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The morphological and syntactic functions of Dagbani nominal suffixes

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Abstract

One of the defining morphological properties of nouns and adjectives of Dagbani (a Gur/Mabia language of northern Ghana) and related languages is the presence of suffixes that mark number (singular or plural) as well as serve as the basis for noun classification. The typical regular noun or adjective (e.g. *bi-a* 'a child') consists of a bound root (*bi-*) providing the lexical meaning, and a suffix (*-a*) which indicates the singular number of the noun. In plural form, the suffix is replaced by a different one that marks plurality: (*bi-hi*). In this paper, we show that while this broad description is generally accepted, it is much weaker than assumed in previous studies, with many inconsistencies. As our main goal, we offer a much broader analysis of the morphological and syntactic functions of the nominal suffixes. We show that these suffixes are primarily there to project lexical words as nouns and adjectives and should be referred to as nominal suffixes used to inflect inherent nouns and derive nouns and adjectives from verbs. The nominal suffixes are also crucial to distinguishing between different compound nouns and noun phrases. The paper is largely descriptive, with no specific theoretical approach assumed.

Key words

Nominal morphology; number marking; suffixes, Dagbani, Gur/Mabia languages

1. Introduction

The presence of suffixes that function as number markers as well as serve as the basis for noun classification is one of the defining morphological properties of nouns and adjectives of Dagbani (a Gur/Mabia language of northern Ghana). As discussed extensively in previous studies, (e.g. Olawsky 1999, 2004, Hudu 2005, 2010, 2014, Issah 2013), a regular noun or adjective minimally consists of a lexical root that provides the lexical meaning, and a suffix. The lexical root is bound to the suffix, with which it must surface. The suffix provides non-lexical information, the principal being an indication of singular or plural number on the noun. Thus, both root and suffix are bound to and complement each other. For instance, in the word *bi-a* 'a child', the root *bi* does not surface in isolation without the suffix. In plural form, the suffix is replaced by a different one that marks plurality: *bi-hi*.

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While this broad description is generally accepted, a closer look at the morphology of nouns and adjectives in Dagbani shows that the role of these nominal suffixes has not been thoroughly studied. The weakness of this non-thorough analysis is that number marking is claimed to be the distinctive role of the nominal suffixes, and no other role of these suffixes, if at all recognized, is given sufficient attention. The major goal of this paper is to offer a much broader analysis of the morphological and syntactic function of the nominal suffixes. The paper also re-examines the much-touted number-marking function of nominal suffixes, and show that it is much weaker than assumed in previous studies and cannot be regarded as the primary function of these suffixes.

The paper is largely descriptive, with no specific theoretical approach assumed in the analysis provided. It uses a combination of secondary data and primary data elicited from five native speakers, which included the authors. The analysis also does not focus on one dialect of the language. As authors who speak different dialects of the language, we present data that are representative of the Eastern and Western dialects. Since no aspect of the analysis requires reference to tone, tone is not marked. Even though several non-contrastive sounds, espcially those that surface in allomorphs in specific environments are used in the transcription, the data are not presented in detailed phonetic transcription. The transcription is largely phonemic, using IPA, not in the orthography of the language. The use of IPA and phonetic realization of sounds in the surface forms of some morphemes are useful in showing the actual realizations of morphemes, which will contribute to a greater understanding of the issues discussed.

In the rest of the introduction, we look into the literature, reflecting on the paucity of research on the morphology of the language and highlighting the major claims about nominal suffixes. In Section 2, we discuss the inflectional and derivational suffixes and their roles as number markers. Section 3 lays out the problem with undue focus on the role of suffixes as distinctive number markers, including observations already made in the literature. In Section 4 we pick one of these observations, the lack of consistency in the number-marking role of suffixes, and discuss it in further detail to demonstrate that the number-marking function is less reliable than assumed. We show that nominal suffixes show gross inconsistency as number markers, which calls for a rejection of number marking as their distinctive role. Section 5 delves into the much broader and consistent, yet largely unnoticed, roles of these suffixes in Dagbani morphology and syntax. It shows that the distribution of these suffixes is at the centre of the distinction between derived and non-derived nouns and different compound types in the language. Section 6 provides the summary and conclusions.

1.1 The paucity of research on Dagbani morphology

For a long time, Dagbani has been described as an understudied language in linguistic research. While that is gradually changing, with relatively more research in aspects of its phonology and syntax, research on its morphology has relatively lagged. Studies on aspects of the morphology since Olawsky (1999, 2004) have mostly been confined to sections of much wider studies, with recent exceptions being Issah (2013). The result of this lesser focus on the morphology is that many claims that have been made in earlier studies have remained unexamined. One of them is the function of suffixes that form part of nouns and adjectives in their citation forms.

The study of Dagbani nominal suffixes and comparison with related languages has received considerable attention in the existing studies on the morphology of the language. However, all the existing observations appear to be focused on simplex nouns and adjectives, consisting of the root and the number suffix. Many other contexts within which these suffixes surface and the role they play in these contexts have not received enough attention. This includes derived nouns and adjectives, different types of compounds, and phrases. In this paper, we show that with a more in-depth study of Dagbani morphology, the broader role of the nominal suffixes in the grammar of the language becomes apparent.

1.2 What the literature says on nominal suffixes

As already noted, the literature projects number encoding as one of the two distinctive roles of the suffix within the noun or adjective, the other distinctive role being nominal classification. Olawsky (1999:83) for instance is categorical in asserting that “[T]he function of a suffix pair is the distinction between singular and plural”. Similarly, Hudu (2010:21) states that “[I]n its simplest form, a noun/adjective consists of a root and a suffix that marks singular or plural number”. The analysis presented in these

studies suggests that, like the plural marker in English, these nominal suffixes are there primarily to encode number. The only difference between English and Dagbani is that, unlike English that has overt marking for only plurality, both singular and plural number are marked overtly in Dagbani.

Studies on related languages have offered a similar analysis of the distinction between these lexical classes of words (e.g Bodomo 1997 on Dagaare, Hien 2022 on Dagara; Bisilki and Yakpo 2020 on Likpakpaln; Musah 2018 on Kusaal; Nsoh 2011; Adongo 2018 on Gurenɛ), although we do not make the claim that in all these cited studies, the role of these suffixes is stated as strongly as what we find in studies on Dagbani. Indeed, the presence of these nominal suffixes is seen as a unique morphological property distinguishing nouns and adjective from verbs of these languages in general (see Miehe et. al 2007 and Miehe et. al 2012, Bodomo 2020).

In this paper, we call for a closer look at the role and function of nominal suffixes in Gur/Mabia languages, with a focus on Dagbani. We provide a more detailed description of the role of these nominal suffixes in the morphology and syntax of Dagbani. We argue that while the position of these suffixes as number markers is undeniable, the number-encoding function is less robust than suggested, and cannot count as the primary function of these suffixes. We observe that the lack of a detailed analysis of the morphology of the language has deprived us of a more thorough understanding of the wider, more robust, and more distinctive role of these nominal suffixes in the morphology and syntax of Dagbani. We conclude that these suffixes are there primarily as nominal suffixes and to perform these neglected morphological and syntactic roles such as making lexical words nouns and adjectives, deriving nouns and adjectives from words of other lexical classes, and distinguishing between different nominal forms.

2. Dagbani nominal suffixes

2.1 Inflectional number-marking suffixes

The presence of a consistent suffix marking singular or plural number of regular nouns and adjectives is one of the acclaimed defining morphological properties that distinguishes Dagbani nouns and adjectives from verbs. Verbs are generally claimed to not require these number suffixes, as the typical verbal suffix marks aspect. The analysis of the number marking function of these suffixes, as projected in the literature says that the language has a set of suffixes that mark singular number and another set that mark plural number. These singular and plural number markers are systematically matched, such that words that take a certain singular suffix or its phonologically conditioned allomorph (e.g. *-a* in *bi-a* ‘child-sg.’ [a child] and *bʊ-a* ‘goat-sg.’ [a goat]) also systematically take a certain plural suffix or its variant, in this case *-hi* (as in *bi-hi* ‘child-pl.’ [children] and *bʊ-hi* ‘goat-pl.’ [goats]). This systematic matching of singular and plural allomorphs also forms the basis for grouping nouns and adjectives into classes.

Over the past decades, various researchers on Dagbani have proposed different classifications, including Benzing (1971), Wilson (1972) (both cited in Olawsky 1999), Olawsky (1999) and Hudu (2005). While these classifications on Dagbani differ slightly, they are all based on the same criterion just noted. For instance, in all the four different classifications, one of the nominal classes is for nouns and adjectives that take the suffix *-ga* in singular form and *-sɨ* in plural form. Words belonging to this class include *gab-ga, gab-sɨ* ‘rope’ and *kpah-ga, kpah-sɨ* ‘mat’. The only exception is for nouns that take the plural suffix *-ba*. Words in this class have the semantic feature of referring to humans (e.g. *paʔ-a* ‘woman-sg.’ *paʔ-ba* ‘woman-pl.’), although not all nouns referring to humans take this suffix. Without getting into details on the differences in the nominal classifications, which is not of interest to the analysis in this paper, the most common singular suffixes and their corresponding plural suffixes are shown in (1).

