows the representation of an actual word. Following Booij (2010), the word is given in phonetic form, with tonal marking.<sup>3</sup> The grammatical features in the subscript matrix, [N aug:+ cl:9], specify that the phonetic form is a noun of class 9, and that the augment is present. (The class numbers are those assigned by Meinhof (1899) to the reconstructed proto-forms of the contemporary classes. The significance of the term ‘augment’ will be explained in section 2 below). These are features of the word as a whole, considered as a construction. The question of which morpheme contributes which feature does not arise: as Booij (2010:15) says, ‘bound morphemes form part of morphological schemas, and their meaning contribution is only accessible through the meaning of the morphological construction [i.e., word] of which they form a part.’

The abstraction in (1b) represents any canonical noun of class 9. I assume that abstractions like these are phonological rather than phonetic, and that they map onto the phonetic forms by means of low-level correspondence schemas or conventions. The nature of such correspondence schemas is briefly discussed in Section 6. Detailed discussion of the low-level correspondence schemas is beyond the scope of this article. ‘/i-N-X/’ represents the vowel /i/, followed by a nasal consonant (unspecified for place of articulation), followed by a sequence of phonemes /X/ that accords with the phonotactics of the language. As this is a very general schema, no tones are indicated. At this level of abstraction, morphemes are separated by hyphens. The grammatical features in the subscript matrix show that this is an abstraction of an augmented noun of class 9. ‘SEM’ is a variable over lexical meanings: here it represents the lexical meaning of the form.

The form–meaning pairings include words, syntactic structures, idioms and discourse functions, all of which are mentally stored in a ‘constructicon’ (Goldberg 2003, 220).<sup>4</sup> CG is unlike Principles and Parameters Theory (Chomsky 1995), Lexical–Functional Grammar (Bresnan 2001) and many other

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<sup>3</sup> Tonal marking is based on Doke et al. (1990), though the notation used here is different.

<sup>4</sup> Goldberg (2003:220; 2006:5) also includes the ‘morpheme’ in the list of constructions. Booij (2010) points out, though, that a morpheme cannot be a construction, because it only becomes meaningful if it is embedded in a larger, word-level schema.

theories, in that the grammar is not assumed to be componential or modular; rather the construction is ‘a lexicon–syntax continuum’ (Hoffmann & Trousdale 2013: 1). Furthermore, CG postulates that a language and its grammar are acquired inductively, not deductively (Croft 2001).

The aim of this article is to provide a CG account of a fairly complex and substantial section of a language’s morphology, specifically the singular/plural inflectional morphology of Zulu nouns. The second section of the article discusses the augmented and augmentless forms of the noun. Section 3 gives a brief description of Zulu noun classes and provides generalized schemas for them. The fourth section describes the morphologically deviant subclasses. The fifth section presents a CG analysis of the singular/plural inflections of Zulu nouns. The sixth section shows how CG could handle phonological alternations. The seventh section concludes with an assessment of the analysis presented. The principles of CG, and the formalism used here, will be explained in the course of the discussion.

## 2. THE AUGMENT OF THE NOUN

In traditional analyses (e.g. Doke 1927, 1973; Taljaard and Bosch 1988; Poulos and Msimang 1998), every Zulu noun in its citation form begins with a vowel. This vowel is generally regarded as part of the noun prefix (e.g. Doke 1927, 1973, Mzolo 1968, Kosch 2004), but because it is omitted in certain constructions, Van der Spuy (2006) treats it as a separate prefix in its own right. This vowel has been given various names in the literature: ‘initial vowel’, ‘pre-prefix’ and ‘augment’. The term ‘augment’ will be used here.

The function of the augment has been the subject of some discussion. Mzolo (1968) and Buell (2011) give accounts of various constructions in which it can be omitted. Halpert (2012) argues that ‘the augment vowel functions as a freely-applying case licenser, which can “rescue” a nominal that appears in a position where it is not assigned structural case’ (2012:22). Mathonsi (2010:170) argues that the function of the augment is to license the ‘grammatical noun’ – the noun ‘in a sentence’. He contrasts this with the augmentless form, the ‘morphological noun’, which, he contends, should be the citation form. The exact function of the augment is not at issue here: rather, the issue is whether the augment is part of the noun, or a word in its own right. Van der Spuy (2006) shows that the Zulu augment fails a range of wordhood tests, for example, it cannot take scope over conjoined nouns. Morphologically, then, the augment is an affix, and thus part of the noun.

The following paradigmatic schemas show examples of the alternation between nouns with the augment (marked [aug:+]) and those without ([aug:-]). The lexical meanings (‘boy’, ‘young woman’) are omitted from the right-hand side of the paradigms, as they do not change.

- (2a) [úmfána]<sub>[N aug:+ cl:1 sg]</sub> ↔ ‘boy’ ≈ [mfána]<sub>[N aug:- cl:1 sg]</sub>  
 (2b) [áfafána]<sub>[N aug:+ cl:2 pl]</sub> ↔ ‘boy’ ≈ [fafána]<sub>[N aug:- cl:2 pl]</sub>  
 (2c) [í<sup>n</sup>tʔô<sup>m</sup>bí]<sub>[N aug:+ cl:9 sg]</sub> ↔ ‘young woman’ ≈ [tʔô<sup>m</sup>bí]<sub>[N aug:- cl:9 sg]</sub>

A paradigmatic schema is one which relates one construction to another with which it has elements of meaning or function in common. Following Booij (2010), the sign ≈ is used to symbolize the paradigmatic relationship. Note that the paradigm does not symbolize a process of derivation. Rather, it relates two constructions whose formal differences signal their difference in meaning or function. Thus, (2a) can be read as follows: ‘Given an augmented class 1 singular noun of the form [úmfána], its augmentless equivalent is [mfána].’

A question that arises is whether it is better to use the augmented form of the noun or the augmentless one as the ‘leading form’ (Matthews 1972), that is, the form from which a different or more complex form can be deduced. As mentioned above, several authors include the augment in the citation form. Van der Spuy (2006) argues that, because the augment is a morpheme in its own right, the citation form should be the one without it. In a CG account where the augmentless form is taken as the leading form, the following six paradigmatic schemas would be required in order to link to the correct augmented form of a noun.

- (3a) /bo-X/<sub>[N cl:2 aug:-]</sub> ≈ /o:-X/<sub>[N cl:2 aug:+]</sub>  
 (3b) /X/<sub>[N cl:5 aug:-]</sub> ≈ /i:-X/<sub>[N cl:5 aug:+]</sub>  
 (3c) /X/<sub>[N cl:11 aug:-]</sub> ≈ /u:-X/<sub>[N cl:11 aug:+]</sub>  
 (3d) /X/<sub>[N cl:2/6 aug:-]</sub> ≈ /a-X/<sub>[N cl:2/6 aug:+]</sub>  
 (3e) /X/<sub>[N cl:1/3/14/15 aug:-]</sub> ≈ /u-X/<sub>[N cl:1/3/14/15 aug:+]</sub>  
 (3f) /X/<sub>[N aug:-]</sub> ≈ /i-X/<sub>[N aug:+]</sub>

The first three schemas are very specific. Schema (3a) shows the augmented form of class 2 nouns whose augmentless form begins with /bo-/ (the so-called class 2b nouns). Schemas (3b) and (3c) show the unique forms of augmented nouns of classes 5 and 11 respectively. Schema (3d) gives the augmented form of class 2 nouns which are not covered by schema (3a), and of class 6 nouns. Schema (3e) gives the augmented form of nouns of classes 1, 3, 14 and 15. Finally, schema (3f) shows the augmented form of all other nouns (those of classes 4, 7, 9 and 10). It is assumed that a version of the Elsewhere Principle operates (Kiparsky 1973). In terms of this principle, schema (3f) will only apply if none of the more specific schemas (3a)–(3e) is applicable.

