VERBAL NOMINALIZATION AS A DERIVATIONAL PROCESS: THE CASE OF AKAN

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Abstract

This paper discusses the derivational morphology of the Akan language with particular focus on verbal nominalization through affixation (particularly prefixation). There are two ways through which this nominalization process can be realized in the Asante-Twi dialect of Akan. These are direct verb stem/base nominalization and nominalization after reduplication. The main difference between the two nominalization processes is shown to be that while in the former process, the nominal prefixes adjoin the verb stem directly to derive nominals, in the latter process, the same prefixation process also applies but after the reduplication process. I first discuss direct verb nominalization through prefixation and follow it up with the discussion of the nominalization process that takes place after reduplication has applied. We observe that in the case of the latter process, sometimes the nominal prefix adjoins another prefix; the reduplicative prefix, as studied by Dolphyne (1988), McCarthy and Prince (1995), Abakah (2004), etc. therefore, giving us the morphological structure: $Affix_1 + Affix_2 + Stem/Base$. The paper argues that in the direct verbal nominalization, whereas nominal prefixation has to apply first before nominal suffixation in the Asante-Twi dialect so that the former forms a constituent with the stem/base, in the reduplicated stem, the $Affix_2$ (i.e. the reduplicative prefix) has to adjoin first the stem/base before the $Affix_1$, which is the nominal prefix. A swap in the order/level of prefixation between $Affix_1$ and $Affix_2$ renders the output form ill-formed, a case for Siegel's ([1974] 1979) Level Ordering Hypothesis. Following Siegel (idem), the reduplicative prefix, which does not cause a change in lexical category in Akan, is treated as a Class/Level 2 Prefix while the nominal prefix, which changes the lexical category of the stem and/or the reduplicated form, is a Class/Level 1 affix. In the end, this paper proposes a common template structure to account for affixation in nominalization of verbs in Akan by conflating what looks like two similar morphological structures for both nominalization of stem/base verbs and reduplicated forms, as follows: $Affix_1 \pm (Affix_2) + Stem/Base \pm (Affix_3)$ in that order.

1. Introduction

Derivational morphology, specifically verbal nominalization, as a word formation process has attracted much attention from linguists, particularly morphologists, phonologists and syntacticians. Akan is no exception. However, what is yet to receive any serious scholarly attention in Akan morphology is for the analysis to establish the levels at which affixes, including nominal affixes and reduplicative prefixes are ordered, especially when reduplicated forms, which in themselves are composed of prefixes, are being nominalized. Unlike the process of nominalizing a bare[1] verb stem, in which only one affix (i.e. the nominal prefix) adjoins the verb stem,[2] two affixes (i.e. reduplicative prefix and nominal prefix) attach to the root/stem when nominalizing reduplicated verb forms. This calls for an investigation to establish the order which affixation that results in deriving well-formed nominals from verb stems in Akan follows in the process. This paper, therefore, is an attempt to contribute towards the investigation of this phenomenon in Akan derivational morphology. Though the current paper analyses the Akan language in general, most of the examples/data will come from the Asante-Twi dialect of the language.

In the Asante Twi dialect of Akan, nominalization of verbal forms is done usually by affixation (both prefixation and suffixation) of the nominalizer. This paper limits its focus of discussion to the former type, where we have nominal prefixes and reduplicative prefixes and leaves out any detailed discussion of the latter for future research, although suffixation will also be captured in the proposed templatic morphological structure for Akan affixation in the latter part of this paper, to show the peripheral nature of affixation of Akan (Asante Twi). As has been indicated, though Akan nominalizes both reduplicated verbs and bare (i.e. unreduplicated) verb stems, our discussion in this paper will centre more on the former, which when nominalized now accommodates two prefixes: the reduplicative prefix and the nominal prefix. Again, with the reduplicated forms, two types will be observed: (1) the complete reduplicated forms and (2) 'partial' reduplicated forms. The discussion will further focus on the latter since aside from the morphological rules that apply in the process of their reduplication, there are also some phonological processes observed in their reduplicants, such as vowel raising, assimilation of place of articulation, final nasal deletion, etc. For the purpose of distinguishing the reduplicated verb forms from the bare verb stems, we adopt a feature [reduplicative]. Whereas we mark verb forms which can be nominalized only after they have been reduplicated with the feature

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[1] The term 'bare' is used in this paper to refer to uninflected verb stems. Although the use of the noun 'stem' in itself should suffice to indicate the inflectional status of those verbs, it is used as emphasis to contrast with the term 'reduplicated'.

[2] It is usually only the Asante dialect that adds the second affix – the nominal suffixes. The other two dialects of Akan apply only the prefix in the nominalization process.

value [+reduplicative], conversely, those verbs which cannot be nominalized when they have been reduplicated contrast with the former only in the feature value [-reduplicative]. It is worth noting that, as Dolphyne (1988) clearly points out, it is possible to reduplicate almost all verbs in Akan. However, as has been pointed out already, it is not all reduplicated verb forms that can be nominalized, therefore the need to distinguish between those two input forms for nominalization, which is the focus of discussions in this paper.

Since much of the discussion of this subject in Akan has been exclusively either phonological or morphological, I adopt a combination of the two i.e. a morpho-phonological approach.

The current paper is organized into the following sections: Section 1 presents the general introduction to the whole work and also gives a brief background of the language of study, Akan. Section 2 briefly discusses some of the definitions of some key concepts employed in this paper such as nominalization, reduplication, etc. In Section 3, I present and analyze the Akan data used in this paper. Here I discuss the different kinds of verbs and how those verbs are nominalized in Akan. In the same section, I show some phonological processes such as vowel raising. In section 4, I briefly discuss the theoretical framework within which the data presented in this paper are analyzed. I thereby present the proposed template for the morphological structure of Akan nominals and its implications in this same section. Section 5 presents the summary of issues discussed in this paper.

