Noun class prefixes aren't nominalisers: Insights from deverbal nominalisation in Chichewa

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ABSTRACT This paper probes the nominalisation processes that derive so-called *deverbal nouns* in Chichewa. Previous studies have shown that many Bantu languages harness both prefix and suffix elements to derive deverbal nouns. However, there is no consensus regarding the role of these affixes in Bantu nominalisation and noun classification. Empirical evidence from Chichewa shows that there are, in fact, a range of deverbal noun-types, many of which have not received much attention in the literature to date. The major findings of our study are that (i) deverbal nominalisation in Chichewa takes a wide range of bases as input (verb radicals, verb stems, and complex verb expressions, including clauses), and (ii) the noun class prefix(NCP) and final vowels (FVs) are not essential in the nominalisation process. This empirical evidence, therefore, challenges the widely accepted NCP-oriented approach to noun classification and the way in which singular number marking is realised.

1 INTRODUCTION

The major aim of this paper is to provide a systematically presented, fully representative empirical overview of the data that should inform any analysis of Chichewa deverbal nominalisation. Typological research beyond Bantu has shown that there are various morphological strategies that languages employ to turn verbs into nouns, such as conversion, prefixing, suffixing or circumfixing (see i.a. Comrie & Thompson, 2007, Mathieu, 2014, Moulton, 2014, Paul, 2014, Schadeberg & Bostoen, 2019). Studies in Bantu languages specifically show that all of these mechanisms also appear to play some role in deriving deverbal nouns of different kinds. One structural component about which there is much uncertainty in the literature, however, is the final vowel (FV). More specifically, what is unclear is how the FV interacts with the noun class prefix (NCP) in the case of deverbal nouns (see i.a. Ferrari, 2005, Ferrari-Bridgers, 2009, Mchombo, 1978, 2004, Mletshe, 2017, for differing perspectives, Mugane, 1997, Muriungi, 2008: 117-18). Further, although there have been several studies focusing on the general phenomenon of deverbal nominalisation, we

observe that there appear to be deverbal noun-types that have not been discussed to date. This paper, accordingly, aims to address this gap by considering the grammar of deverbal nouns in Chichewa in the light of systematically collected empirical evidence from a range of sources including (i) the *Chichewa Electronic Monolingual Dictionary* (Centre for Language Studies 2008), (ii) secondary sources including Mchombo (1978) and Kishindo (1985), (iii) examples produced by native Chichewa speakers, and (iv) the first author's own native-speaker knowledge. We organise the data in terms of a new classification scheme, and, with this in place, we return to the matter of what the full empirical picture seems to be telling us about the nature of so-called *noun class prefixes* (NCPs), deverbal nominalisations, and related matters.

The paper consists of five sections. Section 2 provides a brief background to the structure of nominal and verbal expressions in Bantu generally and in Chichewa specifically. Section 3 presents a summary of our current understanding of deverbal nominalisation and its (apparently) associated morphology. Section 4 describes the various deverbal nominalisation processes in Chichewa. More specifically, section 4.1 gives an overview of the dataset that forms the basis for the current discussion. Thereafter, section 4.2 to section 4.8 discuss various types of deverbal nominalisations which are categorised on the basis of their morpho-syntactic properties. Section 4.9 is an interim summary of the various deverbal noun types. Section 5 briefly introduces some further data that points in the same direction as the detailed investigation in section 4. Section 6 concludes.

2 Background to the Problem

Chichewa belongs to the Benue-Congo branch of the Niger-Kordofanian language family. According to Guthrie's (1967, 1971) classification of Bantu languages, Chichewa is in Zone N, unit N31. It is a variety of Nyanja (N30) (Mchombo, 2006: 142, 2007: 204). The different varieties of Nyanja are spoken in different parts of eastern, central and southern Africa, specifically in Malawi, Mozambique (in the Tete and Niassa provinces), Zambia (in the Eastern Province) and Zimbabwe (Mchombo 2004: 1). The present study focuses on the variety of Chichewa spoken in Malawi.

2.1 Chichewa noun classes and the mechanisms producing deverbal nouns for each noun class

Deverbal nouns in Chichewa and in many Bantu languages have been studied under the rubric of noun classification. The proposal is that nouns in Chichewa are, for the most part, derived by means of noun class prefixes (NCPs; see i.a. Kishindo 1985, Mchombo 2004). These prefixes are a major criterion for identifying the noun class of each noun. Chichewa is analysed as having 18 such noun classes (NCs), numbered 1 through 18 (Mchombo 2004: 6). The numbering system is mainly attributed to the works of Bleek (1869) and Meinhof (1899), which is the source of the designation *Bleek-Meinhof system* in other works (see i.a. Katamba 2006: 104). The numbers correspond to what has been reconstructed for Proto-Bantu, which is claimed to have had over 23 different noun classes (Katamba 2006: 104–105). Although Chichewa

is shown to feature 18 classes, there is, in fact, a total of 17 noun classes as there is no noun class 11.[1] In this regard, there are eleven prefixes associated with the creation of singular nouns and 6 associated with plural nouns. In addition to the NCPs, each noun class is associated with a specific set of agreement markers (AMs) on adjectives (Adj), numerals (Num), verbs, etc. that enter into construction with the noun. Both the NCPs and the AMs are summarised in Table 1.

NC	NCP	Example	AM Adj	AM Num	AM Verb
1	*m(u)-*	*mu-nthu* ('person')	*wa/o-*	*m-*	*(w)a-*
2	*a-*	*a-nthu* ('people')	*a-*	*a-*	*a-*
3	*m(u)-*	*mu-tu* ('head')	*wa-*	*u-*	*u-*
4	*mi-*	*mi-tu* ('heads')	*i-*	*i-*	*i-*
5	**li-*	*li-tali* ('length')	*la-*	*li-*	*li-*
6	*ma-*	*ma-litali* ('lengths')	*(w)o-*	*a-*	*a-*
7	*chi-*	*chi-sa* ('nest')	*cha-*	*chi-*	*cha-*
8	*zi-*	*zi-sa* ('nests')	*za-*	*zi-*	*za-*
9	**N*	*nyanja* ('lake')[2]	*ya-*	*i-*	*i-*
10	**N*	*nyanja* ('lakes')	*za-*	*zi-*	*za-*
12	*ka-*	*ka-mutu* ('small head')	*ka-*	*ka-*	*ka-*
13	*ti*	*ti-mitu* ('small heads')	*ti-*	*ti-*	*ta-*
14	*u-*	*u-ta* ('bow')	*wa-*	*u-*	*u-*
6[3]	*ma-*	*ma-uta* ('bows')	*(w)o-*	*a-*	*a-*
15	*ku-*	*ku-dya* ('eating/to eat')	*ku-*	*ku-*	*ku-*
16	*pa-*	*pa-mudzi* ('on the village')	*pa-*	*pa-*	*pa-*
17	*ku-*	*ku-mudzi* ('to/at the village')	*ku-*	*ku-*	*ku-*
18	*m(u)-*	*m-mudzi* ('in the village')	*mu-*	*m(u)-*	*mu-*

Table 1 Chichewa noun classes, organised according to the Bleek-Meinhof system, with their corresponding AMs.

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[1] The distribution of NC11 varies remarkably across Bantu languages. In some cases, it is claimed that it merged with other classes e.g. NC3, NC5, NC14, while in other cases, it is reported to be completely absent (see Maho 1999: 180ff)

[2] NC9 is known to employ the underspecified nasal prefix N, which is realised as a homorganic nasal /n/ or /m/ (see Alcock & Ngorosho 2004: 9, Batibo & Kgolo 2016: 21, Choti 2015, Katamba 2006: 109, Maho 1999: 59). The variation is due to the phonological process known as *nasal place assimilation* (see e.g. Roca & Johnson 1999: 92).

[3] Nouns in NC14 pluralise by means of the prefix *ma-*, associated with NC6. In this regard, Bantuists allocate NC14 plural nouns to NC6; hence its repeated occurrence in Table 1.

As Table 1 shows, there is typically a connection between and, in some cases, even identity of, the form of the NCP and the AM, a phenomenon known as concordial agreement. For example, NC1 nouns control the AM set *m(u)-* and *(w)a-*, while NC7 controls the AM *chi-*, as shown in (1).

(1) a. *Mu-*   *nthu*   ***wa-***   *luso*   ***m-***   *modzi*   ***a-***   *na-*   *thawa.*
         1.NCP-   root(being)   1.AM-   talent   1.AM-   one   1.AM-   PAST-   run

        'One talented person ran away.'

    b. *Chi-*   *lombo*   ***cha-***   *luso*   ***chi-***   *modzi*   ***chi-***   *na-*
         7.NCP-   root(mask-dancer)   7.AM-   talent   7.AM-   one   7.AM-   PST-

        thawa.
         run

        'One talented mask dancer ran away.'