However, if the augmented form is taken as the leading form, only two schemas are required to derive the augmentless forms:

(4a) /o:-X/[N cl:2 aug:+] ≈ /bo-X/[N cl:2 aug:-]

(4b) /V(:)-X/[N aug:+] ≈ /X/[N aug:-].

The schema in (4a) reads: ‘Nouns of class 2 with the augmented form /o:-X/ have an augmentless equivalent /bo-X/’. For example, the augmentless equivalent of *o:mama*<sub>2</sub><sup>5</sup> ‘mothers’ is *bomama*<sub>2</sub>. Schema (4b) reads: ‘Any augmented noun of the form /V-X/ or /V:-X/ is paradigmatically related to an augmentless form without the initial /V(:)/’. It is clearly more economical to take the augmented form as the lead form.

### 3. ZULU NOUN CLASSES

#### 3.1 DEFINITION OF ‘NOUN CLASSES’

As in all Bantu languages (Katamba 2003), Zulu nouns are divided into classes. The definition of ‘noun class’ assumed here is ‘a group of nouns which command a particular set of agreement constructions’ (cf. Canonici 1990; Doke 1960 notes that Giacinto Brusciotto, in a work published in 1659, was the first grammarian of Bantu to group the nouns according to the agreement they commanded). In other words, each class commands its own distinctive agreement morphology, as illustrated in (5).<sup>6</sup> The class designation is thus a shorthand for the noun’s agreement pattern. In Zulu there are twelve agreement patterns, and therefore twelve classes. Most Bantu languages have more classes (e.g. Chicheŵa with seventeen – Mchombo 2004; see also Katamba 2003). Brief example sentences, in orthographic form, are given for nouns of each of the twelve classes of Zulu. Each noun is preceded by a ‘locative demonstrative copulative’<sup>7</sup> (LDC), a form corresponding to Italian *ecco* or French *voici*: ‘here is’, ‘here are’.

(5) Class 1: *Nan-gu u-m-bhali* ‘here is the clerk’  
LDC-agr<sub>1</sub> aug-N-clerk<sub>1</sub>

Class 2: *Nam-pa a-ba-bhali* ‘here are the clerks’  
LDC-agr<sub>2</sub> aug-N-clerk<sub>2</sub>

Class 3: *Nan-ku u-m-bhede* ‘here is the bed’  
LDC-agr<sub>3</sub> aug-N-bed<sub>3</sub>

<sup>5</sup> Length markings have been added to orthographic forms where they are phonologically significant. Zulu orthography does not indicate tones.

<sup>6</sup> Taraldsen (2010) gives an ingenious account of the relationship between the noun prefixes and the agreement affixes, in which he derives the latter from various subdivisions of the former.

- Class 4: *Nan-si i-mi-bhede* ‘here are the beds’  
LDC-agr<sub>4</sub> aug-N-bed<sub>4</sub>
- Class 5: *Nan-ti i:-lokwe* ‘here is the dress’  
LDC-agr<sub>5</sub> aug-N-dress<sub>5</sub>
- Class 6: *Nan-ka a-ma-lokwe* ‘here are the dresses’  
LDC-agr<sub>6</sub> aug-N-dress<sub>6</sub>
- Class 7: *Na-si i-si-tsha* ‘here is the dish’  
LDC-agr<sub>7</sub> aug-N<sub>7</sub>-dish
- Class 9: *Nan-si i-n-ja* ‘here is the dog’  
LDC-agr<sub>9</sub> aug-N-dog<sub>9</sub>
- Class 10: *Na-zi i-zin-ja* ‘here are the dogs’  
LDC-agr<sub>10</sub> aug-N-dog<sub>10</sub>
- Class 11: *Nan-tu u:-cansi* ‘here is the mat’  
LDC-agr<sub>11</sub> aug-N-mat<sub>11</sub>
- Class 14: *Nam-pu u-bu-hlalu* ‘here are the beads’  
LDC-agr<sub>14</sub> aug-N-bead<sub>14</sub> rel-A<sub>14</sub>-new
- Class 15: *Na-khu u-ku-dla* ‘here is the food’  
LDC-agr<sub>15</sub> aug-N-food<sub>15</sub>

The form of the locative demonstrative copulative is identical for classes 4 and 9 (*nansi*), but other agreeing forms differ for these two classes, for example, the forms of the adjective *-sha* ‘new, young’ are *emisha* and *entsha* respectively. There are no sets of agreement morphemes which differ for all twelve classes.

Zulu lacks classes 8, 12 and 13, which are found in other languages. The nouns in (5) are canonical examples of each of the twelve classes of Zulu. Compare the formal representation in (8).

The classes largely consist of semantically arbitrary groups of nouns. The only class where all nouns have a single semantic feature in common is class 1. All nouns in class 1 refer to human beings (they have the feature [hum:+]), but not all [hum:+] nouns are class 1, as can be seen from examples like *i:Ngisi* ‘English person’ (class 5) and *insizwa* ‘young man’ (class 9).

### 3.2 GENERALIZED SCHEMAS FOR THE CANONICAL CLASSES

This section will give generalized schemas for the canonical Zulu nouns of the various classes. For example, a noun of class 1 can be abstractly represented as follows:

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<sup>7</sup> The term was coined by Doke (1927:212).

(6) /u-mu-X/[<sub>N aug:+ cl:1</sub>] ↔ ‘SEM’

A concrete example is

(7) [úmfána]<sub>[N aug:+ cl:1]</sub> ↔ ‘boy’.

The schema in (6) represents a construction, while that in (7) represents a construct. Constructs are specific (that is, actual words or phrases) while constructions are more general patterns stored as templates or schemas (Goldberg 2003, 2013). In this article, constructs are given in phonetic transcription, while the more abstract constructions are represented in phonological form.

Each of the twelve canonical noun classes has a distinctive form, except for classes 1 and 3, which have the identical form /u-mu-X/. These can easily be distinguished by their semantics, though, as class 1 contains only [hum:+] nouns like *umuntu* ‘person’, while class 3 contains only [hum:-] nouns like *umusi* ‘smoke’. The following schemas show the generalized forms of the nouns of each class. Each schema is accompanied by a noun instantiating the general schema. The abstract representation of lexical meaning, ‘SEM’, would be identical in each case, and is therefore omitted. In classes 5 and 11, the noun class prefix has become fused with the augment.

(8a) /u-mu-X/[<sub>N aug:+ cl:1</sub>]. Example: [úmfána]<sub>[N aug:+ cl:1]</sub> ↔ ‘boy’.

(8b) /a-6a-X/[<sub>N aug:+ cl:2</sub>]. Example: [ábfána]<sub>[N aug:+ cl:2]</sub> ↔ ‘boys’.

(8c) /u-mu-X/[<sub>N aug:+ cl:3</sub>]. Example: [úmûzí]<sub>[N aug:+ cl:3]</sub> ↔ ‘village’.

(8d) /i-mi-X/[<sub>N aug:+ cl:4</sub>]. Example: [ímîzí]<sub>[N aug:+ cl:4]</sub> ↔ ‘villages’.

(8e) /i:-X/[<sub>N aug:+ cl:5</sub>]. Example: [î:lâle]<sub>[N aug:+ cl:5]</sub> ↔ ‘piece of coal’.

(8f) /a-ma-X/[<sub>N aug:+ cl:6</sub>]. Example: [ámâlâle]<sub>[N aug:+ cl:6]</sub> ↔ ‘coals’.

(8g) /i-si-X/[<sub>N aug:+ cl:7</sub>]. Example: [isít<sup>h</sup>ulú]<sub>[N aug:+ cl:7]</sub> ↔ ‘deaf person’.