1.1 The Akan Language

Akan has as many as ten (10) dialects, spoken in six of the ten regions in Ghana according to Dolphyne (1988/2006: xi), mostly as a mother tongue (L1). But out of these ten dialects, three are classified as the major dialects including Akuapem Twi, Asante Twi and Fante. These three dialects are classified 'major' primarily because of the fact that they have received appreciable amount of research attention over the years, have well-developed literatures, and are taught in some schools in many parts the country.

2. Some Definitions of Nominalization

Nominalization as a derivational process has attracted the attention of linguists from diverse backgrounds such as phonologists, morphologists, etc. Following are some of the various definitions these linguists have given for nominalization. Bodomo (1997a) was specific on the categories from which nominals can be formed in Dagaare by defining nominalization as "a process which involves the formation of nouns from verbs and adjectives". Bodomo (idem.) also fails to tell us how the formation takes places and also limits the word classes from which nominals are

derived to only verbs and adjectives. Appah (2003) expands the categories mentioned by Bodomo by defining nominal derivation as "the process or result of forming a noun from words (verbs, adjectives, and other nouns), phrases or clauses" factoring in how the phenomenon is observed in Akan. One truism that runs through the above definitions of nominalization is that it results in category change. However, a critical look at these various definitions indicates a clear restriction of the triggers of the nominalization process only to segments or morphemes such as affixes, while they remain silent on the role that supra-segmentals such as tone can play in changing the category of a lexical item, as is observed in tone languages such as Akan. For example, in Akan a verb like *fìrí* 'to buy on credit' is nominalized by changing the tonal pattern, as in *fírí(é)* 'credit buying'. Therefore, we need to widen the domain within which nominals can be formed in our definition of the process. I hereby propose a more holistic definition of the subject to capture both segmental (affixation) and suprasegmental (tone) nominalization of lexical items, especially in tone languages and build on the last definition by suggesting that nominalization in Akan can be defined as the process by which nominals are derived from lexical items such as verbs, adjectives and other nouns usually by way of affixation or by tonal marking.

2. 1 Reduplication

Cross-linguistically, reduplication is one of the main means through which many languages form new words/lexical items, and Akan is no exception. In derivational morphology, one of the processes which has received much attention in the literature is reduplication. The subject has received much attention mainly in two components of grammar, phonology and morphology, over the past decades and the common consensus among researchers in these two fields of study is that a complete and balanced study of the subject calls for an interaction between these two modules of grammar. Raimy (2000) describes reduplication as the repetition of a sequence of segments and continues to suggest that the analysis of this subject demands a morphology-phonology interface approach and that a neglect of either of the two will undermine the credibility of the outcome of any such study, as he opines that, "the most fruitful analysis of reduplication as a phenomenon unto itself will utilize aspects of both phonology and morphology and any analysis that neglects either of these areas will not fully illuminate what reduplication is" (Raimy 2000:1). This idea leads him to discount the one-sided view of earlier linguists, especially some phonologists such as McCarthy and Prince (1995, 1997), that reduplication is the "microcosm of phonology…", but rather suggests that it "results from general properties of phonology and morphology and more specifically to be the result of the interaction between these two modules of grammar" (Raimy 2000:2). He therefore proposes a

modular approach to analysis reduplication. As has been indicated already, the current paper subscribes to this morphology-phonology modular approach.

2.2 Reduplication in Akan

The reduplication process in Akan has attracted contributions from many scholars including pioneering work by Christaller (1875), later followed by Schachter & Fromkin (1968), Wilbur (1973a, b, c), Marantz (1982), Lieber (1987), Dolphyne (1988/2006), Abakah (2004), among others. However, unlike those previous works which extensively discuss reduplication as a process, the current study takes the discussion to another level; it discusses the how forms which have already undergone the reduplication process are nominalized. In the reduplication process itself, the resultant reduplicated forms go through affixation (specifically prefixation) and later on undergo another affixation (both prefixation and suffixation) when they have been nominalized. The need therefore arises to establish which of these two stages or levels of affixation, i.e. affixation during reduplication and affixation during nominalization, applies first, and the implication of the lack of ordering of these levels of affixation in Akan. Therefore, the approach is a kind of an interface between morphology and phonology and is cast in the mode of Siegel's (1974/1979) Level Ordering Hypothesis.

3. Akan Verb Stem Types

We discuss two main categories of Akan verb stems that can be nominalized: (a) bare/simple verb stems, which we will term in this paper as 'unreduplicative' because they cannot be reduplicated before they are nominalized, and (b) reduplicated verb stems, which will, on the other hand, be termed as 'reduplicative' because always they are nominalized only after they have been reduplicated. This paper pays more attention to the latter stem type because of the unique interest it presents. We further observe two kinds of reduplicated forms; (a) complete reduplicated forms and, (b) 'partial'[3] reduplicated forms.

3.1 Nominalization of Bare/Simple Verb Stems

Akan selects from among sonorant sounds for singular nominal prefixing. These sonorant sounds are vowels and homorganic nasals. Some of those stems arbitrarily select for vowels as their nominal prefixes, others select for homorganic nasals as their nominal prefixes as will be seen in the examples below. Dolphyne (1988/2006)

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[3] The term 'partial' is used here not to refer to a mismatch of segments in correspondence, but rather to loosely indicate a change in either vowel height through vowel raising or consonantal place of articulation due to some phonological processes such as assimilation observed in some reduplicants which do not copy perfectly the segments of their stems.

postulates on the selection for vowels that there seems to be "no correlation to explain the selection of certain vowels as singular prefixes other than ATR agreement that usually exists between vowel(s) in the verb root/stem and the singular nominal prefix". But the low and mid vowels /a/ and /ɛ/ respectively are noted for violating this ATR rule in Akan. Here, it is worth noting that with the exception of the high back vowels, all the ten vowels in Akan[4] can occur word-initially as nominal prefixes. The high front vowels /ɪ, i/ are known to be allowed word/morpheme initially only in some sub-dialects of the Fante dialect of Akan. For the purpose of distinction in prefixation, the verb stems in (1), (2), & (3) have been categorized into transitive and intransitive forms. (The prefixes are underlined). Let us note that the transitive verbs no longer require objects after they have been nominalized: they now assume the object position and are introduced by usually auxiliary verbs.