(1) Nominal suffix pairs (singular and plural)

	sg.	pl.	examples
a.	-lɨ/-ɨ/-i	-a/-ja	pʊ-lɨ, pʊ-ja ‘stomach’; wʊn-ɨ, wʊn-a ‘deity’
b.	-ga/-ʔa/-ŋa/-ŋ	-sɨ	gab-ga, gab-sɨ ‘rope’; kɔŋ(a), kɔn-sɨ ‘leper’
c.	-gʊ/-ʔʊ/-ʊ	-dɨ/-ɾɨ/-tɨ	zʊʔ-ʔʊ, zʊʔ-ɾɨ ‘head’; kʊɾ-gʊ, kʊɾ-tɨ ‘metal’
d.	V]$_{root}$ -a/-o/-ʊ	-hɨ (< -sɨ)	no-o, nɔ-hɨ ‘fowl’; ba-a, ba-hɨ ‘dog
e.	C]$_{root}$ -a/-o/-ʊ	-ba	paʔ-a, paʔ-ba ‘woman’, san-a, ‘saam-ba’

The different realizations of each singular or plural suffix in each pair is due to different phonological processes, including deletion, debuccalization and coalescence, as discussed extensively by Hudu (2018). The singular suffix in both (1)d and (1)e is a vowel. The difference between them is that in (1)d the root ends in a vowel, exposing the suffix onset [s] to an intervocalic position. This is the environment where /g/, /k/ and /s/ debuccalize respectively into [ʔ] and [h] (Hudu 2018). Most nouns in (1)e have root-final consonants, as indicated here, but some also end in a vowel (e.g. *do-o, dɔb-ba* 'man'). Nouns in (1)e are more unique for being animate and taking the plural suffix -ba, though not all animate nouns take this suffix.

2.2 The suffix *-nima*

One suffix that is unique as a number marker is the plural suffix *-nima*. It does not have a matching singular suffix. For this reason, it is generally considered the default plural suffix for words that lack overt singular suffixes such as loanwords (e.g. *bʊkʊ* 'book', *bʊkʊ-nima* 'books') and some native words (e.g. *ba* 'father', *ba-nima* 'father-pl.'; *ma* 'mother', *ma-nima* 'mother-pl.') (Olawsky 1999; Hudu 2005 etc). It can also be used to refer to two or more people bearing the same name. Thus, *Abu-nima* may refer to two or more people bearing the name *Abu.* But its distribution and semantics is much broader than this. It surfaces in some nouns that take regular singular suffixes (e.g. *na-a* 'chief-sg.'; *na-nima* 'chief-pl.'). But in all such cases, it is unique to the word in question. Unlike regular plural suffixes, its surfacing as a plural marker in native words that take regular singular suffixes cannot be predicted. For instance, the regular matching plural suffix for the singular suffix *-a* in words of the structure CV-V is *-hi* (e.g. *da-a* 'market-sg.', *da-hi* 'market-pl.'; *bʊ-a* 'goat-sg.' *bʊ-hi* 'goat-pl.'). Thus, it is not clear why *na-a* is not *na-hi*. Even among loanwords, its distribution is not entirely predictable as some loans take regular plural suffixes (e.g. *bɔl-li* '(foot)ball-sg.', *bɔl-a* '(foot)ball-pl.').

It also has an associative use to refer to people in general who are associated with a place or a thing. For this usage, it can be considered as an alternative plural for *niɾ-a* 'person-sg.', or *lana* 'owner' whose plural forms are *niɾ-ba* 'person-pl.' and *laam-ba* 'owners'. Thus, we can find expressions like *Tamali-nima* 'the people of Tamale'; *da-a-nima* 'the people of the market'; *jiŋ-nima* 'the people of the home' and *sɔ-li-nima* 'the people of the road'. In all these examples, it is only *Tamale*, which is the name of a city, that cannot be pluralized. The rest have their regular plural suffixes, so *nima* is not being used as a plural suffix. This 'associative *nima*' is common in greetings where the greeter asks about the condition of people where the responder is coming from. An associative meaning of *nima* can also be obtained by adding it to personal nouns to form a compound (even cases such as *Tamali-nima* are also compounds). Thus, while *na-nima* means 'chiefs', with *nima* replacing the singular suffix, in *na-a-nima,* which means 'chief (singular) and people associated with him', the singular suffix is not replaced. The nouns could also be proper nouns (e.g. *Abu-nima* 'Abu and people associated with him') or common nouns already inflected for plural suffix *bʊ-hi-nima* 'goat-pl.-nima' (people associated with goats/goat owners). Finally, it is added to the plural personal pronouns *ti* 'first person plural' and *ji* 'second person plural' to create the emphatic pronouns *ti-nima* and *ji-nima* and to the third person plural pronoun *ba* to create the question particle *ba-nima* 'which people'.

In the associative use, and when it is added to pronouns, *nima* is neither a suffix nor a plural marker. If it were, like other plural markers, it would not be attached to nouns already suffixed with singular or plural suffixes as is the case with *na-a-nima* and *bʊ-hi-nima*. No noun in Dagbani is known to combine two number suffixes. Similarly, the personal pronouns *ti, ji* and *ba* are already in plural forms, so there is no room for them to be marked for plurality. If *nima* were truly marking plurality, it would rather be attached to the singular pronouns to form **n-nima* 'first person-pl.', **mani-nima* 'first person emphatic-pl.', **a-nima* 'second person-pl.', **ɲini-nima* 'second person emphatic-pl.', **o-nima* 'third person-pl.' and **ŋʊni-nima* 'third person emphatic-pl.'. None of these pronominal forms exists in the language. And no plural suffix in Dagbani is ever suffixed to a proper noun, so *nima* cannot be attached to *Tamale* to perform a number-marking function.

When all these distributional properties of *nima* are put together, we get to the conclusion that it is actually a word, a noun referring to plurality of animate beings. It is the second element of a compound added to a fully inflected noun in all environments except cases like *na-nima* 'chief-pl.', where it follows a nominal root and behaves like a nominal suffix marking plurality. Thus, it holds the same position as *bi-a* 'child-sg.' in *na-a bi-a* 'chief-sg. child-sg.' (a child associated with a chief) (see section 5.2 for more on compound types in Dagbani). In nouns such as *na-nima* 'chief-pl.', it is cliticized to perform the

function of marking plurality. It is far from being of the same morphological category as the typical nominal suffix in Dagbani. With these distributional properties of *nima*, it is appropriate that previous researchers excluded it from their classification of nouns in Dagbani. Only one of the previous researchers on Dagbani (Hudu 2005) includes *-nima* in their classification of nouns. In the rest of the discussion in this paper, *nima* will not be included, as we focus on regular nominal suffixes.

2.3 Derivational suffixes

The focus of previous researchers regarding number marking is on inflectional suffixes. However, as the discussion in various sections of this paper shows, some derivational suffixes combine their role of derivation with number marking, an observation that has not received attention in previous studies. In fact, Olawsky rejects the position of derivational suffixes as number markers with the claim that "[I]n contrast to simplex nouns, derived nouns do not have a number suffix" (Olawsky 1999:107). We show that some derived nouns encode singular and plural number. We present a brief background on the kinds of derivational suffixes that are used to derive nouns in Dagbani. This will help establish the extent to which their role as number markers supports previous generalizations on the number marking role of nominal suffixes in general.[1]

Nominal derivational suffixes in Dagbani are of two categories. One category of derivational suffixes perform only derivation. They include *-m* and *-sim.* Others are *-lim* and *-tali* which are used to encode certain qualities in a noun, *-linsi* which is attached to a verb to derive a noun that encodes a state of affairs; the action nominalizer *-bʊ,* and the agentive suffix *-da/-ra*. These suffixes are illustrated in (2), showing how they are used to derive simplex nouns. They are also used to derive compounds, as illustrated later in the paper.

(2) Derivational suffixes

a.	–[ɪ]m[2]	vɛl[a]; vɛl-ɪm nice; beauty	malɪs[a]; mals-ɪm sweet; sweetness	ɲaʔs[a]; ɲaʔs-ɪm delicious; deliciousness
b.	-sim	biːgi; biːsim hot; heat	baŋ; baŋ-sim know; knowledge	sɔŋ; sɔŋ-sim help(verb); aid/help(noun)
c.	-lim	niɾ[a]; niɾ-lim kind; kindness	ʤɛɾg[ɪ]; ʤɛɾ-lim be.fool; foolishness	wɔʔ[a]; wɔʔ-lim tall/far; height/distance
d.	-talɪ	do-o; do-talɪ man; manhood	tʊmo; tuːntalɪ messenger; position as a messenger	sɔ-ʔʊ; so-talɪ witchcraft; possession of witchcraft
e.	-lɪnsɪ	ka; ka-lɪnsɪ absent; absence	ʒi; ʒi-lɪnsɪ ignorant; ignorance	mi; mi-lɪnsɪ know; acquaintance
f.	-bʊ	zu; zʊ-bʊ steal; theft	wʊh[ɪ]; wʊh-bʊ teach; teaching	tɔh[ɪ]; tɔh-bʊ contribute; contribution
g.	-da/-ɾa	baŋ; baŋ-da know; scholar	mɔŋ; mɔŋ-da withhold; withholder	sɔŋ; sɔŋ-da help; helper

The second category of derivational suffixes are those that perform both derivational and inflectional functional functions. They include *-lɪ, -gʊ, dɪ, -ɾɪ, -a, -o,* and probably every nominal suffix that marks singular or plural number, as shown in (1). An important distinction between these two types of derivational suffixes is that nouns which are derived with suffixes that perform only derivational functions cannot be pluralized by replacing the suffix with a regular plural suffix after the derivation of the noun. For instance, the derivational suffix *-bʊ* in *zʊ-bʊ* 'stealing/theft' cannot be replaced by a plural

[1] Deriving a noun from a verb can also be achieved tonally (e.g. dólî̱m 'urinate', dólɪ́m 'urine'; kàr̀ìm 'read' kàŕím 'a study').