(8h) /i-N-X/[<sub>N aug:+ cl:9</sub>]. Example: [í<sup>n</sup>gane]<sub>[N aug:+ cl:9]</sub> ↔ ‘baby’.

(8i) /i-ziN-X/[<sub>N aug:+ cl:10</sub>]. Example: [izi<sup>n</sup>gane]<sub>[N aug:+ cl:10]</sub> ↔ ‘babies’.

(8j) /u:-X/[<sub>N aug:+ cl:11</sub>]. Example: [û:fûdu]<sub>[N aug:+ cl:11]</sub> ↔ ‘tortoise’.

(8k) /u-6u-X/[<sub>N aug:+ cl:14</sub>]. Example: [ubúfalú]<sub>[N aug:+ cl:14]</sub> ↔ ‘bead’.

(8l) /u-gû-X/[<sub>N aug:+ cl:14</sub>]. Example: [úgûǰá]<sub>[N aug:+ cl:15]</sub> ↔ ‘food’.

## 4. THE MORPHOLOGICALLY DEVIANT SUBCLASSES

### 4.1 THE FORM OF THE SUBCLASSES

In addition to the canonical classes, Zulu, like many other Bantu languages, has subclasses. A subclass is defined as follows:

- (9) A subclass is a group of nouns which take the agreement morphology of a particular class, but which do not have the canonical form of a noun of that class, as listed in (8) (cf. Canonici 1990).

By this definition, there are two kinds of nouns that fall into subclasses: those whose prefixes differ morphologically from the canonical nouns of their class, and those whose prefixes differ from the canonical nouns according to systematic phonological alternations. The former will be discussed in this section. The latter will be discussed in section 6.

Traditionally the morphologically deviant subclasses have been given designations like ‘class 1a’, ‘class 2b’, etc. But special designations for the subclasses are redundant: nouns of a given class whose form differs from the canonical form will, by the definition in (9), belong to subclasses. It is therefore unnecessary to postulate a feature [subclass:±], as Van der Spuy (2010) does.

The following is a list of the morphologically deviant subclasses that have, for the most part, been identified by previous authors, e.g. Doke (1927, 1973), Canonici (1990) and Van der Spuy (2010), with examples of each. Compare them to the canonical classes in (8). The /a-6e-X/ and /a-me-X/ subclasses have previously been simply noted as deviant forms of class 2 and class 6 respectively, without being recognized as ‘subclasses’. Cf. Doke (1973, 39): ‘A few nouns of this class [class 2] form their plurals with the prefix *abe-*.’

- (10a) /u-X/[N aug:+ cl:1]. Example: [úbâbá]<sub>[N aug:+ cl:1]</sub> ↔ ‘father’.
- (10b) /a-6e-X/[N aug:+ cl:2]. Example: [ábēsût<sup>h</sup>u]<sub>[N aug:+ cl:2]</sub> ↔ ‘Sotho people’.
- (10c) /o:-X/[N aug:+ cl:2]. Example: [o:bụti]<sub>[N aug:+ cl:2]</sub> ↔ ‘elder brothers’.
- (10d) /u-X/[N aug:+ cl:3]. Example: [úbédẓʌnɛ]<sub>[N aug:+ cl:3]</sub> ↔ ‘rhinoceros’.
- (10e) /a-me-X/[N aug:+ cl:6]. Example: [ámệlɔ]<sub>[N aug:+ cl:6]</sub> ↔ ‘eyes’.
- (10f) /i-X/[N aug:+ cl:9]. Example: [ik<sup>h</sup>waja]<sub>[N aug:+ cl:9]</sub> ‘choir’.
- (10g) /i-zi-X/[N aug:+ cl:10]. Example: [iẓị́ṭbulú]<sub>[N aug:+ cl:10]</sub> ↔ ‘deaf people’.
- (10h) /u-X/[N aug:+ cl:14]. Example: [úṭj̣ʷalá]<sub>[N aug:+ cl:14]</sub> ↔ ‘beer’.

Each of these has a unique form, except the subclasses of classes 1, 3 and 14, which all have the form /u-X/. Like their respective canonical classes, the



subclasses of classes 1 and 3 can be distinguished by the feature [hum:±]. As discussed below, the subclass of class 14 contains only four nouns.

## 4.2 THE CONTENTS OF THE SUBCLASSES

The /u-X/ subclass of class 1 contains an indefinite number of words, including many words for relatives like *ubaba* ‘father’, *umama* ‘mother’, *ubhuti* ‘brother’, *usisi* ‘sister’, *ugogo* ‘grandmother’; and also all proper names of persons, e.g. *uShaka* ‘Shaka’.

Van der Spuy (2010, 300–301) analyses nouns that fall into the /a-6e-X/ and /a-me-X/ subclasses as having stems which contain a ‘latent /i/’. This is by analogy with a small group of verbs (*ukuza* ‘to come’, *ukuma* ‘to stand’, *ukuzwa* ‘to hear’) which are traditionally so analysed. The latent /i/ only surfaces after prefixation which ends in /a/. Thus a noun like *abeSuthu* ‘Sotho people’ will be derived as in (11).

- (11) /a<sup>h</sup>ba-sut<sup>h</sup>u/[N aug:+ cl:2]  
→ /a<sup>h</sup>ba-isut<sup>h</sup>u/[N aug:+ cl:2] (by /i/insertion after /a/; a morphological rule that applies to only a small number of stems)  
→ /abeisut<sup>h</sup>u/[N aug:+ cl:2] (by the rule of vowel raising: Khumalo 1987)  
→ /abesut<sup>h</sup>u/[N aug:+ cl:2] (by the rule of high vowel deletion: Khumalo 1987)

This analysis has the effect of reclassifying nouns of the form /a-6e-X/ and /a-me-X/ as canonical nouns which have simply undergone a morphophonological change. There is no independent evidence to support this analysis, as the assumed ‘latent /i/’ surfaces in these forms and no others. Furthermore, as explained in section 6 below, in the CG analysis given here there is no derivation from one phonological form to another, whereas the analysis in (11) assumes the contrary. The more straightforward course taken, therefore, is to treat /a-6e-X/ and /a-me-X/ nouns as belonging to subclasses. The /a-6e-X/ subclass of class 2 contains only four nouns (see Doke 1973, 39, Poulos & Msimang 1998, 31, Doke et al. 1982), all of them ethnonyms: *abeSuthu* ‘Sotho people’, *abeTshwana* ‘Tswana people’, *abelungu* ‘white people’, *abeNguni* ‘Nguni people’. Doke (1973) also includes *abelusi* ‘herders’ and *abeluki* ‘basket-makers’ in this group; but in these words the /e/ is actually part of the stem not the prefix, and so these nouns properly fall into the phonologically alternate schema of the form /a-6-VX/, discussed in section 6 below.

The /o:-X/ subclass of class 2 contains an indefinite number of nouns. It is used to form the plurals of /u-X/ subclasses of both class 1 and class 3 (*o:baba* ‘fathers’; *o:bhejane* ‘rhinoceroses’). All proper names can take the /o:-X/ plural,

which then has the idiomatic meaning ‘(Name) and his/her associates/companions’, for example *o:Jabu* ‘Jabu and his companions’.

The /u-X/ subclass of class 3 contains about 50 nouns (see Poulos and Msimang 1998, who classify them as ‘class 1a’ nouns’, although they do not take class 1 agreement). Many of them are borrowings, e.g. *utamatisi* ‘tomato’, *uklabhishi* ‘cabbage’, *ugesi* ‘electricity’ < English *gas*.

The /a-me-X/ subclass of class 6 contains only two nouns, *amehlo* ‘eyes’ and *ameva* ‘thorns’.