Although it is a widely accepted perspective that prefixally marked noun-class and agreement-marking consistently relate in the way depicted in Table 1, there are reasons to question it. In this paper, we focus on one very troublesome empirical fact, namely that there is more than one mechanism for deriving the singular nouns in each of the traditional singular noun classes. More specifically, the NCP is seemingly not always required to create nominals for its NC: for each singular NC, some nouns with that NCP appear to, instead, have been derived by mechanisms like conversion, suffixation, a combination of prefixation and suffixation, high tone assignment, and so on. Furthermore, there are several other prefixes that are not recognised in the traditional NC analysis (see again Table 1): these include prefixes like *ka-*, and *na-*, which surface as prefixes on some NC1 nouns; *i-*, which is a prefix found on some NC9 nouns; the manner nominal prefixes *ma-* and *ka-*; and so on. These mechanisms are summarised in Table 2. For ease of exposition, we organise the attested deverbal noun-types according to the traditional noun class system, to the extent possible. As the final block in the table demonstrates, some mechanisms remain unaccounted for on this classification.

As shown in Table 2, there are a range of mechanisms that derive deverbal nouns in Chichewa, over and above the NCPs that are canonically associated with this process. Here, we suggest that these can be grouped into four major mechanism-types, namely (i) prefixation only, (ii) prefixation with suffixation, (iii) suffixation only, and (iv) conversion. As shown in Table 2, in each of the four modes, some, but not all derivations require high tone assignment (marked with an acute accent on the relevant forms). The way in which these mechanisms interact to give rise to what appear to be different types of (superficially) deverbal nominalisation will be discussed in more detail in section 4. In order to properly describe the deverbal noun-types introduced in Table 2, however, we first discuss the structure of the verbal expressions, from which deverbal nouns are assumed to come.

NC	Mechanism	Example	AM
1	i. *m(u)-*	***m**-lónda* (PRE-watch ->'guard')	*m(u)-, (w)a-*
	ii. *ka-*	***ka**-fumbata* (PRE-clench ->'tetanus')	
	iii. *na-*	***na**-ku-fa* (PRE-INF-die ->'dead person')	
	iv. *sa-*	***sa**-khúta* (PRE-be satiated ->'glutton')	
	v. *ma-*	***ma**-taya* (PRE-throw ->'affluent person')	
	vi. *m(u)- and -i*	***m**-sodz-**i*** (PRE-fish-SUFFIX ->'fisherman')	
	vii. *conversion*	gogoda (knock ->'high heeled shoe')	
	viii. *-i*	*gónth-**i*** (be deaf-SUFFIX ->'deaf person')	
3	i. *m(u)-*	***m**-píta* (PRE-go ->'path')	*u-*
	ii. *m(u)- and -o*	***m**-chéz-o* (PRE-chat-SUFFIX ->'chat')	
5	i. *l-/d-*	***li**-wamba* (PRE-roast ->'hunting spree')	*li-*
	ii. *l-/d- and -o*	***d**-ip-o* (PRE-pay-SUFFIX ->'ransom')	
	iii. conversion	*sosa* (clear the garden ->'the act of clearing the garden')	
	iv. high tone	*lémba* (write ->'letter/scripture')	
	v. *-o*	*fan-**o*** (be similar-SUFFIX ->'sculpture')	
6	i. *ma-*	***ma**-lódza* (PRE-bewitch ->'strange things')	*a-*
	ii. *ma and -o*	***ma**-kupe* (PRE-fan ->'wings')	
		***ma**-lir-o* (PRE-cry-SUFFIX ->'death')	
7	i. *chi-*	***chi**-líza* (PRE-make cry ->'tombstone')	*chi-*
	ii. *chi- and -o*	***chi**-bay-o* (PRE-stab- SUFFIX ->'pneumonia')	
9	i. *-o*	*nol-**o*** (sharpen- SUFFIX ->'whetstone')	*i-*
	ii. *N-*	***m**-phukíra* (PRE-germinate ->'newly germinated plant')	
	iii. conversion	*phukíra* (PRE-germinate ->'edible sprout')	
	iv. *N- and -o*	***n**-khódz-o* (PRE-kodz-SUFFIX ->'urine')	
	v. *i-*	***i**-m-fa* (PRE-*PRE-die* ->'death')	
14	i. *u-*	***u**-lónda* (PRE-guard ->'security profession')	*u-*
	ii. *u- and -o*	***u**-chím-o* (PRE-sin - SUFFIX ->'sin')	
	iii. *u- and -i*	***u**-lim-i* (PRE-farm-SUFFIX ->'farming')	
15	i. *ku-*	***ku**-dya* (PRE-eat -> 'eating')	*ku-*
?	i. *ma-*	***ma**-dy-edw-e* (PRE-eat-PASS-FV ->'manner of eating')	*a-*
	ii. *ka-*	***ka**-dy-edw-e* (PRE-eat-PASS-FV ->'manner of eating')	*ka-*

**Table 2**   Mechanisms that derive deverbal nouns in Chichewa.

2.2 The internal structure of verbal expressions in Chichewa

Like other Bantu languages, Chichewa is an agglutinating language. Lexical categories therefore typically feature prefixes and suffixes which serve a range of semantic and grammatical functions. Nominalised verbs in many Bantu languages are observed to exhibit both nominal (e.g. noun-class marking) and verbal (e.g. inflectional and derivational) morpho-semantics (see e.g. Du Plessis 1982: 6-15, Hyman 2022, Mletshe 2017: 35ff, Mugane 1997: 14, Visser 1989: 176). It is therefore important that we consider the internal structure of verbal expressions in Chichewa before discussing the nominalised expressions that are our central focus in this paper.

In Chichewa and also in other Bantu languages, the core unit of verbal expressions is usually identified as the root (cf. Mchombo 1978, 2004: 40, Mletshe 2017: 35ff, Poulos & Msimang 1998: 81). To be regarded as meaningful, this root must minimally combine with a vowel traditionally designated the *final vowel* (FV); this produces a so-called verb stem (Hyman & Mtenje 1999: 95, Kishindo 1985: 3, Mchombo 2004: 70). A more complex verb stem would include not only the root and the FV, but also one or more verb extensions (see (2) below); the root + extensions are often referred to as the *verb radical*. The verb stem can be further extended by attaching prefixes of various kinds, such as the object agreement marker (OM) or the reflexive marker (REFL), the Directional Marker (DRM), the tense-aspect-modal marker (TAM), the subject marker (SM), the negation marker (Neg), and so on (see Good 2005: 2-5, Hyman & Mtenje 1999: 95, Mchombo 2004: 28, 2007: 70). A simplified representation of the verbal complex with a particular focus on the verb stem is given in (2a) and (2b) and exemplified in (2c).

(2)   The schema of the verbal complex in Chichewa

    a.   Neg-SM-TAM-DRM-OM-[$_{V\ Stem}$ [$_{V\ Radical}$ [V Root (+ V Extensions)] FV]]

    b.   The Verb Stem component of the Bantu verbal template in tree form:
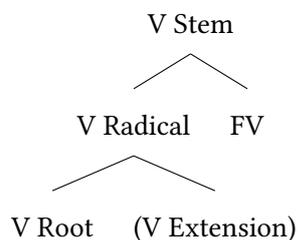
    c.   Examples showing Verb Roots, some verb extensions and FVs

i. *thaw-*	*a*	*thaw-*	*its-*	*a*	*thaw-*	*its-*	*an-*	*a.*
ROOT-	FV	ROOT-	CAUS-	FV	ROOT-	CAUS-	RECP-	FV

         'escape'   'cause to escape'   'elope'

ii. *lemb- a*   *lemb- er- a*   *lemb- er- an- a.*
ROOT- FV   ROOT- APP- VF   ROOT- APP- RECP- FV

'write'   'write for'   'write for each other'

iii. *on- a*   *on- ek- a*   *on- ek- er- edw- a.*
ROOT- FV   ROOT- STAT- FV   ROOT- STAT- APP- PASS- FV

'see'   'be visible'   'be bereaved'

The Chichewa verb, like Bantu verbs more generally, features a prefixal zone, which may host varying numbers of prefixal elements, with the Chichewa ordering following that schematised in (2a). Verbal prefixes express prototypical inflectional categories, e.g. tense, mood, aspect (=TAM), subject and object agreement, negation, etc. The prefixal zone is linearly followed by the so-called *verb stem*, which itself consists of the hierarchically organised components depicted in (2b). Importantly, the root may combine with a range of derivational morphemes, traditionally known as the CARP extensions (CARP = causative-applicative-reciprocal-passive; see Ackema & Neeleman 2005: 305-6) but also includes markers like statives/STAT, and so on, as shown in (2c) Mchombo (2004: 123). As noted above, this produces the so-called *verb radical*. We will return to the formal status of the verb radical below (see section 2), but what is already worth noting here is that there is widespread agreement in the Bantu literature that this structural component is created prior to the addition of the FV, which is, in turn, added before any inflectional prefixes; that is, the bracketing in (2a) and the hierarchical structuring in (2b) reflects the embedding sequence that produces Chichewa verbs. These verbs are, therefore, constructed in a way that fits the crosslinguistically robust pattern in terms of which derivation is closer to the root than inflection; see Greenberg (1966).