[2] For some verbs, nominalizing them with the suffix *-im* requires the presence of the imperfective suffix *-ɾɪ* preceding the derivational suffix. For instance, the noun *bɛɾ̀im* 'pain' consists of three morphemes: *bɛ-ɾɪ-m* 'pain-imperfective-nom.'.

suffix to get 'thefts'. By contrast, consistent with their position as suffixes that also perform an inflectional function, some suffixes in the second category can be replaced by plural suffixes after deriving nouns. Thus, the suffix *-gʊ* in *bɔh-gʊ* 'ask-nom.sg. (a question)' after deriving a noun out of the verb *bɔh[ɨ]* 'ask' can be replaced by the plural suffix *-sɨ* to obtain *bɔh-sɨ* 'ask-nom.pl. (questions)'. Other examples are shown in (3).

(3) Derived nouns that get pluralized

	verb	suffix	sg.	pl.	
a.	tɨm 'send'	-o:	tʊm-o	tuum-ba	'messenger'
b.	zɨŋ 'alienate'	-o:	zʊn-o	zʊm-ba	'alien/stranger'
c.	gbaɾɨ 'to cripple'	-gʊ:	gbaɾ-gʊ	gbaɾ-tɨ	'cripple'
d.	kpalim 'to praise-cry'	-ga:	kpalɨŋ-ga	kpalɨn-sɨ	'a praise-cry' (by women)

We shall see many more examples of these suffixes in the data presented in this paper, as we discuss the number-marking role of nominal suffixes.

3. The problem with number marking as the distinct role of nominal suffixes

While the presence of nominal suffixes is well established and undisputable, the related claim or suggestion that these nominal suffixes primarily perform the function of encoding singular and plural number on nouns and adjectives is at best, exaggerated. There is no dispute about the claim that distinct suffixes systematically mark singular and plural number and may serve the basis for a classification of these words. However, the projection of their number-marking role as primary is problematic in several ways.

First, by focusing on their number-marking role, researchers on Dagbani have lost sight of a more basic role they play in Dagbani grammar – projecting these words as nouns or adjectives through inflection or derivation from other word classes. The presence of these suffixes, whether attached to a lexical bound root or a stem, makes a lexical word a noun or adjective. This basic and unique role every nominal and adjectival suffix plays without exception is rather overlooked or neglected in previous studies. For this reason, not much emphasis is given to derived nouns and the role these suffixes play in the derivational process. Second, exceptions to the number-marking function of these suffixes in Dagbani are too systematic and overwhelming to be considered mere gaps in the morphology of the language. Some nouns that may be considered count nouns take only singular suffixes; others take only plural suffixes. There are other nouns that receive singular suffixes in spite of being notionally plural, and vice versa. These exceptions exist for derived and non-derived nouns and adjectives.

Third, the focus on the number-marking roles of these nominal suffixes overshadows a much broader or richer morphosemantic role of these suffixes in nouns and adjectives. In addition to the widely acclaimed number-marking function, these nominal suffixes, in some cases, contribute semantic content to the entire word, such that replacing one nominal suffix with another changes the meaning of the word without changing the number. While this function of nominal suffixes has been noted by previous researchers (e.g. Olawsky 1999, Hudu 2014), it has only been noted as a rare property of the suffixes with number marking as their primary function. For instance, Olawsky (1999) offers data to illustrate the role of suffixes in disambiguating homophonous lexical roots. Some of these are shown below.

(4) Nominal suffixes disambiguating nouns with identical roots (Olawsky 1999:83)

		sg.	pl.	
a.	i.	tʃɛɾ-lɨ	tʃɛɾ-a	'driver ant'
	ii.	tʃɛɾ-ga	tʃɛɾ-tɨ	'ladle'
b.	i.	sal-lɨ	sal-a	'charcoal'
	ii.	sal-ga	sal-sɨ	'weevil'
c.	i.	jʊ-lɨ	jʊ-ja	'name'
	ii.	jʊ-a	jʊhɨ	'flute'
	iii.	jʊ-ʔʊ	jʊ-ɾɨ	'monitor lizard'
d.	i.	kal-lɨ	kal-a	'segment'
	ii	kal-o	kal-tɨ	'enamel ware'

du (2014) has also shown that suffixes can contribute meaning to an adjective, such that the meaning of the same lexical root gets modified depending on the suffix that it takes. The examples, which are all adjectives,[3] are shown in (5), which show words in each pair both taking a singular or plural suffix.

(5) Modifying nominal suffixes (Hudu 2014: 10)

a.	pal-o	'new-sg. (anim.)'	pal-lɨ	'new-sg. (inanim.)'
b.	pal-ba	'new-pl. (anim.)'	pál-á	'new-pl. (inanim.)'
c.	kʊɾ-o	'old-sg. (anim)'	kʊɾ-lɨ	'old-sg. (inanim.)'
d.	tʃɛ-ʔʊ	'broken piece-sg.'	tʃe-e	'small piece-sg.'
e.	bɛ-ʔʊ	bad/ugly one-sg.'	bé-é	'mischievous person-sg.'
f.	ʒɛ-ʔʊ	'reddish-sg.'	ʒe-e	'red-sg.'
g.	pɛl-lɨ	'white-sg.'	pɛl-ga	'sparkling white'
h.	sabɨn-lɨ	'black-sg.'	sablɨ-ga	'ugly black-sg.'

Explaining the differences between the word pairs, Hudu (2014) notes that some of them differ in the encoding of animacy, as in (5)a-c. While the suffixes *-o* and *-ba* are used to encode animate beings, *-lɨ* and *-a* are used to encode inanimate beings. In (5)d, the distinction has to do with the usefulness of the noun that is described as a small piece. Things that are reduced to small pieces in order to be useful (e.g. meat) are described using the adjective *tʃe-e*. When an item is broken into pieces and each piece fails to perform the function of that item (e.g. broken earthenware), the pieces are described using the adjective *tʃɛ-ʔʊ*. The differences in the remaining pairs have to do with the distinction between the physical and mental quality of something (5)e, the neutral versus complementary/admirative description of a complexion (5)f-g, or neutral versus pejorative description, (5)h.

Finally, the number-marking role of some of these suffixes is not restricted to nouns and adjectives. As shown by Hudu and Atintono (2019), the same suffixes, when attached to verbs in Dagbani and Gurenɛ, mark singular and plural action on these verbs. Yet, they do not make these verbs nouns and adjectives. The focus of the present study is to expatiate on the first two reasons just noted on the need to reanalyse the role of nominal suffixes. It begins by showing that the number-marking role of nominal suffixes is less consistent and less reliable than projected in previous studies. This is followed by an analysis of what the distinctive role of these suffixes is within the morphosyntax of the language.

4. Lack of consistency in the number-marking role of nominal suffixes

This section provides analyses of the various ways in which nominal inflection deviates from the expected number-marking function in nouns and adjectives. These deviations take four different forms: semantically count nouns with inflection for only one (singular or plural) number suffix; potentially count nouns being inflected for a number suffix that is the opposite of the notional number encoded by the noun; morphosemantically similar nouns receiving conflicting number suffixes; and proper (and for that matter non-count) nouns being inflected for singular nominal suffixes.

4.1 Nouns with only one number inflection

The singular suffixes of some nouns cannot be replaced by their corresponding plural suffixes. Such nouns only inflect for singular nominal suffixes. Other nouns inflect for only plural suffixes. Their plural suffixes cannot be replaced by singular suffixes. These patterns exist for simplex nouns, non-derived compound nouns as well as derived nominal forms in the language (see Section 5.2 for the distinction between these word forms). If number marking is the primary role of these nominal suffixes, and every suffix is required to mark a singular or plural number as assumed in the literature, it would imply that the nouns that take only singular suffixes cannot be pluralized by virtue of being mass or abstract nouns (e.g. *pɔhim* **pɔhim-a* 'air'). For nouns that take only plural suffixes, we would assume that they encode meaning that inherently refers to plural concepts (e.g. *biŋ-ga-rɨ* 'thing-mix-nom' [a mixture of cereals]). But this assumption is not borne out by the data, as most nouns that take only plural or only singular suffixes are not distinct from other nouns that take both number suffixes. In fact, many nouns that exist only in plural forms are not mass or abstract nouns, as shown (6). In the data below, and in all other

[3] The observation that all the words are adjectives was pointed out by an anonymous reviewer. We are not aware of similar examples involving nouns.

cases where non-existent singular or plural forms are posited, the posited forms are based on the established correspondence between singular and plural forms, shown in (1). With this, it is possible to determine what the plural form of a word would have been, for a word that lacks a plural form, based on the singular form, and vice versa. Thus, the posited singular forms in (6)a-c are based on (1)a while the one in (6)d is based on (1)c.