3.1.1 Verb Forms

The verb stems below in this subsection can be nominalized straightaway, i.e. without being reduplicated first, through nominal prefixation. This is to say that the stems to be nominalized in this instance are unreduplicated.[5] When these stems are reduplicated before they are nominalized, the output forms are ill-formed as shown in the examples in the column to the right below in (1). They have been classified into transitive and intransitive as discussed below. In the examples of transitive verb stems/bases, I provide two sets of data for them: one set for those that select for vowels as nominal prefixes and the others that select for homorganic nasals stops as their nominal prefixes, as in (1) and (2) respectively. In (3), I provide examples of intransitive verb stems/bases that select for vowels as their nominal prefixes. All the nominal prefix verbs are underlined.

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[4] Among the three dialects of Akan, it is only the Fante dialect that has nine instead of ten vowels (Dolphyne 1988). The advanced low vowel /æ/ is not present in the Fante vowel inventory except in some few Fante subdialects such as Boka (cf Abakah, 2004). The rest have ten-vowel system.

[5] Even though as Dolphyne (1988:136) correctly argues that it is possible to reduplicate all verbs including this type of verb stems, yet when they are reduplicated and subsequently nominalized, they carry different meanings from those of their stems. In most of the cases, the meanings of the nominalized reduplicated forms are unattested. Therefore, since the current paper is on nominalization of verbs, we use the term 'unreduplicative' to refer to those verb stems that cannot be nominalized after they have been reduplicated. Conversely and redundantly, the term 'reduplicative', which will later in the paper be marked by the 'feature' [+reduplicative], would then refer to verb stems which can be nominalized only after they have been reduplicated.

1). Transitive verbs with vowels as nominal prefix

Stem	Gloss	Nominalised	Reduplicated	Gloss
a. kó	'fight'	ɔ̀/àkó	*ɔkoko /akoko[6]	'battle/war'
b. hìá	'need/want'	òhìá	*ohiehia/ʔahiehia	'poverty'
c. táń	'hate'	ɔ̀táń	*ɔtintan	'hatred'
d. dɔ́	'love'	ɔ̀dɔ́	*ɔdɔdɔ/ɔdodɔ	'love'
e. sùró[7]	'fear'	èsùró	*esurosuro	'fear'

In (2) below, I provide more examples of transitive verb stems, but this time those that select for homorganic nasals as their nominal prefix.

2). Transitive verb stems with nasal nominal prefixes.

Stem/base	Gloss	Nominalised	Reduplicated	Gloss
a. pàtá	'compensate'	m̀pàtá	*m.pata-pata	'compensation'
b. bòá	'help'	m̀mòá[8]	*m.boa-boa	'help'
c. hyìrá	'bless'	ǹhyìrá	*n.hyira-hyira	'blessing'

The following verbs do not require direct objects but only the subject. The only thing that their nominal vowel prefixes have in common is the feature value [-High].[9]

3). Intransitive verb stems with vowel nominal prefixes.

Stem/base	Gloss	Nominalised	Reduplicated	Gloss
a. sá	'dance'	àsá	*a.sa-sa	'dancing'
b. nyìní	'grow'	ènyìní	*e.nyini-nyini	'growth'
c. mùná	'frown'	èmùná	*e.muna-muna	'a frown'

It is not only the regular verb stems which can be nominalized in Akan. There are irregular verbs in Akan as well which are nominalized in the same way as their

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[6] The ill-formed data 1(a) which can be well-formed only after the whole nominalized reduplicated form has been reduplicated again. For instance, *akoko.akoko* '(frequent) battle/war' is an acceptable form. Further examples can be inferred from Abakah (2004:204), Dolphyne (2006:137), etc.

[7] The verb *suro* 'to fear' can function as either transitive or intransitive verb.

[8] The stem/base initial stop consonant /b/ changes into the nasal [m] in the prefixed form through assimilation rule i.e. *mboa- mmoa.*

[9] This is a reminder that the data being discussed in this paper are from the Asante Twi dialect of Akan. In the Fante, the feature [-High] is not adequate enough because high front vowels are allowed as nominal prefixes (Dolphyne 2006: 82); it is only the high back vowels which do not occur morpheme-initially.

regular counterparts. The following data in (4) are some examples of such verbs and how they are nominalized. They are irregular in the sense that unlike the regular verb stems, they require both the nominal prefixes and suffixes for their meanings to be complete. These verb stems are not very productive in Akan.

4). Irregular verb stems with nominal prefix and suffix

Root/Base	Gloss	Derived form	Gloss
a. bó/bòró	'beat (intrans)'	ɛ̀bòróɔ̰́	'beating'
b. bó/bòró	'get drunk'	ɛbòróɔ̰́	'drunkeness'
c. sòró	'to be naughty'	ɛ̰̀sòróɔ̰́	'naughtiness'

Even though the focus of this paper is on nominal prefixation, I now would like to briefly discuss nominal suffixation, for a more complete view of nominalization in Akan.

3.1.2 Asante Nominal Suffixes

The Asante Twi dialect uses the following mid vowels as its nominal suffixes: /e, ɛ, o, ɔ/ (cf. Dolphyne, 2006:83), in addition to the prefixes. The choice of which of these vowels to select as the nominal suffix is observed to be informed by two common harmonies: Advanced Tongue Root (ATR) and rounding harmonies with the vowels of stem/base. The front vowels /e, ɛ/ agree with the preceding vowel in terms of value [±back] and [±high], as well as [±ATR]. Similarly, their [+back] counterpart vowels /o, ɔ/ harmonize with the preceding vowels in the three features mentioned above. However, verbs that end in low vowel /a / and mid-vowel, /ɛ/ respectively usually do not obey the ATR harmony thereby leading to vowel disharmony.