The /i-X/ subclass of class 9 contains many borrowed nouns, like *itena* ‘tenor’ (see Canonici 1990), and one word which is not a borrowing, *intombazane* ‘little girl’. This looks like a canonical class 9 noun of the form /i-N-X/, but the apparent nasal prefix is retained in the plural, *ama-ntombazane*<sub>6</sub>, and has therefore been reanalyzed as part of the stem. The form of this noun is thus /i-X/, and so it falls into the subclass.

The /i-zi-X/ subclass of class 10 contains a large number of nouns, including new formations and borrowings like *izitulo* ‘chairs’ < Afrikaans *stoel*. It is the regular plural form of class 7 nouns. In reference grammars it is frequently referred to as ‘class 8’, but this is incorrect, as the reflex of the Proto-Bantu class 8 prefix would be \**ivi-* in Zulu. (Cf. Guthrie 1971:63.) In Zulu, there is no difference in the agreement that goes with /i-ziN-X/ nouns and that which goes with /i-zi-X/ nouns; they can therefore be regarded as variant forms of the same class.

The /u-X/ subclass of class 14 contains only four nouns: *utshwala* ‘beer’, *utshani* ‘grass’, *uboya* ‘wool, fur’, *ubovu* ‘pus’. None of these is a count noun. It is suggested in reference grammars (e.g. Poulos and Msimang 1998) that these nouns consist of vowel-commencing stems, *-ala*, *-ani*, *-oya*, *-ovu*, and that the forms *utshw-*, *utsh-*, *ub-* before the stems are phonologically alternate forms of the canonical class 14 *ubu-* prefix sequence. However, it appears that, synchronically, the consonants *tsh(w)-* and *b-* are regarded as part of the stem and not as prefixes. This is because there exist derivatives in other noun classes which include these sequences. Usually in Zulu, when a derived noun is formed from a stem of a particular class by adding the prefix sequence of another class, the prefix of the original class is not retained. Examples of such derived nouns are *amatshwala*<sub>[cl:6]</sub> ‘beer-party’, *u:boya*<sub>[cl:11]</sub> ‘body hair’.

## 5. SINGULAR/PLURAL INFLECTION

The most salient kind of noun inflection in Zulu is the singular/plural alternation. Singular nouns occur in classes 1, 3, 5, 7, 9, 11; plural nouns occur in classes 2, 4, 6, 10. There are a few count nouns in class 14, which can be either singular or plural, depending on context – this fact has never, to my knowledge, been mentioned in any grammatical account of Zulu before. Non-count nouns can occur in most classes. A well-known feature of the class system

is that the plural form of a count noun can usually be predicted from the singular form. In some other Bantu languages, like Swahili, the correlation between singular and plural forms is extremely regular (see Loogman 1965, Carstens 1993); but in Zulu there are a number of irregular correspondences, which render a formal description of the singular/plural system somewhat complex.<sup>8</sup> The examples below show the most regular singular/plural correspondences between classes:

(12) Canonical nouns

(12a) /u-mu-X/[N aug:+ cl:1 sg] ≈ /a-ḡa-X/[N aug:+ cl:2 pl]

Example: *umuntu* ‘person’ ≈ *abantu* ‘people’.

(12b) /u-mu-X/[N aug:+ cl:3 sg] ≈ /i-mi-X/[N aug:+ cl:4 pl]

Example: *umuzi* ‘village’ ≈ *imizi* ‘villages’.

(12c) /i:-X/[N aug:+ cl:5 sg] ≈ /a-ma-X/[N aug:+ cl:6 pl]

Example: *i:lahle* ‘piece of coal’ ≈ *amalahle* ‘coals’.

(12d) /i-si-X/[N aug:+ cl:7 sg] ≈ /i-zi-X/[N aug:+ cl:10 pl]

(Note that the plural is a subclass form.)

Example: *isitsha* ‘dish’ ≈ *izitsha* ‘dishes’.

(12e) /i-N-X/[N aug:+ cl:9 sg] ≈ /i-ziN-X/[N aug:+ cl:10 pl]

Example: *indlu* ‘house’ ≈ *izindlu* ‘houses’.

(12f) /u:-X/[N aug:+ cl:11 sg] ≈ /i-ziN-X/[N aug:+ cl:10 pl]

Example: *u:dibi* ‘baggage carrier’ ≈ *izindibi* ‘baggage carriers’.

(12g) /u-ḡu-X/[N aug:+ cl:14 sg] ≈ /u-ḡu-X/[N aug:+ cl:14 pl]

Example: *ubucwibi* ‘young creature’ ≈ *ubucwibi* ‘young creatures’.

Nouns of class 14 are mostly abstract (e.g. *ubuhle* ‘beauty’) or mass nouns (in the subclass: see the section on ‘The contents of the subclasses’, above), but there are a few count nouns, like *ubuhlalu* ‘bead’, *ubulongwe* ‘dung-heap’, *ubucwibi* ‘young animal, chick, young child’. These nouns remain in class 14 in the plural. The following data show that they are count nouns:

(13a) *ubuhlalu obubili* ‘two beads’

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<sup>8</sup> Another interesting feature of the class system is that it can be used derivationally, that is, changing the morphology of a noun associates it with a different class, and a change in meaning. There are several examples of such derivational paradigms, but their analysis is beyond the scope of this article.

(13b) *ubulongwe obubili* ‘two dung-heaps’

(13c) *ubucwili obubili* ‘two chicks’<sup>9</sup>

All class 15 nouns are non-count nouns and have no plurals.

The first complication that arises in the noun-class system is the existence of the subclasses. The following are examples of subclass nouns in their singular/plural correspondences. Forms marked with a following ‘\*’ are regular canonical forms, but have a subclass form as their singular or plural.

(14) ‘Traditional’ subclass nouns

(14a) /u-X/[N aug:+ cl:1/3 sg] ≈ /o:-X/[N aug:+ cl:2 pl]

(the subclasses of class 1 and class 3 both take the same plural form).

Example: *ugogo* ‘grandmother’ ≈ *o:gogo* ‘grandmothers’.

Example: *ubhanana* ‘banana’ ≈ *o:bhanana* ‘bananas’.

(14b) /i-X/[N aug:+ cl:9 sg] ≈ /a-ma-X/[N aug:+ cl:6 pl]\*

Example: *ikhwaya* ‘choir’ ≈ *amakhwaya* ‘choirs’.

As noted above, the canonical class 7 nouns take their plural in the subclass of class 10:

(15) /i-si-X/[N aug:+ cl:7 sg]\* ≈ /i-zi-X/[N aug:+ cl:10 pl]

Example: *isitsha* ‘dish’ ≈ *izitsha* ‘dishes’.

For both canonical and subclass nouns, the plural can generally be predicted from the singular, but not vice versa. The singular of an /a-6a-X/[cl:2 pl] noun will always be an /u-mu-X/[cl:1 sg] noun; but other correspondences are not so predictable.

The second complicating issue is the existence of nouns that fall into non-canonical singular/plural paradigms, either because the plural is in an unexpected class, or because it is suppletive. The following are examples:

(16) Nouns that take irregular plurals. Such irregular paradigmatic schemas include a ‘limitation component’ (Matthews 1972), specifying the words to which they apply.

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<sup>9</sup> My colleague Lwazi Mjiyako kindly drew my attention to a Zulu proverb, ‘*Ubucwibi obuhle buhamba ngabubili*’ which roughly translates as ‘Young creatures go well in twos,’ i.e. ‘Friends look out for one another’.

- (16a) /u-mu-X/[N aug:+ cl:1 sg] ≈ /i-mi-X/[N aug:+ cl:4 pl], where [N cl:1] = {*umphuphe* ‘dreamer’, *umhambuma* ‘pilgrim’, *umnqolo* ‘effeminate man’, *umdondoshiya* ‘giant’, ...}<sup>10</sup>

Example: *umhlobo* ‘friend’ ≈ *imihlobo* ‘friends’.