(6) Plural suffix-only nouns compared with nouns with both singular and plural suffixes

	Nouns taking only plural suffixes			**Nouns taking both singular and plural suffixes**		
	sg.	pl.		sg.	pl.	
a.	*gal-lɨ	gal-a	‘bad deeds’	tuːn-ɨ	tʊm-a	‘deed’
b.	*lam-lɨ	lam-a	‘gums’	ɲin-i	ɲin-a	‘tooth’
c.	*nam-lɨ	nam-a	‘placenta’	nɨm-dɨ	nɨm-a	‘meat’
d.	*ɲɔ-ʔʊ	ɲɔ-ri	‘profits’	sam-lɨ	sam-a	‘debt’

In the above data, the words on the left column can only be expressed in plural forms. However, there is nothing in the meaning that makes them mass nouns. For each of them, there is a word on the right column which shares the same semantic field which exists in both singular and plural forms (more discussion of such semantically related in Section 4.4. Other nouns that take only plural suffixes, even though their singular forms are conceivable, are shown in (7)-(8). The singular forms (7)a-d and (8)a-c follow the pattern in (1)a, those in (7)e-g and (8)d-e are based on the pattern in (1)c and (8)f is based on (1)b.

(7) Derived simplex nouns that only exist in plural form

	sg.	pl.	
a.	*fabil-lɨ	fabil-a	‘lament-nom.’ (a lamentation)
b.	* tɛh-lɨ	tɛh-a	‘think-nom.’ (a thought)
c.	*wɔlɨn-lɨ	wɔlm-a	‘hustle-nom.’ (a business)
d.	*tɔh-lɨ	tɔh-a	‘a free addition to a purchased item’
e.	*jɔ-ʔʊ	jɔ-ɾɨ	‘pay-nom.’ (a wage/salary)
f.	*tʊ-ʔʊ	tʊ-ɾɨ	‘abuse-nom.’ (an insult)
g.	*pɔ-ʔʊ	pɔ-ɾɨ	‘swear-nom.’ (an oath)

(8) Compound nouns that only exist in plural form

	sg.	pl.	
a.	*nin-lih-lɨ	nin-lih-a	‘eye-see-nom.’ (a sight)
b.	* so-ʧʃɪɾ-lɨ	so-ʧʃɪɾ-a	‘road-cross-nom.’ (an intersection)
c.	* zʊʔ-kʊʔ-ɾɨ-lɨ	zʊʔ-kʊʔ-ɾa	‘head-lay.on-nom.’ (a headrest)
d.	* bim-mɔ-ʔʊ	bim-mɔ-ɾɨ	‘faeces-grass-nom.’ (a diaper)
e.	* pʊ-zʊ-ʔʊ	pʊ-zʊ-ɾɨ	‘farm-???-nom.’ (farm produce)
f.	* ninkpeːn-ga	ninkpeːn-sɨ	‘eye-stiff-nom.’ (insolence)

In (9), we see a similar pattern, this time with derived nouns that can conceivably be counted taking singular but not plural suffixes.

(9) Derived simplex nouns that take only singular nominal suffixes

	sg.	
a.	ŋmalgɨ-lɨ	‘turn.nom.’ (a turn/corner)
b.	mʊʔsɨ-gʊ	‘disturb-nom.’ (a disturbance/problem)
c.	pahɨ-gʊ	‘add-nom.’ (an addition)
d.	zahɨn-dɨ	‘dream-nom.’ (a dream)
e.	yɛl-gʊ	‘say-nom.’ (a statement)
f.	ŋaɾ-lɨ	‘cheat-nom.’ (an act of cheating)
g.	dʊʔ-lɨ	‘cook.nom’ (the act of cooking)
h.	kɔhɨŋ-gʊ	‘cough-nom.’ (a cough)

The absence of plural cognates of these nouns has nothing to do with their meaning, position as derived nouns or compounds. There are many derived nouns that get pluralized, as already shown in (3). Some of the words in (9) have synonyms that take both singular and plural suffixes. For instance, (9)e has the words *jɛl-tɔʔ-lɨ* and *jɛl-lɨ* as synonyms, both of which have plural forms *jɛl-tɔʔ-a* and *jɛl-a*. The noun *kɔhɨŋ-gʊ* ‘cough-nom.’ (a cough) on the other hand entails a repetitive action, yet receives only the singular suffix. Compounds that exist only in singular forms are shown in (10).

(10) Compound nouns that only exist in singular form

a.	naŋgban-kpeːn-i	‘mouth-hard-nom.’ (argument)
b.	san-jo-o	‘debt-pay-nom.’ (payback/retribution)
c.	ɲɛ-ɲɔn-gʊ	‘nose-smell-nom.’ (frustration)
d.	dih-tabli	‘press-stick’ (conviction)
e.	jɔl-tim	‘delay-medicine’ (regret)

The data in (11) which are also compounds but exist in both singular and plural forms, show that the failure to receive plural suffix has nothing to do with the position of these words as compounds.

(11) Compound nouns that receive plural suffixes

	sg.	pl.	
a.	bɨn-do-o	bɨn-dɔ-hɨ	bedding
	thing-lie-nom.	thing-lie-nom.	
b.	zʊʔ-pɨl-gʊ	zʊʔ-pɨl-a	hat
	head-cover-nom.	head-cover-nom	
c.	ʃe-lɔɾ-gʊ	ʃe-lɔɾ-a	waist band/belt
	wait-tie-nom.	waist-tie-nom.	
d.	bɨn-ɲʊɾ-lɨ	bɨn-ɲʊɾ-a	drink
	thing-drink-nom.	thing-drink-nom.	
e.	gbal-kab-lɨ	gbal-kab-a	broken leg
	leg-break-nom.	leg-break-nom.	

4.2 Nouns taking notionally opposite number suffixes

There are some nouns that behave as non-count nouns. However, notionally, they may be perceived as existing in plural forms because they refer to several units, people or entities grouped together or singular because they refer to single items or entities. Despite this, some notionally plural nouns take singular suffixes while other notionally singular nouns take plural suffixes. The data in (12) contain nouns that can be considered prototypical mass nouns, and would be expected to receive plural suffixes only, or at least both singular and plural suffixes if the encoding of number were the primary function of these suffixes.

(12) Singular suffix only for mass nouns

a.	bɔb-gʊ	'group/multitude'
b.	laʔɨŋ-gʊ	'gathering'
c.	sal-o	'crowd'
d.	gɔɾ-gʊ	'herd (of cattle)'
e.	bʊŋ-gʊ	'sesame seeds'
f.	wʊɾ-gʊ	'chaff, husks of grain'
g.	bʊn-ɨ	'possessions/wealth'

(13) Plural suffix for notionally singular nouns

a.	ʒi-ɾɨ	'a lie'
b.	tala-hɨ	'obligatory'
c.	taka-hɨ	'a state of disappointment'

Notable synonyms among derived nouns which take different number suffixes are shown in (14).

(14) Synonyms that take different number suffixes

	Derived nouns in singular form only		**Derived nouns in plural form only**	
a.	pah-gʊ	'add-nom.'(an addition)	tɔh-a	'add-nom.' (a free addition to a purchase)
b.	daː-bil-gʊ	'market-child-nom.' (commerce)	wɔlm-a	'hustle -nom.' (commerce/business)
c.	kʊh-gʊ	'cry-nom.' (a cry)	kʊm-sɨ	'cry-nom.' (a cry)

4.3 Arbitrary assignment of number suffixes to abstract and mass nouns

There is an arbitrary use of singular and plural suffixes for abstract and mass nouns that would typically be assumed to be non-count. In (15), these nouns exist only in singular forms, in (16), they are in plural forms.

(15) Abstract and mass nouns with singular suffixes

	sg.	pl.	
a.	tan-dɨ	*tan-a	'soil'
b.	bih-gʊ	*bih-sɨ	'sand'
c.	ʒɛ-ʔu	*ʒɛ-ɾɨ	'storm'
d.	nambɔ-ʔʊ	*nambɔ-ɾɨ	'compassion'
e.	paʔ-lɨ	*paʔ-a	'fog'
f.	pɔhi-gʊ	*pɔh-sɨ	'smell/stench'

(16) Abstract and mass nouns with plural suffixes

	sg.	pl.	
a.	*zaʔ-lɨ	zaʔ-a	'an attention'
b.	*tɛh-lɨ	tɛh-a	'a thought'
c.	*siʔ-lɨ	siɣ-a	'a feeling'

Given that Dagbani has both singular suffix *-a* and a plural suffix *-a,* as shown in (1), it is worth giving further details on the analysis that suffix *-a* in (16) is a plural and not a singular suffix. The basis for parsing them as plural is that, these words do not refer to a human being. In the only context where *-a* following a root with a final consonant is a singular suffix, the noun refers to humans and takes the plural suffix *-ba*, as noted in Section 2.