The height of the stem/base vowel does not participate in the selection. I provide below verb stems that select for front mid-vowels as their nominal suffixes in (5a-d) and those that select for back mid vowels as their nominal suffixes in (5e-g).

5) Mid vowels as nominal suffixes

	Stem/base	Gloss	Affixed form (both prefix and suffix)	
a.	sìsí	'cheat'	àsìsíé	'cheating'
b.	dwàrí	'bathe'	àdwàríɛ̀	'bath'
c.	tìtí	'train'	ǹtìtíɛ̀	'training'
d.	fí	'vomit'	ɛ̀fíɛ̀	'vomiting'
e.	wú	'die'	òwùó	'death'
f.	wó	'give birth to'	àwòɔ̰́	'birth'

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g.   **tú**   'eject sb.'   <u>**ètúó**</u>   'ejection'

3.1.3 Asante Prefix-less Nominalization

The Asante dialect does not always nominalize through prefixing and suffixing. There are some verb stems that select for only nominal suffixes. A few examples of such stems are provided below in (6). In the column to the extreme right, we see that the output forms become ill-formed when we attempt to attach a nominal prefix . It is worth noting that in the other dialects of Akan that do not make use of nominal suffixes the stems are nominalized only by the change in their tonal patterns, as indicated on the words in (6).

6). Prefix-less nominals

	Stem	Gloss	Derived form	Gloss	Ill-formed
a.	**fírí**	'buy on credit'	**fírí(é)**[10]	'credit buying'	***afirie**
b.	**nàntí**	'walk'	**nántí(ɛ́)**	'walking'	***anantɪɛ**
c.	**yàrí**	'get sick'	**yárí(ɛ́)**	'sickness'	***ayarɪɛ**

3.2 Reduplicated Verb Stems

Two main reduplicated forms are observed, the first being a reduplicated form where there is vowel raising in the reduplicant. As has been observed in the literature on Akan reduplication (Schachter & Fromkin (1968); Marantz (1982); Lieber (1987); Dolphyne (1988/2006); McCarthy & Prince (1995)), a non-high vowel particularly the low vowel raises to a high front vowel in the reduplicant, while a mid back vowel usually raises to the high back vowel. These kinds of reduplicated forms will be treated in this paper as partial or incomplete reduplication, the other reduplicated form being the one in which exactly the same segments in the base are copied into the reduplicant slot.[11] This is a total or complete reduplication. The morpho-phonological analysis of the data on reduplication will be done in two parallel ways: while in the former there is a change of vowel height in the reduplicant and also homorganic nasal assimilation, the latter process maintains all the segments copied from the base in the reduplicant. I will begin this section by briefly discussing the vowel raising process.

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[10] This derived form does not usually stand on its own semantically. It forms a compound with another morpheme such *àdé(ɛ̀)*. So a native speaker will usually use an expression like *àdè fí!rí(é)* 'credit buying' instead of saying only the head of the compound in an expression. For further detailed discussion, refer to Appah (2003).

[11] Even though in instances such as complete copying of the base it is usually not empirically straightforward to determine which of the morphemes is the base, I am using the term reduplicant *slot* advisedly on the premise that copying of the stem/base is usually observed in Akan to be from a morpheme to the right of the reduplicant. Moreover, the reduplicant in Akan is usually termed as a *reduplicative prefix* in the literature (Dolphyne 1988/2006; McCarthy & Prince, 1995a; Abakah 2004).

3.3.1 Vowel Raising in the Reduplicant

The vowel raising can occur either in a simple CV syllable as in (7a-c) or in closed or heavy CVN syllable reduplicants as in (7d-g). A low vowel in the verb stem/base will usually raise to a high vowel in the reduplicant. The raising process satisfies two harmony rules in Akan, Advanced Tongue Root (ATR) harmony and rounding harmony, with the features [ATR] and [back] respectively. The data in (7) show raising from the low vowel /a/ in the base to a high vowel /ɪ/ in the reduplicant, (8) show raising of a mid-vowel /ɔ/ to a high back vowel /ʊ/ in the reduplicant.

7). Low vowel raises to high front vowel

	Stem/base	Gloss	Reduplicated form
a.	daʔ	'sleep'	dɪ.daʔ
b.	kaʔ	'bite'	kɪ.kaʔ
c.	saʔ	'scoop'	sɪ.saʔ
d.	kan	'read'	kɪŋ.kan
e.	tam	'lift'	tɪn.tam
f.	bam	'embrace'	bɪm.bam
g.	pam	'sew'	pɪm.pam

The data below exemplify instances of raising to the high back vowel in the reduplicant in both simple CV and CVN syllable shapes.

8). Mid-back vowel raises to high back vowel

	Stem/base	Gloss	Reduplicated form
a.	sɔʔ	'mend'	sʊ.sɔʔ
b.	dɔʔ	'weed'	dʊ.dɔʔ
c.	pɔn	'close'	pʊm.pɔn
d.	dɔ	'love'	dʊdɔ

As briefly mentioned in the introduction to this subsection, and also from examples (7) & (8), we observed place assimilation processes in addition to the vowel raising and rounding harmony. In closed syllable stems, the place of articulation of the initial consonant of the stem assimilates place to the final consonant of the reduplicant, as observed in (7d), (7e) and (8c). On the rounding harmony, from the examples in (7), the [-Back, -High] vowels in the stem will raise to a [-Back, +High] in the reduplicant. Conversely, from the data in (8), the [+Back, -High,-Low] (i.e. mid) vowel in the base will raise to another [+Back] [+High] vowel in the reduplicant.

