ON TONE AND MORPHOPHONOLOGY OF THE AKAN REDUPLICATION CONSTRUCTION

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ABSTRACT

Reduplication in Akan has received some discussion in the literature but all the studies have concentrated on some aspects of segmental processes that operate on the base to generate the output. In this paper, we study the morphological, segmental and tonal processes related to reduplicative construction in Akan. We demonstrate that on the basis of tonal perturbations which bases and reduplicative templates undergo, and the output tone melody of the reduplicated form vis-à-vis the tone melody of the base, we are able to tell the base from the reduplicant in the Akan reduplicative structure. We argue in the central portions of this paper that the reduplicant in Akan could be either prefixed or suffixed to the base and, in the course of further reduplication construction, it could be sited within the two constituent tokens of the original reduplicative output which serves as an unmarked base for further reduplication. This piece of information counterexemplifies the assertion in the existing literature that in the Akan reduplication construction, the reduplicant is invariably prefixed to the base. In this paper, we study reduplication of verbs, adjectives, nouns, and lexical reduplication and demonstrate that words belonging to the same class behave tonally the same.

Keywords: Tone, morphophonology, Akan reduplication

INTRODUCTION

Reduplication is fundamentally a morphophonological process “in which some part of a base is repeated, either to the left, or to the right, or, occasionally in the middle” (Spencer, 1991: 13). Looking at it from the morphological standpoint, it is a kind of affixation process (Spencer, 1991; Odden, 1996; Kager, 1999) but from the phonological viewpoint, the reduplicant, the copiable material, is underspecified for both segmental and prosodic properties. Spencer (1991: 10) asserts that the copiable material may be an entire word, a morpheme, “a syllable or sequence of syllables or simply a string of consonants (Cs) and vowels (Vs) which does not form any particular prosodic constituent (i.e. syllable, foot, morpheme etc.).” McCarthy and Prince (1994) refer to the copied material or the reduplicant as the phonological realization of some reduplicative morpheme that is phonologically empty, while Odden (1995, 1996) argues that reduplication copies only the segmental melody of the base minus the prosodic properties. Similarly, Kager (1999: 196) has posited that reduplication does not copy a prosodic constituent and for that matter it cannot be simply ‘constituent copying’ however it involves a prosodic shape invariant in the reduplicant, also referred to as a...
reduplicative template. Abakah, Caesar and Ababila (2010) have demonstrated that reduplication in Akan copies only the segmental melodies of the base which receive their tone melodies by default.

It will be shown in this paper that in the Akan reduplication construction, the segmental melodies of the base are at times copied with some of their prosodic properties, especially tone and nasality, which process Abakah (2005a) refers to as cloning. It will be argued in the central portions of this paper that the reduplicant is attachable to the base either on the right or on the left in contraposition to the apparent axiom in the literature that, in Akan, the reduplicative affix is invariably attached to the base on the left. We shall also investigate how the three major word classes of verbs (plus phrasal verbs) adjectives, and nouns reduplicate in Akan within the context of morphophonological processes and tonal perturbations that occur in the course of the Akan reduplication construction. Moreover, our focus in this paper is to establish the site of the reduplicant and other non-base tokens in a reduplicative output involving these three major word classes and clauses/sentences, each of which will be dealt with under a separate section.

INVENTORY OF AKAN TONES

Akan is a two-tone language having two contrastive level tones, namely the high tone (H) and the low tone (L). These are designated by the superscripts [T] for high tone (H) and [T] for low tone (L). The H has an allotone well-known as Downstepped H, downstep for short. Downstep is denoted by an exclamation mark raised before a symbol, like (’T). Two contrastive, linked tones will result in a contour/gliding tone if and only if the tone-bearing segments (TBSs), which may be VV, VC or CV, occur contiguously. Given this circumstance, a contiguous occurrence of LH or HL will give rise to a rising tone (R) or a falling tone (F), respectively.