One category of nouns and adjectives in the class of abstract and mass nouns end with the bilabial nasal. For many of these nouns, the final [*m*] is a derivational suffix or a part of it, as discussed in Section 2.3, with data in (2). For others, it is not that obvious whether it is the suffix. In plural form, (see data

in (18)), the plural suffix is added to the root with the nasal (e.g. *kɔm* 'water', *kɔm-a* 'water-pl.'); it does not replace the nasal, as expected in the regular nominal morphology. But in root compounds (see further details in Section 5), the nasal is dropped, as expected in the regular nominal morphology (e.g. *ko-tʊl-lɨ* 'water-hot-sg.' [hot water]). It is quite likely the final [*m*] was part of a *-mV* suffix whose vowel was lost diachronically.

Such abstract/mass nouns include *pɔhim* 'wind'; *kɔm* 'water'; *bɛm* 'stinginess'; *bim* 'broth'; *tim* 'medicine'; *lam* 'cow itch'; *dam* 'alcoholic beverage'; *zɨm* 'flour'; *zaʔim* 'nakedness'. As suffixes attached to such nouns, these suffixes would have been the best morphemes for Dagbani nouns that do not receive inflection for plural suffixes. In other words, if number marking were the distinctive function of nominal suffixes in Dagbani, we would expect different distributional properties for the suffixes *m*, *-lim*, and *-rɨm,* such that non-prototypical count nouns (e.g. the data in (2) and the above listed words) would receive these suffixes while prototypical count nouns would receive the remaining suffixes that have singular and plural pairs. However, that is not the case in Dagbani.

In addition to the lack of such a unique distributional property for these *-m*-suffixed words, there is a further lack of systematicity with regards to the number marking of these words. Some of them take plural markers, with *-a* as the plural marker, (17); others do not, (18).

(17) *-m* suffixed nouns with both singular and plural forms

	sg.	pl.	
a.	dam	dam-a	'alcoholic beverage'
b.	kɔm	kɔm-a	'water'
c.	tim	tim-a	'medicine/drug'
d.	ʒim	ʒim-a	'blood'
e.	zɨm	zɨm-a	'flour'

(18) *-m* suffixed nouns with only singular forms

	sg.	pl. (non-existent)	
a.	bim	*bim-a	'broth'
b.	bɛm	*bɛm-a	'stinginess'
c.	bam	*bam-a	'body odour'
d.	pɔhim	*pɔhɨm-a	'air/wind'
e.	lam	*lam-a	'cowitch'

It may be argued that the plurality encoded by the mass nouns in (17) is not the same as that of clearly count nouns such as *kʊʔ-lɨ* 'stone-sg.', *kʊʔ-a* 'stone-pl.'. It is not the case that in Dagbani, speakers conceive of these nouns in the same sense as they conceive count nouns. Depending on the contexts, the plural forms of these nouns may refer to units of measurements, different sources, or different kinds of these mass nouns. The essence of the discussion here is that, regardless of how the plural forms in (17) are conceived, the same conceptualization of the forms in (18) is logical. For instance, just as *kɔm-a* could mean water in different containers or drunk by different people or located at different places, **pɔhɨm-a* could exist in the language to mean air breathed by different people or blown at different places or at different times.

4.4 Inconsistent number suffixation for semantically comparable nouns

To further show the inconsistency in number encoding, we compare words that are either synonymous or related semantically. The goal is to demonstrate that the discrepancies shown here have nothing to do with whether the word is derived or not. They can also not be explained using the semantics. We first consider the Dagbani words or expressions for placenta or after-birth, which are six: *nam-a*, *bɛ-ɾɨ*, *dɔʔint-o*, *tɔlan-a*, *jɔ-lɨ*, *zɔ-lɨ*. Of these, only *zɔ-lɨ* refers to non-human after-birth and has a plural form (*zɔ-ja*). It has a dialectal variant, *zɔl-gʊ*, which does not get pluralized. Of those that refer to human placenta, *dɔʔint-o*, *tɔlan-a*, and *jɔ-lɨ* take suffixes that mark singular nouns in Dagbani while *nam-a* and *bɛ-ɾɨ* receive suffixes that mark plurality.

Our next words for comparison are words that express times and seasons. Some of these words have both singular and plural forms, others have only singular forms.

(19) Words for times and seasons: Only singular

	sg.	pl.	
a.	dakʊl-o	*dakʊl-tɨ	'week'
b.	ʃɛ-ʔu	*ʃɛ-ɾɨ	'rainy season'
c.	wuːn-ɨ	*wuːn-a	'dry season'
d.	kɨka-a	*kɨka-hɨ	'harmattan season'
e.	sanza-lɨ	*sanza-ja	'period of drought'
f.	sɨʔ-lɨ	*sɨʔ-a	'lean season'
g.	ɡbanʒɛ-ʔʊ	*ɡbanʒɛ-ɾɨ	'period of heat after rainy season'

(20) Words for times and seasons: Singular and plural forms

	sg.	pl.	
a.	dabsɨ-lɨ	dabs-a	'day'
b.	ʧʃiɾ-li	ʧʃiɾ-a	'month'
c.	juːn-ɨ	jum-a	'year'

Before concluding the discussion on the lack of consistency in the use of nominal suffixes to mark number, we compare the morphology of the two semantically related words *ʒi-ri* 'lie(s)/falsehood' and *jɛlimaŋ-li* 'truth(s)/reality/ fact(s)'. The word *ʒi-ri* has a nominal suffix that is used to mark plural number while *jɛlimaŋ-li* has a suffix that marks singular number in the language. With both words being semantically related, if one is assumed to be count, the same assumption will be made for the other, and vice versa. For this reason, they make an interesting comparison in the expression of number. In keeping with their semantic closeness, each of them maintains one inflected form, whether it is modifying singular or plural nouns, as shown in the clauses below.[4]

(21) Clauses with ʒiri 'lie(s)/falsehood'

a.	jɛltɔʔ-li	maa ɲɛ-la	ʒi-ɾɨ
	statement-sg.	def. be-foc.	falsehood-nom.
	'The statement is a lie/falsehood'		
a.	jɛltɔʔ-a	maa ɲɛ-la	ʒi-ɾɨ
	statement-pl.	def. be-foc.	falsehood-nom.
	'The statements are lies'		

(22) Clauses with jɛlimaŋli 'truth(s)/reality'

a.	jɛltɔʔ-li	maa ɲɛ-la	jɛlimaŋ-lɨ
	statement-sg.	def. be-foc.	truth-nom.
	'The statement is true'		
b.	jɛltɔʔ-a	maa ɲɛ-la	jɛlimaŋ-lɨ
	statement-pl.	def. be-foc.	truth-nom.
	'The statements are true'		

The two words differ in other ways that indicate the lack of consistency in the use of nominal suffixes to mark number. Unlike *ʒi-ri*, the word *jɛli-maŋ-lɨ* is a compound and derived with the morphemes: say-genuine-nom. The adjective *maŋ-lɨ*, when used in isolation to modify nouns, may take different suffixes

[4] In response to a reviewer's comment, we show that these two words are nouns. They can be the object of a verb (e.g. *Abu bɔrɨ jɛlmaŋ-lɨ* 'Abu likes the truth'; *Abu ʤe ʒi-ɾɨ* 'Abu hates lies' or focused in subject position *jɛlmaŋ-lɨ ka Abu bɔra* 'It is the truth that Abu likes' or *ʒi-ɾɨ ka Abu ʤe* 'it is lies that Abu hates'.

depending on whether the noun is singular or plural: *bi-maŋ-li* 'a good child', *bi-maŋ-a* 'good children'. Other adjectives that are synonyms or antonyms of *maŋ-lɨ* take different number suffixes even when combined with *jɛli*. These include *sʊŋ* (</sʊm-ga/) 'good' and *bɛ-ʔʊ* 'bad/evil', which may combine with *jɛli* to produce *jɛli-sʊŋ* (pl. *jɛli-sʊm-a*) 'good statement' and *jɛli-bɛ-ʔʊ* (pl. *jɛli-bɛ-ɾi)* 'bad/evil happening'. The point of these comparisons is to show that the failure to receive different nominal suffixes to reflect the number of the noun being modified has nothing to do with the semantics or the morphological structure of the word. It reflects the fact that number marking is not the primary role of the suffixes. The suffixes are inflected primarily to project the position of these words as nouns and adjectives. As far as the morphosyntax of Dagbani is concerned, the fact that certain singular and plural suffixes do not mark the expected singular or plural number is not a problem because the suffixes are not there primarily to mark number.

4.5 Proper nouns receiving regular number suffixes

The final source of evidence against the position of nominal suffixes as primary number encoders comes from proper nouns, including personal and place names. These nouns are, by nature, non-count. Thus, if number marking is a primary function of the nominal suffixes, we would expect these proper nouns to either lack these suffixes altogether or be inflected with a unique set of suffixes that do not encode number. However, this is not the case. These proper nouns receive the same number suffixes as other nouns, typically singular ones. They just do not get replaced by the plural counterparts of the singular suffixes.