- (16b) /u-mu-X/[N aug:+ cl:1 sg] ≈ /a-6e-X/[N aug:+ cl:2 pl], where [N cl:1] = {*umSuthu* ‘Sotho person’, *umTshwana* ‘Tshwana person’, *umlungu* ‘white person’, *umNguni* ‘Nguni person’}

Example *umlungu* ‘white person’ ≈ *abelungu* ‘white people’.

- (16c) /i-N-X/[N aug:+ cl:9 sg] ≈ /a-ma-X/[N aug:+ cl:6 pl], where [N cl:9] = {*indoda* ‘man’, *indodana* ‘son’, *indodakazi* ‘daughter’, *inkosi* ‘king’, *inkosikazi* ‘queen’, *inkosazana* ‘princess’, *inkosana* ‘prince’, *insimu* ‘field’}

Example: *indoda* ‘man’ ≈ *amadoda* ‘men’.

There are six nouns which have uniquely irregular plurals. The singular–plural paradigms of these have to be explicitly stated. By the Elsewhere Principle (Kiparsky 1973), these schemas will be chosen over the more general schemas listed above when the plural of one of these words is required.

- (17a) [uᵐz̥uᵐlu] [N aug:+ cl:1 sg] ↔ ‘Zulu person’ ≈ [amaᵐz̥uᵐlu] [N aug:+ cl:6 pl]  
 (17b) [i:va] [N aug:+ cl:5 sg] ↔ ‘thorn’ ≈ [ameva] [N aug:+ cl:6 pl]  
 (17c) [i:so] [N aug:+ cl:5 sg] ↔ ‘eye’ ≈ [ameᵐo] [N aug:+ cl:6 pl]  
 (17d) [u:|a<sup>n</sup>ts<sup>ʔ</sup>i] [N aug:+ cl:11 sg] ↔ ‘mat’ ≈ [ama|a<sup>n</sup>ts<sup>ʔ</sup>i] [N aug:+ cl:6 pl]  
 (17e) [u:limi] [N aug:+ cl:11 sg] ↔ ‘tongue, language’ ≈ [izi<sup>n</sup>ᵐdimi] [N aug:+ cl:10 pl]  
 (17f) [u:ha<sup>m</sup>b̥o] [N aug:+ cl:11 sg] ↔ ‘journey’ ≈ [izi<sup>n</sup>k<sup>ʔ</sup>a<sup>m</sup>b̥o] [N aug:+ cl:10 pl]

The noun *umZulu* ‘Zulu person’, being of the form /u-mu-X/, would normally fall under schema (12a). But the specificity of schema (17a) means that the Elsewhere Principle applies. Similarly, *u:cansi* ‘mat’ would normally have a plural \**izingcansi* (in terms of (12f) – see also (30), (31)), but the more specific schema (17d) applies to it.

*I:va* ‘thorn’ and *i:so* ‘eye’ both take a class 6 subclass plural of the form /a-me-X/, and so could be assigned to a more ‘general’ schema (containing only these two members); but they are listed in (17) and not in (16) because of the extra complication that the plural of *i:so* is suppletive. These are the only two nouns that take the /a-me-X/ plural.

<sup>10</sup> Poulos and Msimang (1998:48) give 21 examples of this kind. Doke (1973:46) gives only five examples, two of which (*umhlobo* ‘friend’, *umlindankosi* ‘royal body-guard’) are not listed by Poulos and Msimang (1998). Doke (1973:46) mentions that ‘there is a tendency nowadays to use the [regular class 2] plural *abahlobo*’ for *umhlobo*.

A comprehensive account of Zulu singular/plural morphology will therefore have to include regular plurals (including both morphologically deviant and phonologically deviant subclasses) and two kinds of exceptional plural: those which are found with several nouns, as in (16), and those which are unique, as in (17).

## 6. PHONOLOGICALLY DETERMINED ALTERNATE FORMS

The role of phonology in CG has not received much attention in the literature: for example, Hoffmann and Trousdale's (2013) overview of Construction Grammar has no chapters on phonology. I postulate that the rules of traditional generative phonology are paralleled by two kinds of schema in Construction Grammar, namely phonetic correspondence schemas and phonological alternation schemas. The phonetic correspondence schemas will provide a mapping from a more general phonological representation onto the phonetic representations. For example, the syllabic consonant [ṁ] occurs only before polysyllables: it is in complementary distribution with the syllable [mu], and at an abstract phonological level can be represented as /mu/. The correspondence schema is given in (18): The symbol  $\Leftrightarrow$  is used to show the mapping between the phonological form and the phonetic one.

$$(18) \quad /mu/ \Leftrightarrow [ṁ] / \_ / \sigma\sigma(X)/$$

This is read: 'The phonological syllable /mu/ corresponds to phonetic [ṁ] when followed by two or more syllables.'

Such correspondences between phonological and phonetic forms are unambiguously phonological, and therefore beyond the scope of this article, which is concerned with the morphology of noun classes.

### 6.1. PHONOLOGICAL ALTERNATION PARADIGMS

Another kind of phonological correspondence is between one kind of phonological sequence and another.

Such correspondences show how constructions that are in complementary distribution are systematically related to one another. Constructions in complementary distribution can be thought of as 'alloconstructions'. The following example illustrates this.

$$(19) \quad /u-mu-X/_{[N \text{ aug:+ cl:1/3}]} \sim /u-m-VY/_{[N \text{ aug:+ cl:1/3}]}$$

As described above, canonical nouns of classes 1 and 3 are of the form /u-mu-X/. In these canonical nouns, the stem (represented by /X/), always begins with a

consonant. However, in these classes there are some nouns where the stem begins with a vowel. In such nouns, the noun prefix is simply /m/, not /mu/. Examples are: *umakhi*<sub>[cl:1]</sub> ‘builder’, *umelusi*<sub>[cl:1]</sub> ‘herder’, *umongi*<sub>[cl:1]</sub> ‘nurse’, *umabo*<sub>[cl:3]</sub> ‘distribution of wedding gifts’, *umehlo*<sub>[cl:3]</sub> ‘unexpected event’. The symbol ‘~’ linking the two constructions in (19) shows that they are alloconstructions. It is not necessary to represent the canonical form as /u-mu-CX/ (with the /C/ explicitly mentioned); the fact that /u-mu-X/ is in an alloconstructional relationship with /u-m-VY/ means that /X/ must have a phonological shape different from /VY/, and therefore cannot start with a vowel. This is another instance of the operation of the Elsewhere Principle in the morphological analysis presented here.

In other classes too, vowel-commencing stems require noun prefixes that do not end in a vowel. These alloconstructions are listed here for the classes in which they apply. Examples of nouns with vowel-commencing stems are given below the formal representation of each pair of alloconstructions.

(20a) /a-ḃa-X/<sub>[N aug:+ cl:2]</sub> ~ /a-ḃ-VY/<sub>[N aug:+ cl:2]</sub>

Examples: *abakhi*<sub>[cl:2]</sub> ‘builders’, *abelusi*<sub>[cl:2]</sub> ‘herders’,  
*abongi*<sub>[cl:2]</sub> ‘nurses’.