TONEBEARING UNITS IN AKAN

In many tone languages, the tone-bearing unit (TBU) is taken to be the mora. However, the syllable is the basic TBU in Akan in that the syllable and the mora in that language clash, the direct result of the fact that Akan does not have a heavy syllable (Abakah, 2005a). In Akan, all vowels are TBUs. Preconsonantal nasal consonants, postconsonantal liquids and word-final nonvowel sonorants are also all syllabic in Akan and are therefore TBUs. All the types of TBU attested in Akan, and discussed above, can be found in the words in (1) below.

(1)  i.  ō.kú.sú.bé.ń.tsi.ř  ‘byname of a clan’
    ii.  ō.kwá.á.tsi.ří.kwá.á  ‘man of straw’
    iii.  pr.à.pr.à.gù.rà.ń.ń  ‘fat and tall’
    iv.  tsi.tsi.à.ń.kó.dó.ř  ‘amulet’

Abakah (2010) has also written about the inventory of the Akan tones and tone-bearing units in Akan but has not devoted sub-sections to them, like in all his works on Akan tonology.
1. REDUPLICATION OF VERBS

Reduplication of the verb in the Akan language semantically triggers multiple occurrences of the action specified by the verb (Abakah, 2013).

Akan verbs are generally subcategorizable into classes on the strength of their syntactic and semantic properties as well as their underlying tone melodies. On the basis of underlying tone melodies, verbs in Akan are sub-classifiable into three subclasses (see Abakah, 1993; 2003b; 2005a for a detailed study of tone-based classification of verbs in Akan): Classes I, II and III verbs in Akan have H, HL and LH melodies, respectively, in phonological representations. But, in the Twi varieties of Akan, especially Akuapem and Asante, the distinction between classes II and III verbs is neutralized in that verbs classified as II and III in Fante receive identical LH tone melody in phonological representations in Twi. In his study of *Stative Verbs in Twi*, Kalchofner (2000: 594) has also classified Twi verbs into two classes, I and II, based on the same lexical H and LH tone melodies, respectively. This classification ties in with Abakah’s (1993, 2003b, 2005a, 2010) classification, even though there is no evidence that Kalchofner (op. cit.) saw Abakah’s (1993) classification of Twi verbs in question. Let us briefly examine the data below on the three classes of verbs in Akan:

(2) **Class I Verbs (H-Toned)**

<table>
<thead>
<tr>
<th>Fante</th>
<th>Twi</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>jí</td>
<td>tóŋ</td>
<td>take</td>
</tr>
<tr>
<td>táŋ</td>
<td>cçɛ́</td>
<td>lift</td>
</tr>
<tr>
<td>čię́n</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Class II Verbs – HL in Fante; LH in Twi**

<table>
<thead>
<tr>
<th>Fante</th>
<th>Twi</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>bíṣá</td>
<td>kásá</td>
<td>ask</td>
</tr>
<tr>
<td>dáŋ</td>
<td>mánń</td>
<td>talk</td>
</tr>
<tr>
<td>mpuśó̰́w</td>
<td></td>
<td>turn</td>
</tr>
</tbody>
</table>

**Class III Verbs – LH Melody in all the dialects of Akan**

<table>
<thead>
<tr>
<th>Fante</th>
<th>Twi</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>sümá</td>
<td>sómá</td>
<td>hide</td>
</tr>
<tr>
<td>pirá</td>
<td>kórá</td>
<td>send</td>
</tr>
<tr>
<td>tečiré́</td>
<td></td>
<td>injure</td>
</tr>
</tbody>
</table>

Classes II and III verbs, as exemplified in the above data, are produced on HL and LH melodies, respectively, in Fante, while in the Twi varieties, those two classes of verb are both produced on LH melody as noted earlier. Despite the tonal difference observed in (1), that is, Fante and Twi having three and two classes of verb, respectively, based on lexical tone melodies, I posit three classes of verb for all the dialects of Akan at the underlying level (u-level) of representation so as to facilitate our analyses.