3.3.2 No Raising in the Reduplicant

Total or complete reduplication is the more easily predictable form of reduplication across languages. That is, all things being equal, one would expect a base to copy itself exactly into the reduplicant slot.

In the following CVCV, CVV, CVrV, CrV syllable stems, the stem-final non-high vowels do not raise, as was observed above in the CV and CVN syllables in (7) and (8), in the reduplicants, resulting in exact copying of segments from the stems. In 9(a) - (c) are examples of stem-final low vowels that do not raise in the reduplicant. 9(e) - 9(h) are examples of final-mid vowels that also do not raise in the reduplicant. Examples in (9ii) show that stem high vowels do not lower their height in the reduplicants.

9). i. Exact copying of stems with final non-high vowels

	Stem	Gloss	Reduplicated form	
a.	kasa	'talk'	kasa.kasa	*kasi.kasa
b.	tea	'reprimand'	tʲɪa.tʲɪa	*ʔtʲɪɛ.tʲɪa
c.	pra	'sweep'	pra.pra	*prɪ.pra
d.	tie	'listen'	tʲie.tʲie	*tʲii.tʲia
e.	pue	'move out'	pʷue.pʷue	*pʷui.pʷue
f.	kyerɛ	'guide'	tɕʲɪrɛ.tɕʲɪrɛ	* tɕʲɪrɪ .tɕʲɪrɛ
g.	frɛ	'call'	frɛ.frɛ	* frɪ.frɛ
h.	srɛ	'beg'	srɛ.srɛ	* srɪ.srɛ

Below are some examples showing exact copying of high vowels in the reduplicant slots. There is no lowering of vowel height in the reduplicant.

ii. Exact copying of stems with final high vowels

	Stem	Gloss	Reduplicated form
a.	di	'eat'	di.di
b.	sere	'laugh'	sɪrɪ.sɪrɪ
c.	huri	'jump'	hʷuri.hʷuri
d.	foro	'climb'	fʷʊrʊ.fʷʊrʊ
e.	horo	'wash'	hʷʊrʊ.hʷʊrʊ

3.4 Nominalization of Reduplicated Forms

The nominalization process has already been observed to apply to [+reduplicative] verb stems. What this implies is that the nominal affix attaches to the reduplicants, but not directly to the stems. In this subsection, we begin the discussion on nominalization of reduplicated verb forms with partially reduplicated forms. The nominalization process we shall see here differs from what we observed in §3.1.1-§3.1.3 in that while in the previous process the nominal prefixes attached directly to the verb stems and not the reduplicated forms, the opposite is the situation to be discussed here.

3.4.1 Nominalization after Complete Reduplication

Here, nominalization applies only after the complete reduplication of the verb stems. We realize an ill-formed output (to the extreme right) when we apply nominalization before reduplication.

10). Nominalization of completely reduplicated verbs

	Reduplication	Nominalization	Gloss	Ill-formed
a.	di.di	æ.di-di(e)[12]	'eating'	*ædi.ædi(e)
b.	tʲɪa.tʲɪa	a.tʲɪa-tʲɪa	'a reprimand'	*atʲɪa.atʲɪa
c.	pʷue.pʷue	æ.pʷue-pʷue	'outing'	*æpʷue.æpʷue
d.	hʷuri.hʷuri	æ.hʷuri.hʷuri	'jumping'	*æhʷuri.æhʷuri
e.	fʷʊɾʊ.fʷʊɾʊ	a.fʷʊɾʊ.fʷʊɾʊ	'climbing'	*afʷʊɾʊ.afʷʊɾʊ
f.	hʷʊɾʊ.hʷʊɾʊ	a.hʷʊɾʊ.hʷʊɾʊ	'washing'	*ahʷʊɾʊ.ahʷʊɾʊ
g.	tʲie.tʲie	æ.tʲie.tʲie	'listening'	*ætʲie.ætʲie
h.	tɕʲɪrɛ.tɕʲɪrɛ	a.tɕʲɪrɛ.tɕʲɪrɛ	'guiding'	*atɕʲɪrɛ.atɕʲɪrɛ

3.4.2 Nominalization after Partial Reduplication

Nominalization again applies only after the verb stems have been reduplicated. When nominalization precedes reduplication, ungrammaticality results (as seen in the column to the extreme right below).

11). Nominalization of partially reduplicated forms

	Reduplication	Nominalization	Gloss	Ill-formed
a.	tɪntam	a.tɪn.tam	'lifting'	*atɪn.atam
b.	kɪŋkan	a.kɪŋ.kan	'reading'	*akɪn.akan

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[12] The nominal suffix /-e/ is present only in the Asante Twi dialect.

c.	pɪmpam	a̱.pɪm.pam	'sewing'	*apɪm.apam
d.	bɪmbam	a̱.bɪm.bam	'embracing'	*abɪm.abam

The data above in (11) differ from those in (10) in two phonologically motivated ways; (a) the reduplicant, which undergoes vowel raising is not considered a free morpheme, but instead a bound morpheme, and (b) apart from the phonological process of vowel raising observed in the reduplicative prefix, some of the reduplicant-final homorganic nasals as in CVN root/stem undergo assimilatory processes.

4. An Overview of the Level Ordering Hypothesis

There have been arguments and counter arguments regarding the level or order of affixation in languages, especially after Siegel's (1974) groundbreaking work on issues on English morphology. The question as to whether affixation in English follows a certain order or goes through certain levels has not attracted as much reaction as the question of how such affixation is ordered. Now extending the same idea to Akan, a question that one may ask is whether the two kinds of affix (both prefixes) presented in §3.4 can swap places, or their order of affixation. In other words, can a reduplicative prefix swap place with a nominal prefix in the course of nominalization of Akan verb stems? In an attempt to answer this question, I would like to briefly touch on what has been proposed in the literature on morphology concerning level ordering of affixes in derivation. I refer to one of the earlier works and particularly Siegel (1974[1979]). One of the central arguments or hypotheses of Siegel (idem)[13] is that English, like many other languages, orders its affixation in deriving lexical items. She divides English affixes into two classes; Class 1 affixes and Class 2 affixes, and claims that a Class 1 affix cannot attach to a word or morpheme which a Class 2 affix has already adjoined.