(20b) /i-mi-X/<sub>[N aug:+ cl:4]</sub> ~ /i-m-VY/<sub>[N aug:+ cl:4]</sub>

Examples: *imabo*<sub>[cl:4]</sub> ‘distributions of wedding gifts’,  
*imehlo*<sub>[cl:4]</sub> ‘unexpected events’

(20c) /i-si-X/<sub>[N aug:+ cl:7]</sub> ~ /i-s-VY/<sub>[N aug:+ cl:7]</sub>

Examples: *isalukazi*<sub>[cl:7]</sub> ‘old woman’, *isenzo*<sub>[cl:7]</sub> ‘action’,  
*isoni*<sub>[cl:7]</sub> ‘sinner’

(20d) /i-zi-X/<sub>[N aug:+ cl:10]</sub> ~ /i-z-VY/<sub>[N aug:+ cl:10]</sub>

Examples: *izalukazi*<sub>[cl:10]</sub> ‘old women’, *izenzo*<sub>[cl:10]</sub> ‘actions’,  
*izoni*<sub>[cl:7]</sub> ‘sinners’

(20e) /u-ḡu-X/<sub>[N aug:+ cl:15]</sub> ~ /u-ḡ-VY/<sub>[N aug:+ cl:15]</sub>

Examples: *ukona*<sub>[cl:15]</sub> ‘to sin, sinning’, *ukonga*<sub>[cl:15]</sub> ‘to nurse, nursing’

All the alloconstructions in (19) and (20) can be summarized in a single, very general schema:

(21) /ZCV<sub>1</sub>-X/<sub>[F]</sub> ~ /ZC-V<sub>2</sub>Y/<sub>[F]</sub>

This is read: ‘A CV sequence occurring before a consonant-commencing stem alternates with C before a vowel-commencing stem.’ Because the /CV/ ~ /C/ alternation occurs in a range of morphological environments, and not just in noun classes, this schema is formulated very generally. /Z/ stands for any

sequence of phonemes, and may be nul. The V's on the left and right-hand side of the schema are marked with subscripts to show that the vowels may be different. [F] represents a set of morphological features.

There are some phonologically regular exceptions to the schema in (21). These occur in classes 11 and 15.

$$(22) \quad /u-lu-X/_{[N \text{ aug:}+ \text{ cl:}11]} \sim /u-lw-V_{[bk:-]}X/_{[N \text{ aug:}+ \text{ cl:}11]}$$

The canonical class 11 prefix /lu-/ alternates with a form /lw-/ before front vowels. Example: *ulwazi*<sub>[cl:11]</sub> 'knowledge'. This is, I believe, the only word which exemplifies the second alloconstruction in (22). Other examples are given in reference grammars – these include *ulwandle*<sub>[cl:11]</sub> 'sea', *ulwembu*<sub>[cl:11]</sub> 'spider, spider-web', *ulwanga*<sub>[cl:11]</sub> 'palate', *ulwebu*<sub>[cl:11]</sub> 'gossamer', *ulwezi*<sub>[cl:11]</sub> 'cicada grubs'. However, in such cases, it appears that the phonological sequence /lw/ has been reinterpreted as part of the stem.

$$(23) \quad /u-gfu-X/_{[N \text{ aug:}+ \text{ cl:}15]} \sim /u-gfw-V_{[bk:-]}X/_{[N \text{ aug:}+ \text{ cl:}15]}$$

Examples: *ukwakha*<sub>[cl:15]</sub> 'to build, building', *ukwelusa*<sub>[cl:15]</sub> 'to herd'

This alternation between noun class prefixes of the forms /Cu/ and /Cw/ occurs only when the consonant is not bilabial, and when the vowel at the beginning of the stem is not a back vowel. This can be captured in the following generalized schema:

$$(24) \quad /Z-C_{[blb:-]}u-X/_{[F]} \sim /Z-C_{[blb:-]}w-V_{[bk:-]}X/_{[F]}$$

This is read: 'A sequence consisting of a non-bilabial consonant and /u/, occurring before a consonant-commencing stem, alternates with a sequence of the same consonant and /w/ before a stem beginning with a front vowel. Once again, the Elsewhere Principle operates. Schema (24) only applies when the consonant of the prefix is not bilabial, and the stem begins with a front vowel. In all other cases where the stem begins with a vowel, schema (21) applies.

## 6.2. ALTERNATIONS INVOLVING /NC/ SEQUENCES

There are four alternations where the canonical form of the construction contains a sequence /NC/. They can be most clearly seen in class 11 nouns which take the class 10 plural, according to the schema (12f) (repeated here as (25)) The first three alternations are given as abstractions of the class 11/class10 singular-plural paradigm, as they are most clearly observed in this paradigm.

$$(25) \quad /u:-X/_{[N \text{ aug:}+ \text{ cl:}11 \text{ sg}]} \approx /i-ziN-X/_{[N \text{ aug:}+ \text{ cl:}10 \text{ pl}]}$$



*Aspirate–non-aspirate alternation*

The first alternation may be termed the aspirate–non-aspirate alternation. The general schema is as follows:

$$(26) \quad /Y-C_{[vd:- asp:+]}X/_{[N \text{ aug:+ cl:11 sg}]} \approx /ZN-C_{[vd:- asp:-]}X/_{[N \text{ aug:+ cl:10 pl}]}$$

This reads: ‘A class 11 noun stem which begins with a voiceless aspirated consonant when not preceded by a nasal begins with the unaspirated equivalent of that consonant when preceded by a nasal.’

Examples are:

$$(27a) \quad u:phaphe_{[cl:11]} \text{ ‘feather’} \approx izimpaphe_{[cl:10]} \text{ ‘feathers’}$$

$$(27b) \quad u:thanga_{[cl:11]} \text{ ‘pumpkin’} \approx izintanga_{[cl:10]} \text{ ‘pumpkins’}$$

$$(27c) \quad u:khophe_{[cl:11]} \text{ ‘eyelash’} \approx izinkophe_{[cl:10]} \text{ ‘eyelashes’}$$

*Implosive–explosive alternation*

The second alternation may be termed the implosive–explosive alternation. The general schema is as follows:

$$(28) \quad /Y-6X/_{[N \text{ aug:+ cl:11 sg}]} \approx /ZN-bX/_{[N \text{ aug:+ cl:10 pl}]}$$

This is read: ‘A class 11 stem that begins with implosive /6/ when not preceded by a nasal alternates with a form that begins with explosive /b/ after a nasal in class 10.’ This alternation applies only to /6/ alternating with /b/. Zulu has another implosive consonant /g/, but it never occurs in constructions where it alternates with a form that occurs directly after a nasal. The alternation in (28) is not bidirectional. While it is true that all class 11 count nouns that fit the schema on the left-hand side of the paradigm will form their plurals according to the schema on the right-hand side, some words whose plurals conform to the right-hand schema have singulars of the form /Y-bX/<sub>[N aug:+ cl:11 sg]</sub>, with an explosive bilabial at the beginning of the stem, not an implosive one. An example is *ubhaca*<sub>[cl:11]</sub> [ú:b̥a|a] ‘chronically sick person’ ≈ *izimbaca* [iz̥i<sup>m̥</sup>b̥a|a].

Examples of (28) are:

$$(29a) \quad u:bende_{[cl:11]} [\acute{u}:b̥\acute{e}^n d̥\acute{e}] \text{ ‘liver’} \approx izimbende_{[cl:10]} [iz̥i<sup>m̥</sup>b̥\acute{e}^n d̥\acute{e}] \text{ ‘livers’}^{11}$$

<sup>11</sup> The difference between the two <b>s is not made clear in the orthography, but can be seen in the phonetic transcription. Zulu has a phonemic contrast between voiced bilabial implosive /6/ (orthographic <b>) and breathy-voiced pulmonic egressive /b̥/ (orthographic <b̥>), except after a tautosyllabic nasal, where it is written <b>). Zulu phonotactics do not

(29b) *u:bambo*<sub>[cl:11]</sub> [ú:ḃa<sup>m</sup>bḃ] ‘rib’ ≈ *izimbambo*<sub>[cl:10]</sub> [izí<sup>m</sup>ḃa<sup>m</sup>bḃ] ‘ribs’

*Voiceless–voiced click alternation*

The third alternation may be termed the voiceless–voiced click alternation. The generalized schema is:

(30) /Y-C<sub>[vel:+, vd:-, asp:-]</sub>X/ ≈ /ZN-C<sub>[vel:+, vd:+, asp:+]</sub>X/

This is read: ‘A stem that begins with a voiceless, non-aspirated click when not preceded by a nasal alternates with a form that begins with a breathy-voiced click after a nasal.’