1.1. REDUPLICATION OF CLASS I VERBS IN AKAN

The briefest examination of data (1) reveals that there are two types of Class I verbs in Akan. These are 1) monosyllabic verbs with CV root structure and 2) disyllabic verb

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2 Most of the ideas and examples throughout this section have been replicated from some of Abakah’s works on Akan synchronic phonology, especially Abakah (2013), in the cause of readers who might not have access to Abakah (ibid.) and other works such as Abakah (2012) and Abakah, Caesar and Ababila (2010).
roots with C₁V₁C₂ (V₂) structure but they both have a common denominator, the H melody. In all the dialects of Akan, any disyllabic verb that has CVC stem structure is underlyingly a C₁V₁C₂V₂ root but the V₂ deletes, provided it is specified as [+High] and the preceding C₂ has [+Sonorant] specification in its feature matrix (see Abakah, 2004 for a detailed study). So, in all verbs with CVC stem structure in Akan, the C₂ is redundantly sonorant.³ However, phonetic disyllabic verbs with C₁V₁C₂V₂ structure, whereby the C₂ is specified as [+Sonorant], exist in the Twi varieties of Akan only. This is because Twi does not apply the deletion process in question rigidly. Let us study data (2) below for exemplification.

<table>
<thead>
<tr>
<th>(3a)</th>
<th>Monosyllabic Class I Verbs</th>
<th>(3b)</th>
<th>Disyllabic Class I Verbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verb</td>
<td>Gloss</td>
<td>RED</td>
<td>Verb</td>
</tr>
<tr>
<td>i. sì</td>
<td>to build</td>
<td>sì-sì</td>
<td>i. tɛ́n</td>
</tr>
<tr>
<td>ii. dzì</td>
<td>to receive</td>
<td>dzì-dzì</td>
<td>ii. p̣ìm</td>
</tr>
<tr>
<td>iii. sù</td>
<td>to cry</td>
<td>sù-sù</td>
<td>iii. kʷúr</td>
</tr>
<tr>
<td>iv. tò</td>
<td>to bake</td>
<td>tò-tò</td>
<td>iv. ṭów</td>
</tr>
<tr>
<td>v. tɛ́</td>
<td>to share</td>
<td>tɛ́-tɛ́</td>
<td>v. tɛ́r</td>
</tr>
<tr>
<td>vi. sè</td>
<td>to say</td>
<td>sè-sè</td>
<td>vi. f̣ów</td>
</tr>
<tr>
<td>vii. só</td>
<td>to hold</td>
<td>sù-só</td>
<td>vii. tɛ́r</td>
</tr>
<tr>
<td>viii. tò</td>
<td>to buy</td>
<td>tò-tò</td>
<td>viii. tɔ́ń</td>
</tr>
<tr>
<td>ix. mà</td>
<td>to give</td>
<td>mà-mà</td>
<td>ix. f̣ám</td>
</tr>
<tr>
<td>x. ká</td>
<td>be stranded</td>
<td>k̀-ká</td>
<td>x. pàw</td>
</tr>
</tbody>
</table>

It is evident from the above data that the prosodic features of tone and nasality inherent in the verb root/base vocalisms are not copiable in the reduplicative template italicised in the data. Since it is obligatory for every syllable in Akan to bear a tone at the phonetic level (p-level), the reduplicant receives a default tone which is redundantly the L, seeing that Akan is a bitonal language as noted above. It is also clear from the above data that in Akan, if the base vocalism of the class I verb is [+High], then it is duplicated in the reduplicant as exemplified by (3a.i-iv) and (3b.i-iv). However, if the said base vocalism is specified as [-High, -Low], then it is raised to a [+High] vowel in the reduplicant, as in (3a.v-viii) and (3b.v-viii). The resultant reduplicant high vowel (V) agrees with the base vocalism in two dimensions of vowel harmony (VH), in being [αATR] and in being [βRound], as (3a.v-viii) and (3b.v-viii) illustrate.