With the exception of three verb stems, *-ti* 'say' and the copulas *-li* and *ndi* 'be' – verbs which are often irregular crosslinguistically (see i.a. Nübling 2011 and Pustet 2003) – all verbs in Chichewa terminate in FVs *-a* or *-e*. The FV *-e* is associated with subjunctive (SBJV) mood marking, while the FV *-a* is understood as the default, being associated with all other moods such as indicative (IND), the positive imperative (IMP), the interrogative, etc. (see Hyman & Mtenje 1999: 111, Maho 1999: 78, Mchombo 2004: 22, 28, 67, Mtenje 2002: 7, 2007: 35).

Importantly, Kishindo (1985: 10) argues that the terms *verb root* and *verb radical* are in fact, misleading: the root and the radical should be analysed as category-free as their categorial status as verbal or nominal depends on the identity of the FV with which they combine. For Kishindo, then, the stem may, therefore, be realised as nominal or verbal, but the root and the radical themselves are category-neutral (see also Mchombo 1978: 88-89). In Kishindo's (1985: 10) view, the correct labels for the minimal unit found in Bantu verbal structures should, therefore, simply be *root* or *radical*, while the final vowel should be viewed as the realisation of a categorising element. The idea that roots get their categorial features during the course of a morphosyntactic derivation has been well explicated in certain theoretical frameworks, Distributed Morphology being a case in point (Creemers, Don & Fenger 2018, De

Belder & Van Craenenbroeck 2015, Ferrari 2005: 15, Halle & Marantz 1993, Marantz 1997). On this view, abstract roots are assumed to enter into a morphosyntactic relation with functional heads such as *v* (=verbaliser), *n* (=nominaliser), and *a* (=adjectivaliser), which give rise to verbs, nouns, and adjectives, respectively (Alexiadou 2001: 7).

With this background in place, the next section considers how previous studies have understood nominalisation processes in Chichewa and other Bantu languages.

3 Previous Analyses of Deverbal Nominalisation in Bantu Languages, and how the Present Study Integrates with the Existing Research

According to the existing literature, deverbal nominalisation minimally involves the 'verb root', with or without its extensions. The derivation process is generally analysed as involving any of the NCPs and/or the FVs *-i* and *-o* (see e.g. Ferrari-Bridgers 2008, 2009, Mchombo 1978, 2004, Mletshe 2017, Mugane 1997). Consider the Chichewa examples in (3).[4]

(3) a. *lim- a*   *m- lim- i*
     ROOT- FV   1.NCP- ROOT- FV

     'cultivate'   'farmer'

   b. *tsek- a*   *chi- tsek- o*
     ROOT- FV   7.NCP- ROOT- FV

     'shut'   'door'

   c. *kond- a*   *chi- kond- an- o*
     ROOT- FV   7.NCP- ROOT- RECP- FV

     'love'   'mutual love'

   d. *kodz- a*   *m- kodz- o*   *li- kodz- o*
     ROOT- FV   3.NCP- ROOT- FV   5.NCP- ROOT- FV

     'urinate'   'urine'   'bilharzia'

The examples in (3) demonstrate the various morphemes and processes that are assumed to be involved in deverbal nominalisations. The deverbal nouns in (3a-3b) are assumed to be derived from the simple verb stems (*lima* and *tseka*), whereas that in (3c) involves a complex verb stem, one with the reciprocal morpheme, *-an.*

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[4] In this specific example, the numbers against morpheme glosses indicate noun class. However, in the subsequent examples, we will not follow this traditional approach of identifying prefixes by their class numbers on the prefix because some derivational prefixes considered in the present study do not have a corresponding traditional noun class (see again Table 2 above). Besides, it remains controversial whether the class features are in fact carried by the prefix, or the stem, or both (see e.g. Amidu 1997: 1, 31-39, Carstens 1991, 1993, 2008: 137, Kinyalolo 1991: 231, Msaka 2019, van der Spuy 2009: 203). As will also become clear, our own analysis will, likewise, not assume the prefix to be the carrier of noun-class features in Chichewa deverbal nouns.

Example (3d), presents a case where the same verb stem is used to derive more than one deverbal noun.

The deverbal nominalisation processes illustrated in (3) have until now been considered as representative of Bantu nominalisation and have received a fairly uniform analysis across Bantu languages. Specifically focusing on Chichewa and Kiswahili, Mchombo (1978: 105-118), for example, postulates six word-formation rules (WFRs) that are assumed to account for all deverbal nominalisation processes in these languages. Each of these rules is devised to account for derived nouns by noun-class pair, for example, Rule 1 applies to NC1/2, Rule 2 to NC3/4, etc. (see Kishindo 1985). The individual rules can be generalised according to the schema in (4), where *Prefix* designates a field for noun class-specific morphemes (e.g. plural and singular number markers) and the FVs *-i* or *-o* are taken to be designated nominalisers (see Kishindo 1985: 3-4).

(4)   Prefix + Verb Radical + nominaliser

The analyses of the derivation process schematised in (4) assume it to take place in the following sequence: (i) noun class prefixing (ii) verbaliser truncation and (iii) introduction of the nominaliser (Kishindo 1985: 4, Mchombo 1978: 106). Mugane (1997: 174-176), however, questions this order of affixation/morphological operations. He argues that noun-class markers necessarily adjoin to nominalised stems, i.e. that nominalisation precedes prefixation. More precisely, on Mugane's (1997: 175) view, there is no verbaliser deletion; instead, the FV *-a*, associated with verbalising a category-free root, is interpreted as a form of a nominaliser. Mugane takes this view because there are several deverbal nouns in many Bantu languages that also terminate in the vowel *-a*, despite this being a vowel associated with verbal expressions. Consider the following Chichewa examples which illustrate this pattern.

(5)   a.   *mer-*   *a*   *m-*   *mera*
           ROOT-   FV   NCP-   germinate

           'germinate'   'seedling/sprout'

      b.   *dul-*   *a*   *chi-*   *dule*
           ROOT-   FV   NCP-   cut

           'cut'   'shortcut/summary'

Although there are these differences between Mugane's (1997) and Mchombo's (1978) analyses, they share the view that the prefix and the suffix are crucial in the nominalisation process. This is clear from the formalisms they employ: Mugane (1997: 157) references **[mũ ... -a]** versus **[mũ ... -i]** deverbalisation schemas, whereas Mchombo (1978: 117) summarises the nominalisation processes with the following general schema:

(6) $[\varepsilon + [X] + o]_N$

where ε = prefix, X = stem, o = verbaliser, and N = noun.

Mletshe (2017: 35-38) also recognises the derivation processes in isiXhosa as involving both the prefixes and the suffixes. For these authors, then, nominalisation in Bantu effectively involves a generalised circumfix, **[prefix-…-suffix]**. However, these studies do not discuss a number of deverbal noun-types found in various classes introduced in Table 2. These will be discussed in detail in section 4 below.

In contrast to the foregoing, the view that nominalisation is (in part) effected by FVs has been strongly challenged by Ferrari-Bridgers (2008, 2009) and others, who take the FV as being of no significance in the derivation of deverbal nouns (Ferrari 2005, Mufwene 1980, Myers 1987, Sproat 1985). Ferrari-Bridgers (2009: 26) argues that the FVs have no semantic content and that 'there is no substantiate [*sic*] basis for assuming that final vowels are N-marked heads' (Ferrari-Bridgers 2008: 248). Under this view, the NCP is taken to be the nominaliser. Unfortunately, however, this conclusion does not address Mugane's (1997: 174) earlier observations that a noun in Bantu may have more than one prefix. Consider (7), for example, where the diminutive prefix attaches to a nominal with the primary NCP *mu-*.

(7)   *ka- mu- ndu*   Gĩkũyũ (Mugane 1997: 174)
      12- 1-   person

      'little person'

As shown in (7), the secondary diminutive prefix *ka-* is for noun class 12 and it triggers agreement marker *ka-*, associated with the diminutive noun class 12. Mugane (1997: 174) argues that, in this case, identifying the prefix as the nominaliser implies that the nominal expression is nominalised more than once. Even more problematically, we note that Ferrari-Bridgers' (2008, 2009) position also does not seem to account for cases where the FV appears to be the only affix featured in the nominalisation. Consider the following examples.

(8)   a.   *sewer- a*   *sewer- o*   Chichewa (Mchombo 1978: 117)
           ROOT- FV   ROOT- FV

           'play'   'play/game'

      b.   *som- a*   *som- o*   Kiswahili (Mchombo 1978: 177)
           ROOT- FV   ROOT- FV

           'learn'   'lesson'

Although Ferrari-Bridgers (2009: 26) argues that final vowels -*a* and -*i* are 'endings of semantically miscellaneous nouns' in Luganda, the processes illustrated in (8) are reported to be very regular in many Bantu languages. There are numerous studies that show that the FVs play a role in the derivation of deverbal nouns in several Bantu languages; see for example Ziervogel & Mabuza (1976: 6, 28) for Siswati, Mchombo (1978: 90-140, 2004: 113-18) for Chichewa, Baumbach (1987: 145) and Hlungwani (2012: Chap.3) for Xitsonga, Poulos (1990: 68) for Tshivenda, Poulos & Louwrens (1994: 49) for Northern Sotho, Mugane (1997) for Gĩkũyũ, Poulos & Msimang (1998: 81) for isiZulu, Contini-Morava & Kilarski (2013: 270) for Kiswahili, Mletshe (2017: 34-38) for isiXhosa, Hyman (2022) for Runyankore, and Schadeberg & Bostoen (2019: 188-89) for Proto Bantu.