Though the focus of Siegel's analysis was on suffixation, because English usually derives new lexical items through suffixation, as against Akan's usual prefixation mode of deriving nominals, we believe the difference in directionality of affixation will not in any significant way set back comparative analysis between the two languages in this section. Like the functions of the English derivational morphemes provided by Siegel, the nominal prefixes in Akan perform the same derivational role during nominalization.

Another central idea of Siegel's hypothesis about affixation in English was that while all class 2 formatives/morphemes are stress-neutral, class 1 affixes, on the other hand, may cause stress changes. It seems that in Akan, both the nominal prefix and the reduplicative prefix cause a tonal change on a word. Even though the current

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[13] Siegel proposed this hypothesis in her 1974 PhD dissertation and the work was published later in 1979.

paper does not discuss tone, which is a very prominent feature and well-researched area of the phonology of the language, I will attempt to expatiate further by giving some examples of data in their three stages or levels of deriving nominalized forms: stem form (bare or affix-less), reduplicated form (affixed), and finally nominalized form (affixed).

Siegel's hypothesis has had its proponents as well as its opponents. Some of its early proponents such as Allen (1978) have done some modification to some of the central ideas of the hypothesis and come up with a hypothesis termed 'Extended Level Ordering Hypothesis'. Later on Kiparsky (1982) further developed this hypothesis into a theory, which became the principle of Lexical Phonology/Morphology. Since then, there have been further extensions to the hypothesis by different authors in both phonology and morphology. Notwithstanding, there have been opponents as well to this hypothesis. Prominent among the early works opposing this hypothesis include Fabb (1988)**.** In the opinion of the author of this current paper, I suppose that to some extent, the hypothesis on level or order of affixation by Siegel (1974) is still relevant today and it can help shed light on the order of affixation, particularly prefixation in the process of nominalization of Akan verb stems.

In all this, I suppose there is a learnability problem for the learner, in this case, both acquiring it as a first language and as a second language. The obvious question is, how does the learner know which verb stem can be reduplicated and which ones cannot when s/he wants to nominalized an Akan verb? I think this problem is not idiosyncratic to Akan, as such knowledge forms part of the native speakers' competence of the language. The learner will, perhaps, have to just memorize and master that aspect of the grammar of the language.

Now having observed the two main ways through which Akan (Asante Twi) nominalizes verb stems: direct nominalization of bare or simple stems, which is further subdivided into direct prefixation and direct suffixation on one hand, and nominalization of reduplicated forms on the other hand, we believe it will be more handy and elegant to come up with a common template for the morphological structure to account for all forms of nominal affixation in Akan. We attempt this in the next section.

4.1 The Proposed Morphological Structure Template

Since the focus of the current paper is on nominalization, which is done mostly through prefixation in Akan, except the Asante Twi dialect which often uses additional nominal suffixes, the proposal will basically revolve around prefixation. This section focuses on nominalization of the reduplicated form which is broader and also has some interesting morphological structure for the proposal of this paper. In

this case two prefixes have been observed and discussed already in Akan nominals; the nominal prefix and the reduplicative prefix. While the former functions as a class-changing morpheme, the latter functions as a class-maintaining prefix. The reduplicative prefix usually adds semantics of degree or intensity to the function of the verb stem. For instance, the stem, **kan** 'read' becomes **kenkan** 'read repeatedly' when reduplicated.

In the case of the nominalized partially reduplicated forms, the reduplicative prefix could be analyzed as the Class 2 prefix (after Siegel 1974) that must attach to the verb stem first. The nominal prefix then becomes the Class 1 prefix. The Class 1 prefix applies only after the Class 2 prefix has adjoined the stem/base. To further illustrate this, let us look at the examples in (12) below on English affixation. It is argued in this paper that the nominal prefixes, like the English noun-forming suffixes such as -**ity**, which can attach either directly to a stem as in the following example by Siegel (1974:13)[14] in (12) or to already derived words in (13), can adjoin both bare (unaffixed) and reduplicated (affixed) forms in Akan, as already exemplified in §3.2 and 3.4 above.

In the case of the reduplicated verbs or forms, like example (13) from English, the Class 1 prefixes apply only after Class 2 prefix has applied. Any attempt to surpass Class 2 affix to attach to the stem will render the output ill-formed as in Akan example (14) below.

12)	Stem		Class 2 affix		Class 1 affix		Derived word
a.	**prob**	+	$\varnothing$	+	**ity**		**probity**
b.	**sincer**e	+	$\varnothing$	+	**ity**		**sincerity**

13)	Stem	Class 2 affix	Class 1 affix	Derived word
a.	**move**	+ **able**	+ **ity**	**movability**
b.	**measure**	+ **able**	+ **ity**	**measurability**

As has been explained earlier, verb stems such as **tam** 'lift', **kan** 'read', **pam** 'sew', **bam** 'embrace', etc. cannot be nominalized through direct nominal affixation (prefixing). They can be nominalized only after they have been reduplicated. In (14a.ii) and (14b.ii) we see the implications of nominalising these stems directly.

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[14] Siegel (1974) discusses something more than just the segments as in the suffixes themselves. She also emphasizes changes in stress placement, particularly primary stress that these suffixes can condition on the stem they attach to. This current paper leaves detailed discussion on these suprasegmental properties for future research.