Nonetheless, if the base vocalism of the class I verb in Fante is specified as [+Low], then only the initial C of the base is copied as the reduplicant. In examples like (3a.x) and (3b.xii), for instance, ka and paw reduplicate as *k-ka and *p-paw, respectively. Thus, unattested CC sequences in the language, namely *kk and *pp, respectively are generated. Where a disyllabic class I verbal base with a [+Low] vocalism terminates in a syllabic N, it (the N) copies together with the initial C of the base as (3b.ix-x) illustrate; that is, when f̣ám and p̣án reduplicate, unattested CC sequences such as f̣m and p̣m occur as the reduplicants as in *f̣m-f̣ám and *p̣m-p̣án reduplicated forms, respectively. Be that as it may, in either case, we observe generation of sequences of unattested Cs in the language. This elicits an epenthesis of a vowel to break the sequence in order to bring it in line with the phonotactics of Akan. The Fante variety of Akan consistently

epenthizes /ā/ between the unattested CCs in question in the reduplicative template to generate the final output. Thus, just like all the examples in (3a, 3b) above where the base vocalism of the class I verb is [+Low] the pre-hyphen tokens of *k-ka, *p-paw, *fm-fam, and *pm-pañ reduplicants receive the epenthetic /ā/, V, in the reduplicative template to generate the derived output as kā-kā, pā-pāw, fām-fa...īm and pām-pān, respectively.

Hitherto, the high front V, /ɪ/, has been wrongfully placed between a CC sequence unattested in all the dialects of Akan and analysed as A-raising.4 This sort of analysis is applicable to only the Twi varieties of Akan but it is extended to cover Fante as well. This analytical extension seems to be influenced by the orthographical representations of three diverse Akan (Fante, Asante and Akuapem) dialects each of which writes /ɪ/ in that phonetic environment. Indeed, /ɪ/ does not feature in the reduplicative template in this kind of reduplication in the Fante dialect at all and, for this reason, siting /ɪ/ in the reduplicant by a number of scholars, including Christaller (1875), Schachter and Fromkin (1968), Obeng (1989), and Abakah (1993) is misleading. It is worth noting that throughout the phonology of Fante, /a/ in a class II or III verb raises to [ɛ], as (4b.i, v-ix) below and the subsequent data in this paper exemplify, whereas mid vowels raise to high vowels, as in (3a.v-viii) and (3b.v-viii) above, as well as in a number of examples scattered across varied data throughout this paper.

In Fante, the low vowel, /a/, in a class II or III verb, exhibits the following three general characteristics in reduplication production, it may

• be copied in the reduplicant as in kasa ‘talk’ which reduplicates as kasa-kasa or
• not be copied at all, like in the pre-slash output of guan (which reduplicates as) gua-guan.
• also be raised to mid vowel assuming [+-ATR] shape, as in gua-guan.5

Thus, we wish to repeat for emphasis: The theory that /a/ shifts to /ɪ/ in the reduplicant in the Fante reduplication construction is bizarre, indefensible, and counterintuitive.

1.1.1. TONE AND CLASS I VERBS IN REDUPLICATION

Reduplicative templates are redundantly toneless as noted above. It is discernible from data (3a) and (3b) above that the tones of all the verbal bases are not copied in the reduplicant. Consequently, all the reduplicant TBUs are realised on default L, which makes it straightforward to tell between the base and the reduplicant. On the basis of the output tone melody of the Akan reduplication construction, we hypothesize, following Abakah (2005) and Abakah, Caesar and Ababila (2010), that the reduplicant of the class I verb is regularly prefixed to the base in Akan.

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4 Throughout the phonology of Akan, a raises to mid tongue position, as (5i, iv, v) exemplify, whereas mid vowels raise to a high tongue position. Authors, including Christaller’s (1875), Stewart’s (1962), Schachter’s and Fromkin’s (1968), Dolphyne’s (1988), Obeng’s (1989) and Abakah’s (1993) claim that a shifts to i in the reduplicant in Akan reduplication construction is not only bizarre but also counterintuitive.