Interestingly, despite the disagreements regarding the status of the FVs, there is consensus regarding the status of the prefixes. These are generally taken to contain two basic types of information, namely grammatical number (singular or plural) and noun-class features (see Ferrari-Bridgers 2008: 256, 2009: 30-31, Mchombo 1978: 104). It is worth noting, however, that there are some works on Bantu noun classes where the prefix is argued to **only** carry number features (see e.g. Carstens 1991: Chapter 2, 2000: 140, 2008: 137-138, van der Spuy 2009).

Given this background, we consider it fair to conclude that our understanding of deverbal nouns in Bantu languages remains incomplete, having focused mostly on the prefix-suffix debate. With specific reference to Chichewa, it is also the case that there are deverbal noun-types that have not been considered in previous studies; consider again Table 2 in this connection. All of these data-types further challenge deverbal nominalisation analyses like those introduced above. As progress in the understanding of Bantu deverbal nominalisation requires a complete and accurate picture of the empirical situation, this paper's chief objective will accordingly be to attempt to present a full picture of this kind for Chichewa deverbal nominalisations. This is the matter to which we now turn.

4 Probing Deverbal Nominalisation in Chichewa: Charting the Empirical Landscape

In this section, we introduce the various deverbal noun-types found in the Chichewa deverbal nouns dataset. We begin by describing the sources contributing to our dataset (section 4.1). This is followed by a description of the various types of deverbal nouns attested in the dataset (section 4.2 to section 4.8). These noun-types will be grouped according to their morphosyntactic properties, specifically based on the presence or absence of various types of prefixes and suffixes. Within these groups, we also consider the distribution of the deverbal noun types across the Chichewa noun-class system.

4.1 *The Chichewa deverbal nouns dataset*

Much of the data for the present study was extracted from the *Chichewa Electronic Monolingual Dictionary* (Centre for Language Studies 2008). This dictionary is the culmination of an extensive lexicography project which started in the early 1970s and was carried out by, firstly, the Chichewa Board and then the Centre for Language Studies (Centre for Language Studies, Kamwendo 1999: 47, Kishindo 2001: 266). In total, our investigation of this dictionary delivered 5822 nominal expressions. From these, we extracted 673 deverbal nouns, which represent 11.5% of the total number of nominal entries. The distribution of the deverbal nouns across the noun classes is summarised in Table 3.

Class	Number	Percentage
Class 1	176	26%
Class 3	122	18%
Class 5	93	14%
Class 6 (mass nouns)	37	6%
Class 7	129	19%
Class 9	98	14%
Class 14	18	3%
Total	673	100%

Table 3   Chichewa deverbal nouns grouped according to the traditional Bantu noun-class system.

An important point to note here, though, is that deverbal nominalisation is, by virtue of its derivational nature, a productive process. Consequently, the 673 entries extracted from the dictionary represent only a subset of the deverbal nominals that are potentially available in Chichewa. Therefore, there are some deverbal nouns that we have included in the discussion to follow that are not lemmatised. Infinitival and manner nominals are cases in point. The figures presented in Table 3 should therefore not be attributed quantitative significance that they cannot have by virtue of their lexicographic source.

What our dataset does show is that there are at least seven morphological templates that can be associated with deverbal nouns in Chichewa. These morphological templates are summarised in (9).

(9)   a.   **Type 1**: Root/Radical + FV (-*i*/-*o*)
          i.e. forms morphologically marked by the FV only; may include high tone
          on the first syllable of the stem

      b.   **Type 2**: Traditional NCP + Root/Radical + FV (-*i*/-*o*)
          i.e. forms morphologically marked by prefixation and by suffixation; may
          include high tone on the first syllable of the stem

      c.   **Type 3**: Root/Radical + FV (-*a*/-*e*)
          i.e. forms featuring no overt morphological marking of any kind; may
          include high tone on the first syllable of the stem

      d.   **Type 4**: Traditional NCP + Root/Radical + FV (-*a*/-*e*)
          i.e. forms morphologically marked as nominal by prefixation only; may
          include high tone on the first syllable of the stem

      e.   **Type 5**: Inflectional prefixes + Root/Radical + FV (-*a*/-*e*)
          i.e. forms where inflectional prefixes could be any of the following TAM,
          SM, NEG, OM, etc.; may include high tone on the first syllable of the stem

      f.   **Type 6**: Manner prefixes (*ka-*/*ma-*) + Radical + FV (-*e*)
          i.e. manner nominals

      g.   **Type 7**: Infinitival prefix + (inflectional prefixes) + Root/Radical + FV (-*a*)
          i.e. infinitival nominals

The configurations summarised in (9) show that deverbal nouns in Chichewa are
derived by a variety of strategies. In the next subsections, we examine each of them
in turn.

4.2 Type 1: Root/Radical + FV (-i/-o)

Type 1 deverbal nouns are characterised by the presence of FVs (-*i*/-*o*) and the
conspicuous absence of the so-called NCPs on singular forms. This type of dever-
bal noun is only attested in NC1, NC5 and NC9 as shown in (10), (11) and (12),
respectively.

(10) a.   **Verb-stem**   **Singular-Noun**   **Plural-Noun**
          gonth- a   *gónth- i*   *a- gónthi*
          ROOT- FV   ROOT- FV   PL- deaf.person

          'be deaf'   'deaf person'   'deaf people'

      b.   *funth- a*   *funth- i*   *a- funthi*
          ROOT- FV   ROOT- FV   PL- unruly.person

          'become mad'   'unruly person'   'unruly people'

(11) a. **Verb-stem**   **Singular-Noun**   **Plural-Noun**

zunz- a	*zúnz-* o	*ma-* zúnzo
ROOT- FV	ROOT- FV	PL- problem
'harass/oppress'	'crisis/problem'	'problems'

b.

yankh- a	*yankh-* o	*ma-* yankho
ROOT- FV	ROOT- FV	PL- answer
'answer'	'answer'	'answers'

(12) a. **Verb-Stem**   **Singular-Noun**   **Plural-Noun**

nol- a	*nol-* o	*ø-* nolo
ROOT- FV	ROOT- FV	PL- whetstone
'sharpen'	'whetstone'	'whetstones'

b.

ndond- a	*ndond-* o	*ø-* ndondo
ROOT- FV	ROOT- FV	PL- queue
'follow each other'	'queue'	'queues'

As generally observed in the previous studies, the FVs *-i* and *-o* participate in the derivation of some deverbal nouns in many Bantu languages (see i.a. Contini-Morava & Kilarski 2013: 270, Hyman 2022: 221-225, Kishindo 1985, Mchombo 1978: 107, 295, 2004: 113, Mletshe 2017: 31, Mugane 1997). In these studies, the FV *-i* has been described as the *agentive suffix* or actor-denoting morpheme which attaches to action verbs. The derived nouns generally have the meaning of 'one who verbs' – e.g. 'one who teaches'.[5] The FV *-o*, in turn, has been described as the non-agentive or non-actor morpheme which, according to Kishindo (1985: 6), derives nouns generally denoting 'object of V-ing' – e.g. 'object of writing' (Mchombo 2004: 113).

As the examples in (10) to (12) suggest, our dataset confirms the respective agent and non-agent denotations of these FVs. However, what has not been considered systematically in earlier studies on Chichewa nominalisation is the fact that the FVs *-i* and *-o* can also derive nouns without the aid of the so-called noun class prefixes. According to Mchombo (1978: 117), the type of nominalisation illustrated in (11) 'do[es] not appear to conform to the required standard'. To explain the lack of noun prefixes in NC5, many Bantuists resort to a diachronic account. For example, Mchombo (1978: 115-118) argues that the initial prefix in NC5 has been lost and that this type of nominalisation only applies to verbs whose initial segments are plosives or liquids (see also Kishindo 1985: 8). Mchombo further argues that those verbs that are not plosive- or liquid-initial such as *yankh-o* 'answer/reply', *sewer-o* 'play' and *funs-o* 'question' '…descended from earlier forms which had initial affricates rather

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[5] According to Comrie & Thompson (2007: 336), the label *agentive nominalisation* does not always mean that the derived noun is necessarily in an 'agent' relationship with the verb from which it is derived. For example, in English the deverbal noun *hearer* is non-agentive. The same observation applies to Chichewa.

than fricatives. … but somehow that did not lead to a reclassification of the nouns' (Mchombo 1978: 117).