14)		Affix 1	Affix 2	Stem	Derived word	Gloss
a.	i.	**a**	**+ kɪn**	**+ kan**	**akɪn-kan**	'reading'
	ii.	**a**	**+ -**	**+ kan**	***akan/*akin**	
b.	i.	**a**	**+ bɪm**	**+ bam**	**abɪm-bam**	'embracing'
	ii.	**a**	**+ -**	**+ bam**	***abam/*abim**	

When we compare (13) with (14), we realize that Affix 2 (reduplicative prefix) in Akan acts like the Class 2 affix in English which when surpassed in affixation, results in ungrammaticality. English forms like *movity **w**ill certainly be judged ill-formed by native speakers since the Class 1 suffix **–ity** will have to attach to a form that Class 2 has already affixed (suffixed) and not the stem itself, in this context.

Another question that will be of interest for discussion is whether from examples such as in (14) above the Affix 1 can attach to the stem before the reduplication applies. I consider this question in (15) below in a series of derivations. The answer to this question can be inferred from the examples in (14ii) ('derived word' column). Therefore, reduplicating an already ill-formed nominal, in essence, does not improve its grammaticality status. Notwithstanding, there are forms that can be grammatical after reduplicating their nominalized forms, as we will see some examples of this process later on in subsequent subsections.

15) a. Step 1

Affix 1	Affix 2	Stem	Derived word	Gloss
a	**+ Ø**	**+ tam**	***atam**	-

b. Step 2

Affix 1	Affix 2	Input	Derived word	Gloss
Ø	**+ *atɪn**	**+ *atam**	***atin-atam**	-

The level ordering hypothesis will help eliminate the forms like *a.tɪn-a.tam in (14), in which the effect of the nominal prefix is felt in both the reduplicant and the stem because it applied before reduplication applied.

The preliminary conclusion one can draw about affixation in nominalization in Akan at this stage is that a Class 1 affix (nominal prefix) cannot attach to [+reduplicative] stems, but only after a Class 2 affix has attached to those stems. Similarly, a Class 1 (reduplicative) prefix cannot attach to an already affixed (Class 2 affixed) i.e. [-reduplicative] form. In the latter case, the process will result in some kind of *infixation*,[15] which is not productive in the Akan language (Dolphyne, 1988/2006:80).

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[15] This term may be simply defined as a process of inserting a morpheme (in this case a reduplicative prefix) into an already affixed/derived word.

With this background in mind, we now move on to propose a template to account for the affixation of verb stems during nominalization in Akan. All the obligatory elements/units are notated with the '+' sign, while the optional ones are indicated by the '±' sign. This practice is adopted for the rest of this paper.

16) Level of affixation (prefixation) in nominalization for [-reduplicative] stem verbs.

	Affix$_1$	Affix$_2$	Stem/Base	Derived word	Gloss
a.	**n**	+ **Ø**	+ **kaɪ**	**nkaɪ(ɛ)**	'remembrance'
b.	**ɛ**	+ **Ø**	+ **fɪ**	**ɛfɪ(ɛ)**	'vomiting'

In (16) above, the Affix$_2$ (Class 2) slot is empty for both (a) and (b), the stems of which are unreduplicative. The empty slot for the Affix$_2$ in the structure above seemingly presupposes that in the process of nominalizing unreduplicative stems, the nominal prefix (i.e. Affix$_1$) can bypass the Affix$_2$ slot and directly attach to the stem. Therefore, Affix$_1$ is the only constant morpheme apart from the stem verb. In (17) below, we present a similar structure to account for the [+reduplicative] stem verbs during nominalization.

17) Level of affixation (prefixation) in nominalization for [+reduplicative] stem verbs.

	Affix$_1$	Affix$_2$	Stem/Base	Derived word	Gloss
a.	**a**	+ **tɪn**	+ **tam**	**atɪntam**	'wrestling'
b.	**a**	+ **kɪn**	+ **kan**	**akɪŋkan**	'reading'

In (17) above, unlike the structure in (16), all the slots for affixes are filled. What this means is that both Affix$_1$ and Affix$_2$ are obligatory elements in nominalizing reduplicative verb stems. So far two morphological structures have been briefly presented; one with an empty Affix$_2$ slot in (16) and the other with the Affix$_2$ slot filled as in (17). Now conflating the two structures in (16) and (17) above, we get the proposed initial structure template for affixation below in (18), where the marked difference between the two is observed in the slot for the Affix$_2$. While is it null or absent in the former structure, it is obligatorily present in the latter structure. This option of it being present or absent in the structure is indicated by the symbol '±'. The symbol indicates the optionality of the item to its left, in the case of prefixation, and vice versa in the case of suffixation. The stem is the only obligatory element.

18) Proposed morphological structure template for level of affixation (prefixation) in nominalizing Akan verb stems for the data in (16) and (17).

Affix$_1$ + Affix$_2$ ± Stem

As regards suffixation in nominalizing, as has already been pointed out, it is more prominent in the Asante Twi dialect than the other two dialects of Akan. Therefore, it is assumed in this case that nominal suffixes, in particular, are optional elements in nominalizing Akan verb stems, hence, they being introduced by the optional sign, '±' in the revised[16] proposed template presented in (19) below.

A proposed morphological structure template for level of affixation (prefixation) in nominalizing Akan stem verbs in general is presented below in (19). The structure is revised to capture nominal suffixation as well. I follow the bracketing convention adopted in Siegel (1974:103) and boundary markings for classes of affixes where '+' means the attaching affix is a class-changing affix, '#' means the affix can be optional and class-maintaining. We restate the above structure in (18) below in (19).

19) $[\text{Affix}_1 +] + [\text{Affix}_2 \#] \pm [\text{Stem}] \pm [+\text{Affix}_3]^{17}$

4.2 Open Issues.

There seem to be some exceptions to the claim in this paper that the Affix_1 is the only obligatory element or morpheme apart from the stem/base. From the examples in (6), the presence of the nominal suffix alone (which is applicable only in the Asante Twi dialect) is enough to nominalize the verb stem. Put differently, the absence of the usual nominal prefix does not affect the grammaticality of the derived nominal of such categories.