5 Indeed, examples of these three characteristics of /a/ in Akan reduplicative construction abound in this paper and so readers can find more examples scattered in the various data below as they read on.
1.2. CLASSES II AND III VERBS

Classes II and III verbs reduplicate differently from class I verbs as the data below demonstrate:

<table>
<thead>
<tr>
<th>(4a) Cl.2 Verb</th>
<th>Gloss</th>
<th>Reduplicated Form</th>
<th>(4b) Cl.3 Verb Gloss</th>
<th>RED Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. búŋkãm</td>
<td>outdo</td>
<td>búŋkãm-búŋkãm</td>
<td>i. guŋ̚ escape</td>
<td>guŋ̚-guŋ̚</td>
</tr>
<tr>
<td>ii. pǐ́ɲ̄ń</td>
<td>get near</td>
<td>pǐ́ɲ̄ń-pǐ́ɲ̄ń</td>
<td>iii. sòró(w)-sòró(w)</td>
<td>sòrá-sòró(w)</td>
</tr>
<tr>
<td>iii. sámàñ</td>
<td>summon</td>
<td>sámàñ-sámàñ</td>
<td>iv. fùrú(w)-fùrú(w)</td>
<td>fùrú(w)-fùrú(w)</td>
</tr>
<tr>
<td>iv. táfìr</td>
<td>lick</td>
<td>táfìr-táfìr</td>
<td>vi. qì́rèw scrape</td>
<td>qì́rè(w)-qì́rè(w)</td>
</tr>
<tr>
<td>v. púṣùw</td>
<td>shake</td>
<td>púṣù-púṣùw</td>
<td>vii. kúrá hold</td>
<td>kúrá-kúrá</td>
</tr>
<tr>
<td>vi. núnšèñ</td>
<td>be pregnant</td>
<td>núnšèñ-núnšèñ</td>
<td>ix. múnà frown</td>
<td>múnè-múnà</td>
</tr>
<tr>
<td>vii. kánjìfò</td>
<td>praise</td>
<td>kánjìfò-kánjìfò</td>
<td>x. tǔ́jà pay</td>
<td>tǔ́jà-tǔ́jà</td>
</tr>
<tr>
<td>viii. tási</td>
<td>collect</td>
<td>tási-tási/tèsi-tèsi</td>
<td>xii. wòrà pour</td>
<td>wòrè-wòrè</td>
</tr>
<tr>
<td>ix. pǐ́tsì</td>
<td>sprinkle</td>
<td>pǐ́tsì-pǐ́tsì</td>
<td>xiii. sòmà send</td>
<td>sòmè-sòmà</td>
</tr>
</tbody>
</table>

It is noticeable from the above data that in the reduplicative construction of the Akan classes II and III verbs, the underlying tone melodies of the bases of both classes of verb are retained in the leftmost token, whilst the rightmost token of the output receives the default L. It is evident that there is vocalic replacement in the left tokens in terms of (4b.v-ix), under class III verbs, whereas the base-final vocalism is rather sited in the purported reduplicative suffix.

As regards the issue of the location of the nasal V in a reduplicative construction, Cahill (1985: 10) has observed that in Akan, “when a monosyllabic verb is reduplicated the copied vowel is not nasalized if the original vowel is a low nasal. If the original vowel is high, the nasal feature is also reduplicated.” In contraposition to Cahill’s (ibid.) observation (as examples 3a.iii, iv and 4a.viii-ix demonstrate, regardless of the tongue height position) a base vocalism with an inherent nasal feature loses its nasality in the reduplicant for the reason that other things being equal, reduplication does not copy suprasegmental features in Akan. However, as Cahill (ibid.) has rightly observed: “... if the initial nasal consonant is reduplicated, the duplicate vowel is also nasal.” Indeed, we repeat for emphasis that any [+Nasal] V which occurs in the context after a nasal C in a base (as we have just noted above) retains its nasality in the reduplicant, irrespective of its position in a morpheme, that is, whether word-initially or word-finally (see (3a.ix), (3b.i, ii, vii-x), (4a.i-iii, vi) and (4b.i, iii, vi,) for illustration). This piece of research finding confirms, and gives credence to, Abakah’s (2005a) and Abakah, Caesar and Ababila’s (2010) observation that even though, in Akan, reduplication copies only the segmental melodies minus their prosodic properties, at times the entire segmental and prosodic features of the base are cloned in the output of the reduplication construction.