The difficulty in Chichewa, however, is that deverbal nouns of this type are very common in NC5 and they include nouns with a wide range of initial characteristics, not just plosive- or liquid-initial nouns. Our dataset shows that 65.2% (62/94) of the deverbal nouns in NC5 are nominalised by this strategy. Further, deverbal nouns of this type in NC1 and NC 9 have not been considered in previous studies of Chichewa. Although their frequency is low (only 2.8%, or 5/176, in NC 1 and 3%, or 3/98, in NC 9), this remains a productive process, as confirmed by the morphological innovation that we see in the domain of loan words. For example, the English loan word *goal* has taken the following forms *gol-a* 'become a goal', *gol-i* (class 1 noun = 'goalkeeper') and *gol-o* (class 5 noun = 'goal post'). For Chichewa, then, deverbal nominalisation via *-i/-o* suffixation therefore needs to be recognised as a synchronically productive nominalisation mechanism whose effects are visible in 3 of the traditional noun classes.

The *-i/-o*-marked nominal form may further differ from the verb form by having a high tone on the first syllable. This appears to spread to the following syllables, but not to the FV domain. The high tone could thus be evidence that the nominalisation happens without/before the suffixation of FVs.

In the next section, we consider deverbal nouns that are derived in a similar manner, but that additionally involve prefixes in both the singular and plural form.

4.3 Type 2: Traditional noun prefix + Root/Radical + FV (-i/-o)

In standard Chichewa, Type 2 deverbal nouns are characterised by the presence of FVs *-o* and *-i* and the noun prefix on both singular and plural forms. Unlike Type 1 discussed above, Type 2 deverbal nouns are found in all the primary noun classes. Table 4 below shows the statistical distribution of these deverbal nouns in the various noun classes in Chichewa. The number column shows the Type 2 nouns against the total number of deverbal nouns per noun class. The other columns provide some relevant singular and plural examples.

Having presented Type 1 and 2 derived nouns, we note that they already present two key challenges to traditional analyses of nominalisation, namely those relating to (i) the role and distribution of the prefixes, and (ii) the distribution of the FVs *-i* and *-o* across the traditional noun class system.

Next, we consider Type 3 deverbal nouns. This type does not involve either the FVs *-i* or *-o* or the prefixes.

NC	Count	Percent	Verb	Prefix	Singular noun	Plural noun
1/2	31/176	18%	*lim- a* ROOT- FV 'farm'	*m-*	m- *lim- i* SNG- ROOT- FV 'farmer'	*a- lim- i* PL- ROOT- FV 'farmers'
3/4	98/122	80%	*teng- a* ROOT- FV 'take'	*m-*	m- *teng- o* SNG- ROOT- FV 'price'	*mi- teng- o* PL- ROOT- FV 'prices'
5/6	14/96	15%	*lip- a* ROOT- FV 'pay'	*l-, d-*	*dip- o* SNG.ROOT- FV 'fine/payment'	*ma- dip- o* PL- ROOT- FV 'fines/payments'
6	15/39	38%	*lir- a* ROOT-FV 'cry'	*ma-*	*ma- lir- o* SNG- ROOT- FV 'funeral'	*ma- lir- o* PL- ROOT- FV 'funerals'
7/8	74/129	57%	*gon- a* ROOT- FV 'sleep'	*chi-*	*chi- gon- o* SNG- ROOT- FV 'rest house'	*zi- gon- o* PL- ROOT- FV 'rest houses'
9/10	47/97	48%	tay- a ROOT- FV 'lose'	*N-, i-*	*ntháy- o* SNG.ROOT- FV 'abortion'	*ø- ntháy- o* PL- ROOT- FV 'aborted foetuses'
14/6	5/29	17%	*batiz- a* ROOT- FV 'baptise'	*u-*	*ubatiz- o* SNG.ROOT- FV 'baptism'	*ma- ubatiz- o* PL- baptism- FV 'baptisms'

Table 4 Distribution of Type 2 nouns across the Chichewa noun class system.

4.4 Type 3: Root/Radical + FV (-a/-e)

As was pointed out above, deverbal nouns in Chichewa can also be obtained by means of conversion, i.e., without any overt marking by the noun-associated FVs *-i* and *-o*, or the prefixes. This is a very surprising possibility if we take the traditional views on nominalisation into account. We will refer to this conversion-centred

group as Type 3. As was the case for Type 1, these nouns are only found in NC1, NC5 and NC9. Consider (13) and (14), respectively.

(13) a. **Verb**   **Singular-Noun**   **Plural-Noun**
        nyeng- a   *nyénga (NC1)*   *a- nyénga (NC2)*
        ROOT- FV   N.STEM   PL- deceiver

        'deceive'   'deceiver/mongoose' 'deceivers'

    b. *gogomol- a*   *gógómóle (NC1)*   *a- gógómóle   (NC2)*
        ROOT-   FV   N.STEM   PL- woodpecker

        'hatch (eggs)'   'woodpecker'   'woodpeckers'

(14) a. **Verb**   **Singular-Noun**   **Plural-Noun**
        lemb- a   *lémba (NC5)*   *ma- lémba (NC6)*
        ROOT- FV   N.STEM   PL- letter

        'write'   'letter/script'   'letters/scripts'

    b. *ful- a*   *fule   (NC5)*   *ma- fule (NC6)*
        ROOT- FV   N.STEM   PL- heap.of.soil

        'burrow/dig'   'heap of soil'   'heaps of soil'

    c. *phukir- a*   *phukíra (NC9)*   *phukíra (NC10)*
        RADICAL- FV   N.STEM   N.STEM

        'germinate'   'sprout'   'sprouts'

Like Type 1 and 2 nouns, in some cases, the difference between the verbal and nominal readings is marked by tone differences, specifically the high tone introduced on the first syllable of the stem. These deverbal nouns are, however, different from Type 1 and 2 nouns as they end in the FVs *-a* and *-e*. Since these final vowels have been said to mark verbal categories like the subjunctive (see i.a. Hyman & Mtenje 1999: 111, Maho 1999: 78, Mchombo 2004: 22, 28, 67, Mtenje 2002: 7, 2007: 35), the implication is that the nominalisation process modifies the inflected verb and not the verb root/radical, as appears to be the case with Type 1 and 2. Taken together, Type 1 and Type 3 might therefore suggest that Chichewa can nominalise bases of different 'sizes', both uninflected verb radicals (e.g. Type 1) and inflected verb stems (forms of the kind found in Type 3).

4.5 Type 4: Traditional noun prefix + Root/Radical + FV (-a/-e)

The set of derived nouns presented in this section comprises deverbal nouns with both FVs (*-a* and *-e*) and prefixes. These nouns are thus the prefixed versions of Type 3 above. The prefixes involved are well known in the Bantu literature as putative NCPs which also alternate between singular and plural. Unlike their unprefixed counterparts, Type 3, which only features in NCs 1, 5 and 9, the deverbal nouns

under consideration here are found in all the primary traditional noun classes. Consider Table 5.

NC	Number	%	Verb root	Prefix	Singular Noun	Plural Noun
1/2	4/176	2.2	*lond- a* ROOT- FV 'guard'	*m-*	*m- lónda* SNG- N.STEM 'guard'	*a- lónda* PL- N.STEM 'guards'
3/4	23/122	18.8	*pit- a* ROOT- FV 'go'	*m-*	*m- píta* SNG- N.STEM 'duct/path'	*mi- píta* PL- N.STEM 'ducts/paths'
5/6	6/93	6.4	*kumb- a* ROOT- FV 'dig'	*li-*	*li- kúmba* SNG- N.STEM 'narrow way'	*ma- likúmba* PL- N.STEM 'narrow ways'
6	22/37	59	*lodz- a* ROOT- FV 'bewitch'	*ma-*	*ma- lódza* SNG- N.STEM 'calamity'	*ma- lódza* PL- N.STEM 'calamities'
7/8	47/129	36.4	*yabw- a* ROOT- FV 'itch'	*chi-*	*chi- yábwe* SNG- N.STEM 'itchy caterpillar'	*zi- yábwe* PL- N.STEM 'itchy caterpillars'
9/10	46/97	47.4	*kalamb- a* ROOT- FV 'be old'	*N-*	*n- khalámba* SNG- N.STEM 'elderly person'	*nkhalámba* PL.N.STEM 'elderly people'
14/6	4/28	22	*lond- a* ROOT- FV 'guard'	*u-*	*u- lónda* SNG- N.STEM 'watchman hood'	UNCOUNTABLE - -
Total	***152/683***	***22***	-	-	-	-

Table 5 Statistical distribution of Type 4 nouns across the Chichewa noun class system.

As shown in Table 5, these nouns seem to be derived by means of attaching the so-called NCPs, which alternate between the singular and plural. Another set of deverbal nouns that are closely related to this group involves noun prefixes that are not considered as productive or that are generally left out in the description of the Chichewa and Bantu NC system. Because these need to be introduced in a special way, we designate them as Type 5.