Examples include:

(31a) *u:cokucoku*<sub>[cl:11]</sub> ‘tall thin person’ ≈ *izingcokucoku*<sub>[cl:10]</sub>,

(31b) *u:cingo*<sub>[cl:11]</sub> ‘wire’ ≈ *izingcingo*<sub>[cl:10]</sub> ‘wires’

Like the implosive–explosive alternation, the alternation in (31) is not bidirectional. All class 11 count nouns that fit the schema on the left-hand side of the paradigm will form their plurals according to the schema on the right-hand side, however, some words whose plurals conform to the right-hand schema have singulars of the form /Y- C<sub>[vel:+, vd:+, asp:+]</sub>X/[N aug:+ cl:11 sg], with a breathy-voiced click at the beginning of the stem, not a voiceless one. An example is *u:gqoko*<sub>[cl:11]</sub> [ú:ḡ!ḡḡ] ‘meat-tray’ ≈ [izíḡ!ḡḡ]. A person acquiring the language who encountered the form *izingqoko* [izíḡ!ḡḡ] would not be able to tell, without further evidence, whether the singular was *u:gqoko* [ú:ḡ!ḡḡ] or *u:qoko* [ú:!ḡḡ].

*Nasal–zero alternation*

The fourth alternation may be termed the nasal–zero alternation. The general schema is:

(32) /YN-CX/[F] ~ /Y-C<sub>[son:+]</sub>Z/[F]

Here the schema presents an alternation between alloconstructions. It is read: ‘A construction where a prefix ending in a nasal occurs before a consonant-commencing stem is in complementary distribution with a construction containing a similar prefix without the nasal at the end before a stem beginning with a sonorant consonant.’

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allow a sequence \*/\$N6V\$/. When a stem whose unmarked form begins with /ḃ/ has a nasal-final prefix before it, the /ḃ/ alternates with /b/, as described in this section.

Examples include:

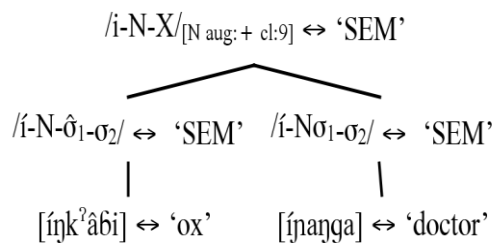
- (33) *izilwandle*<sub>[cl:10]</sub> ‘seas’, *izilimi*<sub>[cl:10]</sub> ‘tongues, languages’, *izimoto*<sub>[cl:10]</sub> ‘cars’, *izinyosi*<sub>[cl:10]</sub> ‘bees’.

### 6.3. TONAL ALTERNATIONS

Zulu tonology is a complex thing, and to do it justice would require at least a whole article in its own right. In this section I shall simply present a sketch of how tonological alternations could be handled in a CG analysis.

Zulu nouns may be associated with a variety of tonal patterns (Rycroft 1963, Laughren 1984, Clark 1988). These patterns can be incorporated into ‘mid-level’ generalised schemas for nouns of each class, which would be more specific instances of the ‘high-level’ generalised schemas like (1b), as illustrated in the following tree diagram, with the most general schema at the top; tone-marked generalized schemas one level below it, as instantiations of it; and constructs at the lowest level, as instantiations of the tone-marked schemas.

(34)



Thus Rycroft (1963:44) gives the examples of  $[iŋkʰâbi] \leftrightarrow \text{‘ox’}$  and  $[iŋaŋga] \leftrightarrow \text{‘doctor’}$ ,<sup>12</sup> which, on a CG analysis, instantiate the following ‘mid-level’ generalised schemas:

(35a)  $/i-N-\hat{\sigma}_1-\sigma_2/[N \text{ aug:} + \text{ cl:}9] \leftrightarrow \text{‘SEM’}$

(35b)  $/i-N\sigma_1-\sigma_2/[N \text{ aug:} + \text{ cl:}9] \leftrightarrow \text{‘SEM’}$

These formal representations say: (35a) ‘An augmented class 9 noun may consist of a phonological sequence beginning with a high-toned /i/, followed by

<sup>12</sup> The phonetic transcriptions are mine. Rycroft (1963) uses standard Zulu orthography with tone marking added.

a nasal, followed by a syllable with falling tone, followed by a low-toned syllable; or (35b) it may consist of a phonological sequence beginning with a high-toned /í/, followed by a nasal-commencing low-toned syllable, followed by a low-toned syllable. These mid-level generalisations are alloconstructions of one another, and several other patterns occur. All of these instantiate the high-level generalised schema:

(36) /i-N-X/[N aug:+ cl:9] ↔ ‘SEM’

Another kind of tonological alternation is purely phonologically motivated. For example, there are the alternations that occur in tone patterns when a vowel is preceded by a breathy-voiced consonant (what Rycroft (1963:46ff) calls a ‘low consonant’, but is usually referred to nowadays as a ‘depressor consonant’ (Clark 1988:66ff, Khumalo 1987). Such alternations would be handled by correspondence schemas similar to those described at the beginning of Section 6. A detailed discussion of this is beyond the scope of the present article.

## 6.4 IN SUM: CG PHONOLOGY

In CG analyses, empty categories and underlying forms that never surface are avoided. As Goldberg (2003:219) puts it, ‘A “what you see is what you get” approach to syntactic form is adopted: no underlying levels of syntax or any phonologically empty elements are posited.’ Extending this principle to the phonology, it can be assumed that there are no ‘rules’ deriving one phonological form from another – there is no process of phonological derivation. So there would be no rule of vowel deletion like the one in (37), which derives the right-hand schema from the left-hand one.

(37) /C<sub>[blb]</sub>V-VX/[F] → /C<sub>[blb]</sub>-VX/[F]

Rather, schemas of the type seen in (18) and (20) systematically link one kind of phonological configuration to another. These linking schemas will all be stored in the constructicon, and can be assumed to take the place of much of the phonological component of other theories.

## 7. CONCLUSION: AN ASSESSMENT OF THE CG ACCOUNT

Michaelis (2012) points out that CG aims for a realistic representation of a speaker’s language knowledge. Much of what speakers store in their minds is redundant; when used to represent a speaker’s grammar, CG is therefore less elegant than other frameworks. Compare Croft (2001), who points out that a general assumption in linguistic practice is that ‘Linguistic analysis should

minimize syntagmatic redundancy' (2001:120). Construction grammars, which usually aim to represent speakers' knowledge of their language, in accordance with Michaelis's description mentioned above, do not conform to this assumption. As Croft goes on to say, 'there is no a priori reason to assume that linguistic representations maximize syntactic parsimony' (2001:121).

While agreeing with Michaelis that a speaker's grammar is probably highly redundant, this article takes the view that CG can also be used to formulate a linguist's grammar, that is, one where the facts of a language are represented as succinctly and economically as possible: in CG terms, a linguist's grammar confines itself to general, constructional schemas, except where a word has a very irregular morphology. The above account of the singular/plural morphology of Zulu nouns is such a grammar. It consists of the 20 generalized schemas in (8) and (10), which respectively stipulate the forms of canonical and subclass nouns of each class; the seven schemas in (12), which stipulate the plural forms of canonical classes; the two schemas in (14), which stipulate the plural forms of subclasses; the three schemas in (16), which stipulate the plurals of sets of irregular nouns; and the five unique schemas in (17), which stipulate the uniquely irregular plurals of certain nouns. These construction schemas can be regarded as analogical to the rules found in other approaches. In addition there are the phonological alternation paradigms in (21), (24), (26), (28), (30) and (32). These are the equivalent of the phonological rules in a generative grammar. Furthermore, a complete account of Zulu noun morphology would require a set of tonological alternation paradigms of the kind sketched in Section 6.2.