A clear example of this is the word for God, *Naawʊni*. This word is a compound with two common nouns: *na-a* 'chief-sg.' (a chief) and *wʊn-ɨ* 'god-sg.' (a deity). As common nouns, they can be pluralized: *na-nɨma* 'chiefs' and *wʊn-a* 'deities'. Other nouns with *-ɨ* singular suffix and *-a* in plural suffix are *dʊn-ɨ*, *dʊn-a* 'knee'; *kpan-ɨ*, *kpan-a* 'spear'; and *gbɨn-ɨ*, *gbɨn-a* 'buttock'. However, once combined to form a proper noun, only the singular forms of each noun form the compound *naawʊni*. The potential plural form **naawʊn-a* does not surface. Similarly, most native place names in Dagbani end with the common singular suffixes *-gʊ [-ʔu]*, *-ga, -ŋ*, *-lɨ*, *-ɨ*. Examples are shown in (23).

(23) Nominal suffixes for the names of major towns and villages in Dagbon

a.	-gʊ/ʔʊ	jimah-gʊ,	saʔnaɾ-gʊ	gʊʃɛ-ʔʊ,	lamaʃɛ-ʔʊ	sakpɛ-ʔʊ
b.	-ga	kaɾ-ga,	gbɨngbal-ga	kalaɾ-ga	lɨb-ga	gɔlɨŋ-ga
c.	-li	kɔɾ-lɨ	ʤim-lɨ	zandʊ-lɨ	waːpʊ-lɨ	ta-lɨ
d.	-ŋ	tampiŋ	tɔŋ	kʊŋkɔŋ	zagbaŋ	naːntɔŋ

Evidence that the final syllables are suffixes comes from root compounds with these place names, which combine the lexical roots of more than one noun or adjective with the lexical suffix of the final noun or adjective in the compound (c.f. Section5.2). Thus, the chief of *jimah-gʊ* is *jimah-naa*, *kaɾ-naa* for *kaɾ-ga*, and *kɔɾ-naa* for *kɔɾ-lɨ* etc. The fact that they do not receive the plural number suffix is exactly what is expected. However, unlike English and other languages, which mark only the plural forms of nouns, Dagbani marks both singular and plural number using these suffixes. Thus, if the suffix is there to primarily perform the function of number marking, as is the case for the plural suffix in English, neither the singular nor plural marker should be part of nouns that are not subject to number specification.

We now turn to arguments regarding what the primary and distinctive function of nominal and adjectival suffixes are.

5. The morphological and syntactic functions of the nominal marker

The nominal suffixes play two distinctive roles: one is lexical, the other is morphological. These are discussed in the sections below.

5.1 Lexical function of nominal suffixes

Nominal suffixes exist as one of the defining morphological features of nouns or adjectives that also contribute to the exact lexical meaning of nouns and adjectives. These roles are relevant for non-derived

nouns and adjectives (with underlying lexical nominal and adjectival roots) as well as for nouns derived from words of other lexical classes. Below, details are provided, beginning with the role of nominal suffixes in different nominal and adjectival forms.

5.1.1 Nominal suffixes in non-derived nominal and adjectival forms

The nominal suffixes are inflectional suffixes for lexical stems that are underlyingly nominal or adjectival. For these words, what is required is for them to be inflected for these suffixes to change them from bound forms to free-standing words. Copious examples of such words are shown in most of the preceding data, (e.g. those in (4)-(6)). For such words, the suffixes are not required for the roots to acquire their status as nouns or adjectives. For this reason, they surface in root and stem compounds (discussed below), in addition to their suffixation to simplex nouns and adjectives.

5.1.2 Nominal suffixes in derived nominal and adjectival forms

As already noted in Section 2.3, one of the means of deriving a noun from a verb is to add a nominal suffix to the verb, with the nominal suffixes serving as derivational suffixes. Thus, for derived nouns and adjectives, the addition of these suffixes to stems is the most important step in the derivational process. The focus of the discussion in Section 2.3, was on simplex derived nouns, and the distinction between derived nouns that can be pluralized and those that cannot (see data in (2), (3)). We have also shown further data on the derivational function of regular number suffixes in (9), (10), (11), (7), (8), and (14), demonstrating that deriving a noun can be as simple as adding the suffix to one lexical stem, producing a simplex derived noun or adjective, or two lexical stems, resulting in a derived compound noun. In the derived compound, the different lexical stems typically belong to different lexical classes. The first stem is a noun and the second is a verb, as illustrated further in (24).

(24) Complex derived nouns

a.	ko-kpɛ-ʔu	‘water-enter-nom.’ (flood)
b.	nin-lih-a	‘eye-see-nom.’ (a sight)
c.	taŋkpa-gbɨl-gʊ	‘soil-scatter-nom.’ (dust storm)
d.	tɨŋgban-dam-lɨ	‘earth-shake-nom.’ (earthquake)
e.	sʊh-kab-lɨ	‘heart-break-nom’ (a heartbreak)
f.	sa-tahɨŋ-ga	‘rain-shout-nom.’ (thunder)

5.2 The morphosyntactic role of nominal suffixes

In this section, we show that the nominal suffixes play a crucial role in distinguishing between compounds and phrases of different types.

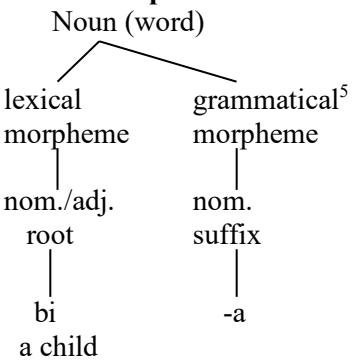
5.2.1 Distinguishing between compound types

Non-derived nouns and adjectives in Dagbani are of three types (see Hudu 2014 for a similar analysis): simplex, root compounds and stem compounds. The number and positions of the nominal suffixes are critical in distinguishing between these three morphological forms of nouns and adjectives. A simplex noun or adjective consists of one lexical root and one nominal suffix. Any noun with more than one lexical root is a compound, and may either be a root compound, consisting of more than one lexical root and one suffix, or a stem compound consisting of two constituent words, each with its own suffix (see Hudu 2013 and Hudu and Nindow 2020 for the effects of compound type on phonological processes).

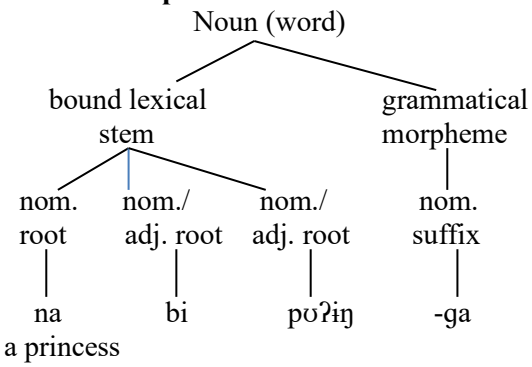
In root compounds of two or more lexical roots, at least one of the lexical roots modifies the initial nominal root. A stem compound is an associative construction in which the second constituent is associated with the first. Both constituent words in a stem compound are nouns, and any of them may be a simplex noun or a root compound with one or more lexical roots. The difference between them is illustrated in the trees below.

(25) The morphological structure of words

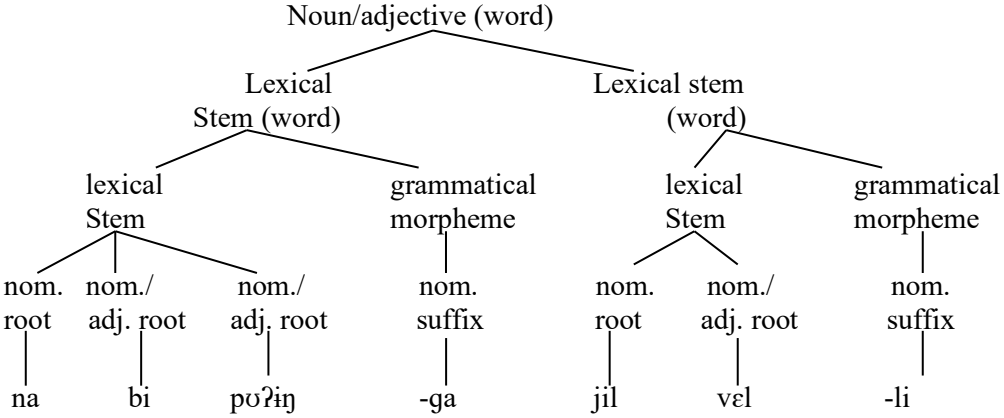
a. Simplex words



b. Root compounds



c. Stem compounds



A princess' beautiful house.

In the data below, we demonstrate the critical role of the suffix in drawing the distinction between the three different nominal forms. We show that having the suffix in the wrong location or having more or fewer than the required number of suffixes produces ill-formed compound words. For easy identification of the suffixes, they are shown in bold font.

(26) Root compounds

a.	na-jil-**ɨ**	'chief-house-sg.' (palace)
b.	na-jil-pal-**li**	'chief-house-new-sg.' (a new palace)
c.	na-jil-pal-vɛl-**a**	'chief-house-new-beautiful-pl.' (beautiful new palaces)
d.	*na-jil-pal-**a**-vɛl-	'chief-house-new-beautiful-pl.' (beautiful new palaces)
e.	*na-jil-pal-**li**-vɛl-**a**	'chief-house-new-beautiful-pl.' (beautiful new palaces)

The word in (26)d is ill formed because the suffix is at the wrong location while the one in (26)e is ill formed for having more than one suffix.