4.6 Type 5: Inflectional prefix + Root/Radical + FV (-a/-e)

Type 5 deverbal nouns are derived by prefixes that do not serve as traditional NCPs in Chichewa. In addition, some of the derived nouns have a more complex structure, bearing one or more of a range of inflection-related prefixes such as TAM, OMs, SMs, negation markers (Neg), directional markers (DRM), etc. Consider the following examples.

(15) a.

Verb	**Singular-Noun**	**Plural-Noun**
pasul- a	*ka- pasule*	*a- kapasule*
ROOT- FV	DRM- untie/devastate	PL- spy/backbiter
'untie/devastate'	'spy, backbiter'	'spies/backbiters'
		Lit.: 'one who goes to destroy'

b.

khut- a	*sa- khúta*	*a- sakhúta*
ROOT- FV	NEG- be.satisfied	PL- glutton
'be satisfied'	'glutton'	'gluttons'
		Lit.: 'one who does not get satiated'

c.

-f- a	*na- ku- fa*	*a- nakufa*
ROOT- FV	TAM- OM- be.dead	PL- dead.person
'die'	'dead person'	'dead people

d.

-tch- a	*na- dzí- tche*	*a- nadzítche*
ROOT- FV	TAM- REFL- give.a.name	PL- namesake
'give a name'	'namesake'	'namesakes'

e.

tay- a	*ma- taya*	*a- mataya*
ROOT- FV	TAM- throw.away	PL- affluent.person
'throw away'	'affluent person'	'affluent people'
		Lit.: 'one who throws (things) away.'

f. | *lem-* | *a* | | *nd-* | *a-* | *lema*[7] | | *nd-* | *a-* | *lema*[8] |
|---|---|---|---|---|---|---|---|---|---|
| ROOT- | FV | | 1st^prs- | PRES- | be.tired | | 1st^prs | PRES- | be.tired |

'be tired'   'an easy chair'   'easy chairs'
Lit.: 'I am tired.'

g. | *-dy-* | *a* | | *a-* | *ba-* | *ka-* | *dya* | | *a-* | *ba-* | *ka-* | *dya* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ROOT- | FV | | SM- | PROG- | DRM- | eat | | SM- | PROG- | DRM- | eat |

'eat'   'glutton'   'gluttons'
Lit.: 'They are still eating'

Unlike the prefixes considered so far, some of the prefixes illustrated in (15) form part of the verb base, where they play inflectional functions. One important piece of evidence is that they pluralise additively, i.e., the plural prefix does not replace the existing prefix (see Maho 1999: 59). Since the plural-marking prefix is external to the 'original' NCP, it looks as if the prefixes in (15) are embedded below the number projection in the structure of these nominals.

However, with specific reference to *ka-*, *na-*, and *ma-*, it is important to note that there are homophonous counterparts that attach to clearly nominal bases (see 16 below). Since these do not derive deverbal nouns, we do not consider them as part of the deverbal nouns dataset. As they do shed light on aspects of the problem we are concerned with here, we will, however, briefly outline their properties (for a detailed discussion, see Msaka 2024).

Focusing on the prefixes *ka-* and *na-* first: in addition to the inflectional function illustrated in (15), the prefixes *ka-* and *na-* are found in three other environments.

First, they attach to nominal stems to derive nouns that control agreement markers associated with the traditional NC1, as shown in (16).

(16) a. | **Stem** | **Singular-noun** | **Plural-noun** |
|---|---|---|
| *litsiro* | *ka-* *litsiro* | *a-* *kalitsiro* |
| dirt | PRE- dirt | PL- dirty.person |
| | 'a dirty person' | 'dirty people' |

b. | *nyongo* | *ná-* *nyongo* | *a-* *nányongo* |
|---|---|---|
| gall bladder | PRE- gall bladder | PL- clitoris |
| | 'clitoris' | 'clitorises' |

Here *ka-* and *na-* have the common function of creating forms with associative meanings, i.e., 'of x property/action/state'. According to the existing literature, the noun-related prefixes *ka-* and *na-* have been analysed as frozen prefixes, i.e., they have become part of the noun stems (see Cole 1955: 11, Doke 1927: 198, Givón 1971:

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8   *Ndalema* alternates with an alternative singular form, *nalema*; and the same is true for the plural. In both the singular and plural, we therefore have alternation between *ndalema/nalema*.

8   Because this noun does not morphologically mark the plural form, the dictionary entry classified it as belonging to NC9. However, the word triggers NC1 agreement in standard Chichewa.

35, Lombard 1985: 33, Maho 1999: 74–75, 252–253, Vail 1971: 40). Some studies claim that the *na-* affix forms the clan-names subclass NC1a (see Givón 1971: 35). However, Msaka (2019: 85-101) observes that, in addition to the traditional NC1 prefix *m(u)-*, Chichewa in fact has further productive prefixes, such as *ka-* and *na-*, which derive nouns that trigger NC1 agreement. These prefixes are also observed to systematically derive nouns by attaching to nominal stems, as shown in (16) (see Msaka 2019: 90-95).

The second morphological function of the homophonous prefix *ka-* is to derive diminutive (DIM) nouns, those associated with NC12 in the Bleek-Meinhof noun class schema. The DIM *ka-* is very different from the *ka-* associated with NC1 nouns illustrated in (15-16). The DIM *ka-* is highly predictable as it attaches to any noun to show diminution (17) and triggers the agreement marker *ka-* on words in construction with the noun (18).

(17) a. *galu*   ***ka-*** *galu*
          dog   DIM- dog

          'dog'   'small dog'

      b. *nyumba*   ***ka-*** *nyumba*
          house   DIM- house

          'house'   'small house'

(18) ***Ka-*** *galu* ***ka-*** *modzi* ***ka-***   *bwer-*   *a.*
      DIM- dog am- one   SM.PRS- ROOT(come)- FV_indicative

      'The small dog has come.'

The non-DIM nouns in (16) differ significantly from the DIM type in (17) in the sense that the former derives ordinary nouns while the latter specifically derives diminutive nouns. In addition, the two noun types control different agreement markers, an indication that they belong to different noun classes, the non-DIM nouns belong to NC1 and the DIM type to NC12.

The third homophonous *ka-* and *ma-* derive another class of nouns namely, manner nominals. Manner nominals are discussed next.

4.7 Type 6: Manner nominals

The set of nouns under discussion in this section are derived by attaching prefixes *ka-* and *ma-* to passivized verbal expressions deriving what are known as *manner nominals*.[9] According to Mchombo (2004: 115), the derived nouns mean roughly 'the manner of V-ing' or, in Comrie & Thompson (2007: 339)'s terms, 'way of verbing'. Consider the examples in (19).

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[9] Passive morphemes in Chichewa take two forms, *-idw-* or *-edw-*, the variations being subject to vowel harmony (Mchombo 2004: 115). For more details about vowel harmony in Chichewa, see Mtenje (1985) and Mchombo (1993, 1999).

(19) a. *ganiz- a*   *ganiz- idw- a*   *ka- ganizidwe/ma- ganizidwe*
          ROOT- FV   ROOT- pass- FV   MN- be.thought/MN- be.thought

          'think'   'be thought'   'manner of thinking'

      b. *lemb- a*   *lemb- edw- a*   *ka- lembedwe/ma- lembedwe*
          ROOT- FV   ROOT- PASS- FV   MN- be.written/MN- be.written

          'write'   'be written'   'manner of writing'

      c. *lim- a*   *lim- idw- a*   *ka- limidwe/ma- limidwe*
          ROOT- FV   ROOT- PASS- FV   MN- be.farmed/MN- be.farmed

          'farm'   'be farmed'   'manner of farming'

Manner nominals are derived in a predictable way; as such, they are also mostly not lemmatised in the dictionary, the exception being very few lexicalised forms such as *ma-limidwe* 'manner of farming/farming practice.'

Manner nominals function like any other noun in Chichewa. Consider the following manner nouns in context.

(20) a. *Ka- dy- edw- e*   *ka- wo*   *ti- ku- ka- dziwa.*
          MN- eat- PASS- FV   am- POSS   SM- PROG- OM- know

          'We know their diet/manner of eating.'

      b. *Anthu   a-   phunzir- a*   *za ma-/ka- lim-   idw- e.*
          people   SM.PRS- learn-   FV   of MN-   cultivate- PASS- FV

          'People have learnt about farming practices/manner of farming.'

Mchombo (2004: 16) associates the prefixes *ka-* and *ma-* with the DIM prefix for NC12 and the prefix for NC6 (the plural counterpart of NC5), respectively. However, Mchombo's (2004) analysis of the prefix *ka-* is problematic since the morpho-semantic status of the DIM NC12 prefix is different from that associated with manner nominals. The *ka-* in manner nominals does not produce a diminutive reading, as shown in (19). However, the prefixes *ka-* and *ma-* seem to be related to the processes discussed in section 4.5, where the prefixes attach to bases that can stand alone. Consider the fact that in some instances, the passivized base can be nominalised through conversion (21a) and that it can also take the other regular prefixes *chi-* and *m-* (21b-21d).