Two main explanations could be assigned for this seeming exception to the proposal. The first explanation is that nominalization of such verbs is not only done at the morphological level of the grammar/lexicon, but also at the suprasegmental/prosodic level of the language. Differences in tonal markings on the two lexical items i.e. the verb base and the derived nominal, distinguish the two, as in the example in (20) below. The second possible explanation is that some of those verb stems can function as either reduplicative or unreduplicative with some variation in the meaning of each nominal derived. When they are reduplicative, their nominalized forms make sense only after the whole derived form i.e. the nominalized reduplicated form, has been reduplicated again. An example of this derivation has been provided in (21) for illustration. In hypothesizing this explanation, it is assumed in this paper that since all verbs in the language can be reduplicated (cf. Dolphyne 2006: 136), all the

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[16] The structure is revised in the sense that it now accounts for nominal suffixes, making the structure now look more peripheral in shape.

[17] In order not to confuse the different uses of the same '+' sign, the one outside the bracket has already been explained in (15), that it determines the obligatory presence or otherwise of the affix it follows in the case of prefixation. The same sign when used in the bracket, on the other hand, indicates the class-changing effect of the associated affix_1 on the stem.

verbs, including those of this category are underlyingly reduplicative, thus the inherent presence of the nominal prefix in the underlying representation of the grammar. However, these kinds of verbs can surface as either reduplicative or unreduplicative, resulting in the variation in their nominalization at the phonetic or surface level of representation. It is therefore postulated here that the structure template in (17) can hold for such forms as (6) and restated in (20) in the underlying representation of the grammar of Akan. The decision to drop both prefixes (i.e. Affix$_1$ and Affix$_2$) is made at the surface level of the grammar, but not in the underlying representation.

20) The morphological structure for prefix-less nominals in the underlying representation.

	Affix$_1$	Affix$_2$	Stem	Affix$_3$	Derived word	Gloss
a.	**Ø**	**+ Ø**	**fìrí**	**+ e**	**fírí (é)**	'credit buying'
b.	**Ø**	**+ Ø**	**nàntí**	**+ ɛ**	**nántí(ɛ́)**	'walking'

In example (21) below, we present instance where one verb stem can be derived in two different ways i.e. with a unaffixed (stem/base) input and with an affixed (nominalized) input through derivation.

21). Reduplication of some nominalized forms. (a) is not semantically well-formed, but (b) is. (b) employs the output (the unattested 'derived' form) of (a) as its input and reduplicates it.

	Affix$_1$	Affix$_2$	Stem	Affix$_3$	Derived form	Gloss
a.	**a**	**+ -**	**nàntí**	**+ ɛ**	***anàntí(ɛ)**	'walking'
b.	**-**	**+ anàntí**	**anàntí**	**+ -**	**anàntíanàntí(ɛ)**	'the habit of walking'

From (21) above, it is evident that Affix$_1$ is still obligatorily present in the reduplicated form of some verb stems which we earlier on labeled as [-reduplicative] though they make sense after the entire reduplicated unit has been duplicated again after it has been nominalized.

The stem in (21b) is what is assumed to be present in the underlying representation of the grammar, but can be realized at the surface level in two main ways:

a. by dropping the prefix and instead, using the suffix (specifically in the Asante Twi dialect)
b. by maintaining the prefix and in addition, reduplicating the underlying stem in deriving a nominal.

The conclusion is that in all nominalized verbs in Akan, the nominal prefix is hypothesized in this paper to be obligatorily present in the underlying representation

of those verbs, while the reduplicative prefix may be an optional element. But these nominalized verbs surface in three major ways:

(i)   with the nominal prefix and or nominal suffix;

(ii)   with only the nominal suffix and finally;

(iii) in reduplicative form with nominal prefix and/or nominal suffix.

The third option is what is similar to the underlying form we have hypothesized in this section.

Within the current linguistic theories such as the Optimality Theory (OT) framework, a difficulty would be encountered when an attempt is made to account for the nominalization of such verb stems in Akan. Perhaps morpheme-specific indexation constraints, after Pater (2010), might be a workable approach towards attempting to account for this variation in affixation in Akan.

5. Conclusion

To conclude, it has been observed that Akan nominalizes two main kinds of verb forms, which we identified as *bare* (unreduplicated) verb stems and reduplicated verb forms. We noted that in nominalizing the former, the nominal affix straightforwardly attaches to the stem to yield a grammatical nominal. With the latter verb form, however, the nominal affix (specifically the prefix) can adjoin the verb form only after the verb form has undergone a reduplication process. Put differently, in the latter form, attaching the nominal affix before the stem is reduplicated would result in ungrammaticality, as was observed in the data in section 3. This observation necessitated the analysis of this affixation process within Siegel's (1974) Level Ordering Hypothesis, where it was postulated that affixation in the nominalization of Akan verbs follows particular order. With particular reference to the process of nominalizing reduplicated verbs, we realized that always the reduplicative prefix has to precede the nominal prefix. This ordered-affixation requirement does not apply to all verb forms in Akan. In nominalizing bare verb stems, in which affixation is a direct interaction between the nominalizer and the stem, this requirement becomes irrelevant. We thereby proposed a conflated morphological structure template to account for what seemed to be two somewhat different morphological structures presented us by the nominalization of these two verb forms. Based on this proposed morphological structure, the following conclusions were drawn: that since all verbs in Akan can be reduplicated (cf. Dolphyne 2006: 136), for all nominalized verbs in Akan (Asante Twi), all the items that fall under $Affix_1$ are obligatorily present either at the underlying level or possibly at the intermediate level of representation of the grammar, but those that fall under $Affix_2$ such as reduplicative prefixes are optional elements which may or may not be present in the surface representation.

Finally, for future research, I suggest that this topic be further subjected to more phonological analysis with respect to the tonal patterning of the data presented, to determine its implications for the proposed morphological structure in this study. Also, an optimality theoretical analysis might be interesting, to determine whether the two verb forms use a common input form.

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