(27) Stem compounds (associative construction)

a.	na-**a** jil-**i**	'chief-sg. house-sg.' (chief's house)
b.	na-**a** jil-pal-**a**	'chief-sg. house-new-pl.' (chief's new houses)
c.	na-wɔʔɨn-**li** jil-pal-**a**	'chief-tall-sg. house-new-pl.' (a tall chief's new houses)
d.	*na-jil-pal-**a**	'chief-house-new-pl.' (chief's new houses)
e.	*na-**a** jil-**i** vɛl-**a** pal-**a**	'chief-sg. house-sg. nice-pl. new-pl.' (chief's beautiful new houses)

[5] In this simple illustration, the focus is on the function of the suffix as the sole provider of grammatical information within the word. That is why it is labelled a "grammatical morpheme". The fact that it may contribute semantic meaning to the word, as noted earlier in this paper, is ignored in this illustration.

In the above data, *na-jil-pal-**a*** is well formed, but not as a stem compound, and cannot mean 'chief's new houses'. Without the number suffix of the initial constituent stem, it becomes a root compound with the meaning 'new palaces'.

5.2.2 Distinguishing between phrase types

At the level of the phrase, the suffixes contribute to determining the structure of different noun phrases,[6] including the position of the head and the definite and indefinite markers, as well as the interrogative markers. The definite determiners are *maa*, and *la*. The indefinite markers are also two and differ based on animacy: the indefinite animate *so* and the indefinite inanimate *ʃɛli*. Similarly, there are two interrogatives which differ in animacy: the interrogative animate *ŋuni* and the interrogative inanimate *dini*. The determiner always follows the suffix, it does not precede it. This means that in an associative construction, the definite marker could follow either of the suffixes or both. This is not the case with root compounds; and marks an important distinction between the two compound types.

(28) Noun phrase: A simplex noun with a determiner

a.	do-**o** maa	*do -maa-**o**	
	man-sg. def.	man-def.-sg.	'the man'
b.	zaʔ wɔʔin-**li** la	*zaʔ wɔʔin-la-**li**	
	pro. tall-sg. def.	pro. tall-def. -sg.	'that tall one'

(29) Noun phrase: A root compound with a determiner

a.	na-jil-**i** maa	*na-maa jil-**i**		
	chief-house-sg. def.	chief-def. house-sg.	'the palace'	
b.	na-jil-pal-**li** maa	*na-maa jil-pal-**li**	*na-jil-maa pal-**li**	
	chief-house-new-sg. def.	chief-def. house-new-sg.	chief-house-def. new-sg.	
	*na-jil-pal-maa-**li**			
	chief-house-new-maa-sg.			
	'the new palace'			

Unlike the data in (28) and (29), the addition of a determiner to a stem compound produces two phrases, one for each constituent of the compound. Depending on the number and position of the determiner, the results could be [Head det.] [H], (30)a, a [H] [H det.], (30)b, or a [H det.] [H det.] (30)c.

(30) Deriving two noun phrases from stem compounds with a definite marker

a.	[do-**o** maa] [jil-**i]**	
	[man-sg. def.] [house-sg.]	'the man's house'
b.	[do-**o]** [jil-**i** maa]	
	[man-sg.] [house-sg. def.]	'the house of a man'
c.	[do-**o** maa] [jil-**i** maa]	
	[man-sg. def.] [house-sg. def.]	'the house of the man'

The syntactic features of the indefinite marker and the interrogative marker differ from that of the definite markers. They inflect for the same suffixes that nouns and adjectives take (*so/ʃɛ-ba*; *ʃɛ-li/shɛ-ŋa*; *ŋuni/ba-nima*). For this reason, they behave like nouns and adjectives. This implies that in simplex nouns and root compounds, they are not combined with the suffixes. They take the place of the nominal

[6] There is no adjectival phrase consisting of only an adjective and a determiner. Any phrase with an adjective and a determiner requires the pronominal morpheme *zaʔ*, in place of a nominal root to serve as the head of the phrase, with the adjective as a modifier, followed by the determiner. This makes them strictly noun phrases.

suffixes. It also means that in compounds, the rules on the addition of one noun or adjective to another noun also apply to the addition of the indefinite marker.

(31) Noun phrase: A simplex noun with the indefinite marker

a.	na so	*na-**a** so	
	chief indef.anim	chief-sg. indef.anim.	'a certain chief'
b.	bi ʃɛ-ba	*bi-a ʃɛ-**ba**	
	child indef.anim-pl.	child-sg. indef.anim.-pl.	'certain children'
c.	zaʔ bɨl ʃɛ-lɨ	*zaʔ bɨl-**a** ʃɛ-**lɨ**	
	pro. small indef.inanim.-sg.	pro. small-sg. indef.inanim.-sg.	'a certain small one'

This shows that *bi-ʃɛ-ba* ('certain children') is morphologically a compound in the same sense as *bi-ku-ra* ('big children'), even though one combines a noun and an indefinite marker while the other combines a noun and an adjective. In other words, the indefinite and interrogative markers are lexical forms with the same morphosyntactic properties as adjectives. Like the adjectives, they are the second constituents in a root compound and their suffixes become the suffixes of root compounds. In stem compounds, they maintain their suffixes along with the suffixes of the nouns and adjectives they follow. Further examples are shown below, showing both licit and illicit combination of morphemes.

(32) Noun phrase: A root compound with the indefinite marke

a.	na-jil ʃɛ-**lɨ**	*na-**so** jil-**ɨ**
	chief-house indef.inanim-sg.	chief-indef.anim. house-sg.
	'a certain palace'	
b.	na-jil-pal-ʃɛ-**lɨ**	*na-so jil-pal-**lɨ**;
	chief-house new-indef.inanim-sg.	chief-indef.anim. house-new-sg.
	*na-jil-ʃɛ-**lɨ** pal-**lɨ**;	*na-jil-pal- ʃɛ-**lɨ-lɨ**
	chief-house-indef.inanim-new-sg.	chief-house-new-indef.inanim-sg.-sg.
	'a certain new palace'	

The form *na-so jil-i* is acceptable when it is derived from the stem compound *na-a jil-i* (a chief's house), as shown below. Similarly, *na-so jil-pal-lɨ* is fine when derived from the associative compound *na-a jil-pal-lɨ*. However, unlike the definite marker, the addition of the indefinite marker does not produce separate phrases for each constituent of the compound. The indefinite marker does not close the boundary of the phrase. While it resembles the definite marker semantically, its morphosyntactic properties are such that it can surface between two lexical roots in a root compound, as in (33)a, or after two stems in a stem compound, (33)b. There can even be two indefinite markers within one stem compound, as shown in (33)c. This implies that unlike the definite marker, the indefinite marker does not function as a determiner in Dagbani.

(33) Stem compounds (associative construction) with indefinite marker

a.	na- so jil-**ɨ**	'a certain chief's house'
b.	na-**a** jil-ʃɛ-**lɨ**	'a certain house of a chief'
c.	na- **so** jil- pal-ʃɛ-**lɨ**	'a certain new house of a certain chief'
d.	*na-so jil-ʃɛ-**lɨ** pal-ʃɛ-**lɨ**	'a certain new house of a certain chief'

In **na-so-jil-ʃɛ-**lɨ** pal-ʃɛ-**lɨ***, the final and indefinite marker *ʃɛ-**lɨ*** is making reference to the adjectival modifier *pal* 'new' within the phrase, not the head noun, which already has an indefinite marker. This is what accounts for its ill-formedness.

5.3 The distinction between derived and non-derived nouns

The generalizations regarding the position of the nominal suffix in derived compounds is not different from that of non-derived compounds. In a derived compound noun, the suffix only follows the final stem, it does not surface between stems. Similarly, there can be only one nominal suffix in these compounds, just as in non-derived root compounds, already shown in (26). Data on the non-attested forms are shown in (34).

(34) Nominal suffix in a derived compound

a.	ko-kpɛ-**ʔu**	*ko-**ʔu** kpɛ	*ko**m**-kpɛ-**ʔu**	
	water-enter-sg.	water-sg. enter	water.sg-enter-sg.	‘flood’
b.	taŋkpa-gbɨl-**gʊ**	*taŋkpa-**gʊ** gbɨl	*taŋkpa-**ʔʊ**-gbɨl-**gʊ**	
	soil-scatter-sg.	soil-sg. scatter	soil-sg.-scatter-sg.	‘dust storm’
c.	tɨŋgban-dam-**lɨ**	*tɨŋgban-**lɨ** dam	*tɨŋgban-**ɨ**-dam-**lɨ**	
	earth-shake-sg.	earth-sg. shake	earth-sg.-shake-sg.	‘earthquake’
d.	sa-tahɨŋ-**ga**	*sa-**a** tahiŋ	*sa-**a**-tahiŋ-**ga**	
	rain-shout-sg.	rain-sg. shout	rain-sg.-shout-sg.	‘thunder’
e.	sʊh-kab-**lɨ**	*sʊh-**lɨ** kabɨ	*sʊh-**ʊ** kab-**lɨ**	
	heart-break-sg.	heart-sg. break	heart-sg. break-sg.	‘heartbreak’

The form *tɨŋgban-**ɨ**-dam-lɨ* (34)c, is well formed as an associative construction meaning ‘earth’s quake’. The two compound types also have the same syntactic properties as phrasal heads followed by the definite marker. The definite marker (*la* or *maa*) follows the nominal suffix, it does not surface between the stems in a derived compound noun.