(21) a. *khal- a*   *khal- idw- a*   *khal- idw- e*
          ROOT- FV   ROOT- PASS- FV   ROOT- PASS- FV

          'sit'   'be sat'   'behaviour'

      b. *khal- a*   *khal- idw- a*   *chi- khalidwe/m- khalidwe*
          ROOT- FV   ROOT- PASS- FV   MN- be.sat/MN-   be.sat

          'sit'   'be sat'   'manner of sitting/behaviour'

c.   *leng-*   *a*   *leng-*   *edw-* *a*   *chi-* *lengedwe/*m- leng- edw- e*
      ROOT- FV   ROOT- PASS- FV   MN- be.created

      'create'   'be created'   'creation'

d.   *chit-*   *a*   *chit-*   *idw-* *a*   *m-*   *chitidwe/*chi-chit-idw-e*
      ROOT- FV   ROOT- PASS- FV   MN- be.done

      'do'   'be done'   'manner of doing/practice'

As shown in (21), the regular prefixes *m-* and *chi-* also derive nouns by attaching to passivized verbs. However, the distribution of prefixes *chi-* and *m-* is not as regular and predictable with manner nominals, as is the case with prefixes *ka-* and *ma-*. Tellingly, it is also the latter prefixes that serve as the basis for neologisms, i.e. *ka-* and *ma-* are productive in a way that *m-* and *chi-* are not. Concluding on the structure of manner nominals, then, it appears that the prefixes *ka-* and *ma-* have the same status as those discussed in Type 4 (see section 4.5). Here, the prefix attaches to nominalised stems in the same manner as they attach to other nominal expressions.

The last type of deverbal nouns in Chichewa centres on infinitival expressions. We consider these next.

4.8 Type 7: Infinitival deverbal nouns

The seventh type of deverbal nouns corresponds to the NC15 nominal expressions recognised in traditional analyses. These deverbal nouns carry the infinitival prefix *ku-* with the verbal part ending with the FV *-a*. Consider (22):

(22) a.   *-dy-*   *a*   **ku-** *dya*
       ROOT- FV   INF- eat

       'eat'   'to eat/eating'

   b.   *yend-* *a*   **ku-** *yend-*   *a*
       ROOT- FV   INF- root (walk)- FV

       'walk/move'   'walking/moving'

Just like manner nominals, infinitival nouns are derived by a predictable morphological process such that this type of deverbal noun is not lemmatised in the Chichewa dictionary. Although they are not represented in the dictionary, infinitival nouns are well known expressions in the Bantu literature (see i.a. Makeeva & Ryabova 2020, Schadeberg & Bostoen 2019: 188, Visser 1989). Given that we have observed that some prefixes found on Type 5 deverbal nouns form part of the verbal complex, we need to also consider whether the so-called infinitival prefix is in fact a NCP or part of the verbal complex.

The common view in Bantu is that the infinitive prefix is like any other NCP which attaches to a particular stem to derive a noun (see i.a. Cole 1955: 96, Corbett & Mtenje 1987: 27, Du Plessis 1982: 6, Makeeva & Ryabova 2020: 196, Mchombo

2004: 6, Schadeberg & Bostoen 2019: 188). However, Visser (1989: 187) argues that the nominal infinitives in isiXhosa and related Bantu languages do not, in fact, have an overt noun prefix. In other words, the nominal reading of the infinitival noun is not a consequence of attaching the prefix *ku-*, as is traditionally assumed; rather, it is a result of the attachment of a covert nominaliser to the entire infinitival phrase, with *ku-* constituting part of the verbal base which serves as the input to the nominalisation process. Accepting this to be the case, the infinitival prefix *ku-* can therefore be treated in a similar way to the other verbal prefixes that appear on other deverbal nouns, especially Type 5 above.

4.9 Interim summary

Summing up the empirical patterns presented in section 4, two observations stand out: (a) the range of mechanisms that derive deverbal nouns, and (b) the range of bases that undergo nominalisation.

With respect to the former, we have shown that the derivation of deverbal nouns in Chichewa involves at least four mechanisms, namely (i) prefixation only, (ii) prefixation and suffixation (iii) suffixation only, and (iv) conversion. See Table 6 for a complete overview:

	Schema	Observed mechanisms
1.	Root/radical + FVs (-*i* or -*o*)	Suffixation (high tone)
2.	NCP + root/radical + FVs (-*i* or -*o*)	Prefixation, suffixation (high tone)
3.	Root/radical + verb stem	Conversion (high tone)
4.	NCP + verb stem	Prefixation (high tone)
5	Derivational prefixes + verb stem	Conversion
6.	Infinitival prefix (*ku*) + verb stem/phrase	Conversion
7.	Manner prefixes (*ka-/ma-*) + passivized verb phrase	Conversion

Table 6   A summary of nominalisation schemas in Chichewa.

Five of the 7 Types identified – Types 1, 3 and 5-7 – are unexpected in light of the widespread perception that NCPs are a key or perhaps even essential component of the nominalisation process: none of these cases feature a traditional NCP. This is a challenge for Distributed Morphology (DM)-inspired views in terms of which NCPs are taken to instantiate nominalisers, i.e. *ns* (see section 2.2 above, and see Fuchs & van der Wal (2021) for a particularly clearly formulated recent analysis along these lines).

Similarly, the fact that none of Types 3-7 requires suffixation of a nominal FV -*i* or -*o* in order to create what appears to be a verb-derived nominal suggests that this element probably also cannot be viewed as a nominaliser (a DM *n*), contrary to many of the analyses presented in section 2.2. Types 3 and 5-7 are particularly telling against the backdrop of existing proposals: these types – the latter of which

our discussion has shown to be productive (see again section 4.4 and section 4.6-section 4.8) – do not require either a traditional NCP or a nominal FV. Taken together, these facts raise the question: what is the source of the nominalisation in Chichewa nominals?

Regarding the range of bases that undergo nominalisation, in turn, we have shown that nouns can be derived from bases of strikingly different sizes. Type 1 and 2 derive nouns from roots or radicals, which appear to be the smallest bases that are in play here. It is not clear that nominalisations deriving from these bases can in fact always accurately be classified as *deverbal*: for Type 1, for example, there are some forms (see 10-12 above) with no overt reflexes of verbal morphology, either in the form of a FV or in the form of verbal (CARP) extensions; for Type 2, CARP extensions may be present, but the FV typically associated with verbs (*-a* and *-e*) is not. If Type 1 and Type 2 bases are indeed verbal, the verbalising component must be phonetically unrealised, and it cannot be the case that FV *-a* and *-e* are required to produce a verbal form. In DM terms, then, FV *-a* and *-e* cannot be spellouts of v. Given what we have just concluded about the role of FVs *-i* and *-o* – namely, that these rather frequently do not seem to be essential to nominalisation (see the discussion in the previous paragraph) – this may, of course, not be an unreasonable conclusion.

Types 3 and 4, however, can be said to derive from verb stems, if we adopt the view that FVs *-a* and *-e* are verbal. Finally, Types 5, 6 and 7 are derived from more complex verbal elements, which include not only a verbal FV, but, additionally also, inflectional material such as OM, DRM, TAM, NEG, and so on. Leaving open the possibility that one or both of the smallest bases (Types 1 and 2) may not actually be verbal, there would then seem to be at least 5, and possibly as many as 7, sources for deverbal nominalisation in Chichewa.

5 Nominalisation without Traditional noun class prefixes: some Further Data

Recall that an initial consideration of the mechanisms that produce the deverbal nouns that are traditionally assigned to singular noun classes 1, 3, 5, 6, 7, 9, 14 and 15 in Chichewa delivered Table 2 (? Represents a group of deverbal nominalisations that cannot readily be assigned to one of the traditional NCs). The Table is repeated as Table 7 for convenience.

As Table 2/Table 7 shows, deverbal nominalisation mechanisms that do not require prefixes surface in NCs 1, 5 and 9. Prefixless mechanisms are, in fact, robustly attested in NCs 1 and 5, and they also constitute a less frequently attested option in NC9. More precisely, our data shows that only 17% (31/176) of deverbal nouns in NC1 feature the prefix traditionally associated with NC1 (*m*-), with only 7.5% (7/93) of the deverbal forms in NC5 featuring that class's traditional *li*-prefix (see Table 4). This distribution pattern accords with Msaka's (2019: 86) finding that traditional NC prefix, i.e. *m*-initial, nouns make up only 12% (150/1222) of all nouns that control NC1 agreement markers in the dataset extracted from the *Chichewa Monolingual Dictionary*.