Vocalic replacement in the bases that undergo reduplication is not unique to Akan. Odden (1996: 118) has affirmed that like Kikerewe, “Javanese has a pattern of vocalic replacement associated with reduplication.” Hence, on the basis of the above explanation
of post-copy phonological processes of *A-raising* and VH in V-Place ([CORONAL] and [RADICAL]) articulation features in Akan, we uphold the theory espoused in Abakah (2005a) replicated in Abakah, Caesar and Ababila (2010) that reduplicants of classes II and III verbs in Akan are invariably suffixed to the base.

### 1.3 Further Reduplication of Verbs

Every Akan verb, regardless of its class could, in theory, be reduplicated ad infinitum to emphatically heighten the multiplicity, magnification and amplification of the action it encodes. In practice, however, “the largest reduplicated form in use is made up of three identifiable parts” (Dolphyne 1988: 132). In this respect, the entire output of the original reduplicated form serves as a new base for further reduplicative construction. The following data, extracted from each class of the reduplicated forms in (3) and (4) above, illustrate this:

<table>
<thead>
<tr>
<th>Cl.1 CV Base</th>
<th>Gloss</th>
<th>RED I</th>
<th>RED II</th>
<th>RED III</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. ʥɪ́</td>
<td>‘to get’</td>
<td>amenti</td>
<td>amenti</td>
<td>amenti / amenti</td>
</tr>
<tr>
<td>ii. 툍</td>
<td>‘to bake’</td>
<td>.writeHead</td>
<td>.writeHead</td>
<td>.writeHead /  itemBuilder</td>
</tr>
<tr>
<td>Cl.1 CVC Base</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>iii. ȹvé</td>
<td>‘to kiss’</td>
<td>ȹvé้อย</td>
<td>ȹvé้อย</td>
<td>ȹvé้อย / ȹvé้อย</td>
</tr>
<tr>
<td>iv. ƙʊ́ř</td>
<td>‘to roof’</td>
<td>ƙʊ́ř</td>
<td>ƙʊ́ř</td>
<td>ƙʊ́ř / ƙʊ́ř</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cl.2 Base</th>
<th>RED I</th>
<th>RED II</th>
<th>RED III</th>
</tr>
</thead>
<tbody>
<tr>
<td>v. ȹʊ́</td>
<td>‘squeeze’</td>
<td>ȹʊ́ qp</td>
<td>ȹʊ́ qp</td>
</tr>
<tr>
<td>vi. ҭsì</td>
<td>‘gather’</td>
<td>ҭsì</td>
<td>ҭsì</td>
</tr>
<tr>
<td>F-toned Cl. 2 Stem</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>vii. ƹn-màn</td>
<td>‘branch’</td>
<td>ƹn-màn</td>
<td>ƹn-màn-màn</td>
</tr>
<tr>
<td>viii. ƹsì</td>
<td>‘listen’</td>
<td>ƹsì</td>
<td>ƹsì</td>
</tr>
</tbody>
</table>
ON TONE AND MORPHOPHONOLOGY OF THE AKAN REDUPLICATION CONSTRUCTION

Based on the output tone melody of reduplicated forms, the reduplicant of every class I verb, on the one hand, and every class II/III verb, on the other, are prefixed and suffixed to the base, respectively, as noted above. However, irrespective of class, the reduplicative template of a second reduplicated form (REDII) is incontrovertibly suffixed to the base, seeing that the rightmost token of the reduplicated form is L-toned signalling that it bears the default L. This is because, as noted above, all reduplicants or copiable units are toneless and, for this reason, they redundantly receive the default L at the phonetic stage. As regards the third copy (REDIII) referred to as retriplicant in this paper, it is difficult to determine its affixal site, whether it (the retriplicant) is affixed to the reduplicant of the second reduplicated form on its right or in its middle. This is because it is as toneless as the reduplicant of the second reduplicated form. However, in the (b) examples the affixal site of the retriplicant is easy to determine in view of the fact that it is located at the boundary between the two halves of the reduplicative output.