A Construction Grammar account of a phenomenon like Zulu noun class plurals will require the storage of more words than other accounts, and the number of schemas will probably exceed the number of rules in other accounts. But the CG account needs considerably fewer steps to link one form to another, and therefore requires less processing time. As Croft (2001:121) states, 'redundant storage allows for more parsimonious computation'.<sup>13</sup> Furthermore, the CG account requires fewer grammatical features than a generative account: for example, Van der Spuy's (2010) Extended Word and Paradigm account postulates a feature [subclass], and another feature [pl], which links singular forms to their plurals. These features are unnecessary in CG account.

The CG model is also less complex because only one grammatical level is relevant to morphological alternation, namely the construction. No rules are postulated that derive one phonological form from another. Instead, equivalent constructions with divergent phonological forms are linked as 'alloconstructions'. Thus, much of traditional phonology is subsumed into morphology.

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<sup>13</sup> As an anonymous reviewer has commented, 'In this regard, it would be very interesting to conduct psycholinguistic experiments, measuring some of the effects this might have.' For example, it is likely that frequency of occurrence correlates with the speed with which an irregular form may be retrieved.

In terms of the number of schemas required, as opposed to the number of rules, CG is less economical than other theories; but it requires much less processing time and fewer features, and the overall design of the grammar is simpler. It appears, then, that a CG account of a fairly complex inflectional morphology, like Zulu singular/plural alternations, is at least as economical as a generative account.

## REFERENCES

- Booij, G. 2010.  
*Construction Morphology*. Oxford: Oxford University Press.
- Bresnan, J. 2001.  
*Lexical–Functional Grammar*. Oxford: Blackwell.
- Buell, L. 2011.  
*The Nguni augment from a syntactic perspective*. Handout, B4ntu, April 2011.
- Canonici, N. 1990.  
*Subclasses of Zulu nouns*. **South African Journal of African Languages** 10(2): 52–58.
- Carstens, V. 1993.  
On nominal morphology and DP structure. In: Sam Mchombo (ed.), *Theoretical Aspects of Bantu Grammar*, pp. 151–180. Stanford: CSLI Publications.
- Chomsky, N. 1995.  
*The Minimalist Program*. Boston, Massachusetts: The MIT Press.
- Clark, M. 1988.  
An accentual analysis of the Zulu noun. In: H. van der Hulst and N. Smith (eds.), *Autosegmental Studies on Pitch Accent*, pp. 51–79. Dordrecht: Foris Publications.
- Croft, W. 2001.  
*Radical Construction Grammar*. Oxford: Oxford University Press.
- Doke, C. 1927.  
*Textbook of Zulu Grammar*. (First edition.) Cape Town: Longman.
- 1960 Early Bantu literature – the age of Brusciotto. In: R. K. Herbert, (ed.), *Foundations in Southern African Linguistics*, 1993, pp. 109–127. Johannesburg: Witwatersrand University Press.
- 1973 *Textbook of Zulu Grammar*. (Sixth edition.) Cape Town: Longman.
- Doke, C., Malcolm, D. McK., and Sikakana, J.M.A. 1982.  
*English–Zulu Dictionary*. Johannesburg: Witwatersrand University Press.
- Doke, C., Malcolm, D. McK., Sikakana, J.M.A. and Vilakazi, B.W. 1990.  
*English–Zulu/ Zulu–English Dictionary*. Johannesburg: Witwatersrand University Press.

- Fillmore, C., Kay, P. and O'Connor, M. 1988.  
*Regularity and idiomacity in grammatical constructions: the case of let alone. Language* 64(3): 502–38.
- Goldberg, A. 1995.  
*Constructions: A Construction Grammar Approach to Argument Structure*. Chicago: University of Chicago Press.
- 2003 *Constructions: A new theoretical approach to language. Trends in Cognitive Sciences* 7(5): 219–224.
- 2006 *Constructions at Work: The Nature of Generalization in Language*. Oxford: Oxford University Press.
- 2013 Constructionist approaches. In: T. Hoffmann and G. Trousdale (eds.), *The Oxford Handbook of Construction Grammar*, pp. 15–31. Oxford: Oxford University Press.
- Guthrie, M. 1971.  
*Comparative Bantu*. Volume 2. Farnborough: Gregg.
- Halpert, C. 2012.  
*Argument Licensing and Agreement in Zulu*. Ph.D. thesis, Yale University.
- Hoffmann, T. and Trousdale, G. 2013.  
*The Oxford Handbook of Construction Grammar*. Oxford: Oxford University Press.
- Katamba, F. 2003.  
Bantu nominal morphology. In: D. Nurse and G. Philippson (eds.), *The Bantu Languages*, pp. 103–120. London: Routledge.
- Kiparsky, P. 1973.  
'Elsewhere' in phonology. In: S. R. Anderson & P. Kiparsky (eds.), *Festschrift for Morris Halle*, pp. 91–106. Austin, Texas: Holt, Rinehart and Winston.
- Kosch, I. 2004.  
*Significance of absence: the case of zero and empty morphs. South African Journal of African Languages* 24(4): 245–251.
- Khumalo, J. 1987.  
*An Autosegmental Account of Zulu Phonology*. Doctoral thesis, University of the Witwatersrand.
- Laughren, M. 1984.  
Tone in Zulu nouns. In: G. M. Clements and John Goldsmith (eds.), *Autosegmental Studies in Bantu Tone*, pp. 183–234. Dordrecht: Foris Publications.
- Loogman, A. 1965.  
*Swahili Grammar and Syntax*. Pittsburgh, Pennsylvania: Duquesne University Press.

- Mathonsi, N. N. 2010.  
A headword identification problem of nouns in Zulu dictionaries. In: Karsten Legère & Christina Thornell (eds.), *Bantu Languages: Analyses, Description and Theory*, pp. 163–173. Cologne: Rüdiger Köppe.
- Matthews, P. 1972.  
*Inflectional Morphology*. Cambridge: Cambridge University Press.
- Mchombo, S. 2004.  
*The Syntax of Chichewa*. Cambridge: Cambridge University Press.
- Meinhof, C. 1899.  
*Grundriss einer Lautlehre der Bantu-Sprachen*. Hamburg: Eckardt und Messtorf.
- Michaelis, L. 2012.  
Making the case for Construction Grammar. In: Hans C. Boas & Ivan A. Sag (eds.), *Sign-based Construction Grammar*, pp. 31–69. Stanford: CSLI Publications.
- Mzolo, D. 1968.  
*The Zulu noun without the initial vowel*. **African Studies** 27(4): 195–210.
- Poulos, G. and Msimang, C. 1998.  
*A Linguistic Analysis of Zulu*. Cape Town: Via Afrika.
- Rycroft, D. 1963.  
*Tone in Zulu nouns*. **African Language Studies** 4: 43–68.
- Taljaard, P.C. and Bosch, S.E. 1988.  
*Handbook of isiZulu*. Pretoria: van Schaik.
- Taraldsen, K. T. 2010.  
*The nanosyntax of Nguni noun class prefixes and concords*. **Lingua** 120: 1522–1548.
- Van der Spuy, A. 2006.  
*Wordhood in Zulu*. **Southern African Linguistics and Applied Language Studies** 24(3): 311–329.
- 2010 *Generating Zulu noun class morphology*. **Language Matters** 41(2): 294–314.
- 2017 *Construction Morphology and inflection*. **Lingua** 199: 60–71.

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