NC	Mechanism	Example	AM
1	i. *m(u)-*	**m**-*lónda* (PRE-watch ->'guard')	*m(u)-, (w)a-*
	ii.*ka-*	**ka**-*fumbata* (PRE-clench ->'tetanus')	
	iii. *na-*	**na**-*ku-fa* (PRE-INF-die ->'dead person')	
	iv. *sa-*	**sa**-*khúta* (PRE-be satiated ->'glutton')	
	v. *ma-*	**ma**-*taya* (PRE-throw ->'affluent person')	
	vi. *m(u)- and -i*	**m**-*sodz-i* (PRE-fish-SUFFIX ->'fisherman')	
	vii. *conversion*	gogoda (knock ->'high heeled shoe')	
	viii. *-i*	*gónth-**i*** (be deaf-SUFFIX ->'deaf person')	
3	i. *m(u)-*	**m**-*píta* (PRE-go ->'path')	*u-*
	ii. *m(u)- and -o*	**m**-*chéz-o* (PRE-chat-SUFFIX ->'chat')	
5	i. *l-/d-*	**li**-*wamba* (PRE-roast ->'hunting spree')	*li-*
	ii. *l-/d-* and *-o*	**d**-*ip-o* (PRE-pay-SUFFIX ->'ransom')	
	iii. conversion	*sosa* (clear the garden ->'the act of clearing the garden')	
	iv. high tone	*lémba* (write ->'letter/scripture')	
	v. *-o*	*fan-**o*** (be similar-SUFFIX ->'sculpture')	
6	i. *ma-*	**ma**-*lódza* (PRE-bewitch ->'strange things')	*a-*
	ii. *ma* and *-o*	**ma**-kupe (PRE-fan ->'wings')	
		ma-*lir-o* (PRE-cry-SUFFIX ->'death')	
7	i. *chi-*	**chi**-*líza* (PRE-make cry ->'tombstone')	*chi-*
	ii. *chi-* and *-o*	**chi**-*bay-o* (PRE-stab- SUFFIX ->'pneumonia')	
9	i. *-o*	*nol-**o*** (sharpen- SUFFIX ->'whetstone')	*i-*
	ii. *N-*	**m**-*phukíra* (PRE-germinate ->'newly germinated plant')	
	iii. conversion	*phukíra* (PRE-germinate ->'edible sprout')	
	iv. *N-* and *-o*	**n**-*khódz-o* (PRE-kodz-SUFFIX ->'urine')	
	v. *i-*	**i**-*m-fa* (PRE-*PRE-die* ->'death')	
14	i. *u-*	**u**-*lónda* (PRE-guard ->'security profession')	*u-*
	ii. *u-* and *-o*	**u**-*chím-o* (PRE-sin - SUFFIX ->'sin')	
	iii. *u-* and *-i*	**u**-*lim-i* (PRE-farm-SUFFIX ->'farming')	
15	i. *ku-*	**ku**-*dya* (PRE-eat -> 'eating')	*ku-*
?	i.*ma-*	**ma**-*dy-edw-e* (PRE-eat-PASS-FV ->'manner of eating')	*a-*
	ii. *ka-*	**ka**-*dy-edw-e* (PRE-eat-PASS-FV ->'manner of eating')	*ka-*

Table 7   Mechanisms that derive deverbal nouns in Chichewa: repeated from Table 2.

Significantly, this observation about the very limited extent to which some of the traditional NCPs actually seem to derive the nouns found in the NCs they are associated with is echoed in two further contexts. The first relates to a variety of Chichewa spoken in parts of the Zomba, Phalombe, and Mulanje districts and popularly known as *Jali Chichewa*. This variety omits the prefix on many deverbal and non-deverbal/'non-derived' nouns in NC1, NC3, NC7 and NC9. Consider Table 8 in this regard.

As in Table 8, singular nouns in the Jali variety lack a prefix, both when they appear to be derived from verbs (a-c) and when they do not (d-f). Significantly, these nouns unproblematically trigger the relevant NC-related agreement, i.e., they behave completely normally in that regard.

		Jali Chichewa		Standard Chichewa	
	Root/stem	Singular	Plural	Singular	Plural
a.	*phik- a* ROOT- FV 'cook'	*phika* NC3 'pot'	*mi- phika* NC4- pot 'pots'	*m- phika* NC3- cook 'pot'	*mi- phika* NC4- cook 'pots'
b.	*phunz- its- a* ROOT- CAUS- FV 'cause to learn'	*phunzitsi* NC1 'teacher'	*a- phunzitsi* NC2- teacher 'teachers'	*m- phunzitsi* NC1- teacher 'teacher'	*a- phunzitsi* NC2- teacher 'teachers'
c.	*teng- a* ROOT- FV 'take'	*teng- o* NC3- FV 'price'	*mi- teng- o* NC4- price- FV 'prices'	*m- teng- o* NC3- take- FV 'price'	*mi- teng- o* NC4- take-FV 'prices'
d.	*-tsíkana* STEM	*tsíkana* NC1 'girl'	*a- tsíkana* NC2- girl 'girls'	*m- tsíkana* NC1- girl 'girl'	*a- tsíkana* NC2- girl 'girls'
e.	*-tedza* STEM	*tédza* NC3 'peanut'	*tédza* NC3 'peanuts'	*m- tédza* NC3- peanut 'peanut'	*m- tédza* NC3- peanut 'peanuts'
f.	*-nyezi* STEM	*nyezi* NC3 'moisture'	*nyezi* NC3 'moisture'	*chi- nyezi* NC7- moisture 'moisture'	*chi- nyezi* NC7- moisture 'moisture'

Table 8 Prefixation differences between Jali Chichewa and Standard Chichewa.

Consider the following examples:

(23) a. *Tsikana* *m-* *modzi* *wa-* *pita.*
         girl   1- one   1.PRS- go

      'One girl is gone.'

    b. *Nyezi*   *u-* *wu* *u-* *ku-* *chokera*   *pansi.*
         moisture 3- this 3- INF- come.from below

      'This moisture is coming from underground.'

As shown in (23), the nouns that do not require prefixes control agreement within the NP and on the verb just like those that do bear noun prefixes (see (1) above).

The second context that calls into question the usually assumed role of noun prefixes in Bantu nominalisation and noun classification comes from language acquisition studies across many Bantu languages. These studies have shown that children use forms such as those of Jali Chichewa before they learn to use forms featuring the required noun prefixes (see i.a. Demuth 1988: 73, Herbert 1991: 110–111). Consider the stages summarised in (24).

(24) Stages in the acquisition of Bantu noun class prefixes (Demuth 2000: 283).

    a. No prefixes (full or partial noun stems)

    b. 'Shadow' vowel and nasal prefixes

    c. Full morphophonologically appropriate noun class prefixes.

The stages in (24) are illustrated with the Sesotho adult target form *se-tulo* 'chair', which manifest as follows:

(25) The variation of the Sesotho noun *setulo* (Demuth & Wechsler 2012: 73).

    a. *ø-tulo* 'chair'

    b. *e-tulo*

    c. *se-tulo*

Taken together, what the Chichewa deverbal nominalisation, Jali Chichewa and Sesotho noun class acquisition facts show us is that the various kinds of deverbal nouns that do not require prefixes in their singular should not be viewed as a peculiarity; rather, they seem to constitute an option in the grammar of Chichewa that has the potential to be further exploited than it is in the standard variety. At least as far as Chichewa is concerned, then, there appear to be a range of empirical reasons to doubt the widespread view that the traditional NCPs are nominalisers (*n*s).

6 Conclusion

This paper set out with the objective of offering a more comprehensive overview of the processes giving rise to deverbal nouns in Chichewa. Detailed consideration of data deriving from the *Chichewa Electronic Monolingual Dictionary*, a range of secondary sources, examples produced by native-speakers of Malawian Chichewa varieties, and the first author's own native-speaker knowledge revealed at least four mechanisms that produce deverbal nominalisations: prefixation only, prefixation and suffixation, suffixation only, and conversion. These mechanisms interact to combine with bases of different sizes, not all of which are, upon closer inspection, uncontroversially verbal, to produce seven broad schemas (Types) for deverbal nouns in Chichewa (see section 4 and Table 6 for an overview).

The schemas are informative regarding the distribution and nature of prefixes and suffixes in deverbal nouns in Chichewa. First, the well-known traditional noun class-related prefixes are not found in all the deverbal nouns: they are, in fact, absent in the majority of Types. Similarly, the FVs that are typically associated with nominals (*-i* and *-o*) are mostly absent: only two of the Types features these FVs. Importantly, the seven Types are distributed across the NCs identified in the traditional literature (see Table 4 and Table 5, by way of illustration).

For Chichewa, then, there is significant empirical evidence challenging the widely accepted NCP-oriented approach to noun classification and the way in which singular number marking is realised. Our empirically oriented investigation of Chichewa has shown that the prefix is by far not the only element involved in the nominalisation process. In addition, where the prefix is involved, it is not always clear that it is serving a nominalising rather than a more specific nominal function, e.g. number marking. This, of course, raises the question: what is the source of nominalisation in Chichewa nominals, deverbal and otherwise? And, looking beyond Chichewa: is the situation described here replicated in other Bantu languages, or is there previously unnoted variation across Bantu in respect of how (deverbal) nominalisation is achieved? We leave these questions to future research, though see Msaka (2019) and Msaka & Biberauer (2024) for further consideration of the Chichewa facts. For the moment, we conclude this paper by observing that our understanding of deverbal nouns in Bantu languages may well be very incomplete, given its strong focus, to date, on the prefix-suffix debate (see section 3). We hope that this initial work will stimulate further research that takes into account a wider empirical picture.

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