Nevertheless, a close study of the alternative output of the third reduplicated form sited at the post-slash environment in (5) suggests that the retriplicant, italicised in the data above, is sited at the boundary between the rightmost and the leftmost tokens of the reduplicant of the second reduplicated form. It is noteworthy that the alternative version at the post-slash environment is used often by Fante speakers than the pre-slash variety because it is used mostly in informal discourse situations. Inherent in it is a kind of infinite technique by which a V following the initial syllable of the retriplicant is lengthened as long as the breadth could support.

In reality, not all types of verb in Akan can have the post-slash forms of the third type of further reduplicative construction. As can be seen from (5) above, class II verbs do not undergo this kind of reduplication. So, based on reduplicative construction involving verbs in Akan, which we have studied so far, the reduplicative template does not have a fixed affixal position. It could be prefixed, suffixed or (in the case of further reduplication) fixed between the boundary between the base and the reduplicant of the first/original reduplicated form. These have been italicised for easy identification in the examples.

1.4. ADJECTIVE REDUPLICATION

Reduplication of the adjective intensifies the semantic reading of the adjective and the degree of intensity is tied in with the number of times that it is reduplicated (see also Dolphyne, 1988; Owusu-Ansah, 1995; Amfo, Boateng & Otoo, 2007 and Abakah, Caesar & Ababila, 2010). Like verbs, nearly all adjectives can be, in theory, reduplicated ad infinitum, depending upon the degree of intensity which the speaker intends to place on the adjective. However, it is not always clear whether the lexemes in (6) are adjectives or nouns (Boadi, 2010: 67) In the Asante variety of Akan, for instance, the noun is
invariably suffixed with a nominal suffix whereas the adjective does not receive any word class indicator affix. So, it is easy to differentiate between the following pairs: *aniwu-o* (disgrace) and *aniwu* (disgraceful); *aŋreho-o* (grief) and *aŋreho* (grievous) etc. (Boadi, ibid.). The Fante variety of Akan, from which the bulk of the data for this study were collected, does not have any differentiative indicators. All the same, the noun reduplicates once, whereas the adjective can retriplicate or requadruplicate. So, the lexemes in (6) below are all adjectives, not nouns.

<table>
<thead>
<tr>
<th></th>
<th>Adjective</th>
<th>Gloss</th>
<th>RED I</th>
<th>RED II</th>
</tr>
</thead>
<tbody>
<tr>
<td>i.</td>
<td>è-ŋiwú</td>
<td>disgraceful</td>
<td>(a) èniwè-èŋiwú</td>
<td>(a) èniwè-èŋiwú-èŋiwú</td>
</tr>
<tr>
<td>ii.</td>
<td>è-ŋiández</td>
<td>agreeable/</td>
<td>(a) èniʒé-èŋiández</td>
<td>(a) èniʒé-èŋiández-èŋiández</td>
</tr>
<tr>
<td>iii.</td>
<td>è-ŋiító</td>
<td>embarrassing</td>
<td>(a) ènițiɣ-èŋiító</td>
<td>(a) ènițiɣ-èŋiító-èŋiító</td>
</tr>
<tr>
<td>iv.</td>
<td>à-hóguán</td>
<td>troublesome</td>
<td>(a) àhógün-àhóguán</td>
<td>(a) àhógün-àhóguán-àhóguán</td>
</tr>
<tr>
<td>v.</td>
<td>à-kóndó</td>
<td>appetising</td>
<td>(a) àkóndwà-àkóndó</td>
<td>(a) àkóndwà-àkóndwà-àkóndó</td>
</tr>
<tr>
<td>vi.</td>
<td>è-hí</td>
<td>irritating</td>
<td>(a) èhi-èhí</td>
<td>(a) èhi-èhí-èhi-èhiÈhi</td>
</tr>
<tr>
<td>vii.</td>
<td>è-búfúw</td>
<td>annoying</td>
<td>(a) èbúfúw-èbúfúw</td>
<td>èbúfúw-èbúfúw-èbúfúw</td>
</tr>
<tr>
<td>viii.</td>
<td>à-qirèhòw</td>
<td>disconsolate</td>
<td>(a) àqirèhòw-àqirèhòw</td>
<td>àqirèhòw-àqirèhòw-àqirèhòw</td>
</tr>
<tr>
<td>ix.</td>
<td>à-bòfón</td>
<td>disgusting</td>
<td>(a) àbòfòn-àbòfòn</td>
<td>àbòfòn-àbòfòn-àbòfòn</td>
</tr>
</tbody>
</table>