(35) Derived compounds with the definite marker

a.	taŋkpa-gbɨl-**gʊ** maa	*taŋkpa-maa gbɨl-**gʊ**	‘the dust storm’
b.	sa-tahɨŋ-**ga** la	*sa-la tahiŋ-**ga**	‘that thunder’
c.	tɨŋgban-dam-**lɨ** maa	*tɨŋgban- maa dam-**lɨ**	‘the earthquake’
d.	suh-kab-**lɨ** maa	*suh-maa kab-**lɨ**	‘the heartbreak’

Despite these similarities, the nominal suffixes serve to distinguish between derived and non-derived compounds. As already noted, complex derived compounds combine a nominal and a verbal root with a nominal suffix. The differences between the derived and non-derived compounds can be seen in the presence of indefinite markers. Unlike non-derived compounds, shown in (31), the indefinite marker does not replace the nominal suffix when added to a derived compound.

(36) Complex derived compounds with indefinite marker

a.	ko-kpɛ-**ʔu** ʃɛ-lɨ	*ko-kpɛ- ʃɛ-lɨ	‘a certain flood’
b.	taŋkpa-gbɨl-**gʊ** ʃɛ-lɨ	*taŋkpa-gbɨl- ʃɛ-**lɨ**	‘a certain dust storm’
c.	tɨŋgban-dam-**lɨ** ʃɛ-**lɨ**	*tɨŋgban-dam- ʃɛ-**lɨ**	‘a certain earthquake’
d.	sa-tahɨŋ-ga ʃɛ-**lɨ**	*sa-tahɨŋ- ʃɛ-**lɨ**	‘a certain thunder’
e.	suh-kab-**lɨ** ʃɛ-**lɨ**	*suh-kab ʃɛ-**lɨ**	‘the heartbreak’

The difference between derived and non-derived compounds in the presence of the indefinite marker is easy to understand. The non-derived compound maintains two nominal roots and a suffix. The suffix is not required to make them nominal. In the case of a derived compound, it only becomes a noun after the addition of the nominal suffix. In the absence of the suffix, it ceases to be a noun. The same observation is true of non-compound derived nouns. The suffixes are maintained in the presence of indefinite markers.

(37) Non-compound derived nouns with the indefinite marker

a.	ŋmaliɨgɨ-**li** ʃɛ-**li**	*ŋmaliɨgɨ ʃɛ-**li**	‘a certain curve’
b.	kùm-**si** ʃɛ-**li**	*kùm ʃɛ-**li**	‘a certain cry’
c.	bɔl-**gʊ** ʃɛ-**li**	*bɔl ʃɛ-**li**	‘a certain call’
d.	tʊ-**ɾi** ʃɛ-**li**	*tʊ ʃɛ-**li**	‘a certain insult’
e.	bɛ-**ɾim** ʃɛ-**li**	* bɛ ʃɛ-**li**	‘a certain pain’

Similarly, derived nouns cannot be compounded at the root level by dropping the suffix and adding another lexical root such as an adjective, as is the case with non-derived nouns.

(38) No root compounding of derived nouns

a.	ŋmaliɨgɨ-**li** ʤi-a	*ŋmaliɨgɨ-ʤi-a	‘a short curve’
b.	kʊm-**si** jɔ-liɨ	*kʊm jɔliɨ	‘a cry in vain’
c.	tʊ-**ɾi** bɛ-ʔʊ	*tʊ bɛʔʊ	‘a bad insult’
d.	bɛ-**ɾim** tʊl-liɨ	*bɛ tʊl-liɨ	‘a hot pain’

In the same way, derived root compounds cannot be further compounded with the addition of more lexical roots, unlike non-derived root compounds. In other words, the number of lexical roots in a derived root compound is fixed. Once the noun is derived, it is not possible to modify it via compounding at the root level. Modifying the compound is done at the syntactic level using the morphemes *zaʔ* or *din*. While *zaʔ* simply licenses the use of an adjective without a preceding noun, *din* introduces a relative clause.

(39) No further root compounding of derived compound nouns

a.	ko-kpɛ-**ʔʊ** zaʔ pal-**li**	*ko-kpɛ-pal-liɨ	
	water-enter-sg. pro. new-sg.	water-enter-new-sg.	‘new flood’
b.	sa-tahiŋ-**ga** dɨn tʃɛhiɾa	*sa-tahiŋ tʃɛhiɾa	
	rain-shout-sg. rel. shrill cry	rain-shout shrill cry	‘a piercing thunder’
c.	tɨŋgban-dam-**li** dɨn bala	*tɨŋgban-dam-bala	
	earth-shake-sg. rel. light	earth-shake-light	‘a light earthquake’
d.	sʊh-kab-**li** dɨn be	*sʊh-kab-bɛʔ-**ʊ**	
	heart-break-sg. rel. bad	heart-break-bad-sg.	‘a terrible heartbreak’

Perhaps the most important role of the suffix is the distinction between inflectional and derivational functions. The derived nouns in (40) gives the impression that any noun with the internal structure verb root+nominal suffix is a simplex derived noun. However, this is not the case, as other nouns with this structure do not conform to the generalizations noted about the morphosyntactic properties of these derived nouns and illustrated in (37) and (38). These nouns, shown in (41), drop their suffixes in the presence of the indefinite marker and to achieve root compounding.

(40) Simplex derived nouns

a.	ŋmaligi-liɨ	‘turn-nom’. (a curve)
b.	kʊm-siɨ	‘cry-nom.’ (a cry)
c.	bɔl-gʊ	‘call-nom.’ (a call)
d.	ti-ɾɨ	‘vomit-nom.’ (a vomit)
e.	gɔ-ɾɨm	‘travel-nom.’ (a journey)

(41) Suffix-dropping simplex derived nouns

a.	zab-lɨ	fight-nom.	zab ʃɛ-lɨ	zab-ʤi-a	‘a short fight’
b.	wa-a	dance-nom.	wa ʃɛ-lɨ	wa wɔʔɨn-lɨ	‘a long dance’
c.	ʒi-a	sit-nom.	ʒi ʃɛ-lɨ	ʒi nah-ga	‘a prolonged sitting’
d.	la-ɾɨ	laugh-nom.	la ʃɛ-lɨ	la tʃɔʔm-a	‘a meaningless laughter’
e.	lʊ-a	fall-nom.	lu ʃɛ-lɨ	lu jiɾɨŋ	‘a senseless fall’

There are two plausible analyses of the differences between the nouns in (40) and those in (41). One is to assume that while the nouns in (40) are derived from verbs, the verb forms in (41) are derived from the nouns through backformation. The second plausible explanation is that both the nominal and verbal forms of the nouns in (41) are derived from an underlying form that is neither inherently nominal nor verbal. They attain a nominal status when the nominal suffix is added and a verbal status either with the infinitive prefix *n-* (e.g. *n-wa* ‘to dance’) or a suffix marking aspect (e.g. *wa-ra* ‘dancing’).

There is hardly any further evidence in support of analysis that posits backformation, partly because no research exists on backformation as a morphological process in Dagbani. The second plausible analysis also requires further discussion as well as language-internal and crosslinguistic evidence. Given that a deeper analysis of general word formation processes is not the focus of this paper, we defer the task of further analysis for the future. For the present study, we lean more towards the second analysis and hypothesize that the nominal forms in (41) are not derived from verbs. Regardless of what the findings of a further and deeper analysis will be, the conclusion of the present paper, which is unlikely to change, is that the nominal suffix is an integral part of what defines the difference between these two nominal categories in (40) and (41).

6. Summary and concluding remarks

The goal of this paper has been to provide a broader understanding of the functions of nominal suffixes in Dagbani. Before doing so, we deemed it important to show that while previous analysis of the number-encoding role of these suffixes is accurate, the view of number encoding as the distinctive role of these suffixes is not. Their role as number markers, even though productive, is a secondary and less consistent property applicable to some, not all, nouns in Dagbani. We have noted that the issues pointed out have not been the focus of previous studies because of the lesser attention to the research on the morphology. At the same time, these issues are required for a deeper descriptive and formal analysis that may be undertaken in the future. Thus, the analysis presented should be seen as both a product and a requirement of a deeper analysis of Dagbani morphology.

Because of the focus on presenting basic analysis that will help reveal the functions of these suffixes, many of the issues that came up in the analysis have not been exhaustively discussed. One of them, which requires a greater understanding beyond what is presented here both at the descriptive and theoretical levels, is the difference between the inflectional and derivational functions of these nominal suffixes. The data in (40) and (41) show that making this distinction is not always straightforward. A future, more focused, research on this, grounded on typological observations as well as theoretical assumptions, could potentially unearth interesting findings.

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