The reduplicants in the post-slash forms, labelled (b) under RED I, are obviously prefixed to the base on the basis of the output tone melody of the first token of a prefix, which is incontrovertibly the default L.

A brief study of the phonological processes that operate during reduplication may facilitate comprehension of the segmental transmutations in the constituent tokens of the reduplicative output. In (6iii, v), for instance, glide formation occurs across the boundary between the base and the reduplicant which replicates across the boundary between the medial and the following final tokens. This is to be expected in all phonetic environments where a [+Round] V precedes a [-Round] vowel in the Akan phonology. In the case of an adjective base that begins and terminates in a vowel and a nonvocalic syllabic sonorant, /m, n, r, w/, respectively, resyllabification occurs at the boundary between the two halves of the reduplicative output as (6iv, vii-ix) illustrate. Here, the first token’s final syllabic sonorant resyllabifies to the onset position of the following onsetless V syllable.  

Needless to say, the resultant sonorantal onset ceases to be syllabic and accordingly loses

---

6 The onset and the nucleus of the resultant syllable are underlined in (6) and (6c).
its TBU status. The H which the nonvocalic syllabic sonorant in-question bears is, as expected, transferred onto the nucleus of the new syllable because onsets are not tone-bearing in any tone language. In (6) the segments that undergo resyllabification are underlined at token boundary.

The vowel replacements in the derived outputs in (6) as in the other data scattered throughout this paper, is the direct result of obligatory vowel simplification process which comes about in the language whenever a sequence of nonidentical Vs occurs at the boundary between two words or morphemes. Invariably, the V₁ in a V₁#V₂ or V₁+V₂ sequence deletes, if the V₂ is specified as [+Low]. In Fante, the V₂ invariably spreads leftwards to the position that had previously been occupied by V₁ to compensate for the V₁-loss (see Abakah, 2004, for a detailed study of this process in Akan).

Tonologically, when an underlying LH-toned adjective whose constituent L and H are singly linked and multiply linked, respectively, reduplicate, two interchangeable phonetic representations are generated under both RED I and RED II, as in (6i-v). In (6i.a, ii.a, ii.a, iv.a, v.a) under RED I, the lexical tone melody of the base is duplicated in the reduplicant with some modification brought about by a postcopy tone sandhi rule. Here, the H of the left token of the reduplicated form spreads rightwards to the initial L of the rightmost token and dislodges it. The displaced L floats and conditions the following H to receive a lower pitch value relative to a preceding H. In (6ii.a, ii.b, ii.c, ii.d, ii.e, ii.f) under RED I which constitutes an alternative phonetic output to (6i.a, i.b, i.c, i.d, i.e, i.f) respectively, it is evident that the reduplicant is produced on default L. It can therefore be argued that the left token of the reduplicative construction in (6i.a, i.b, i.c, i.d, i.e) makes up the reduplicant while the right element is the base, thereby giving rise to prefixing reduplication.

1.4.1. COMMENTS

We have seen in the reduplication of the verb in Akan above that a reduplicated verb can be further reduplicated. In this context, the entire output of the first reduplicated form constitutes the base for further reduplication. The adjective can also reduplicate more than once in Akan but with some difference. Here, the second reduplication structure (RED II) does not employ the entire output of the first reduplicative construct as its base; but, it is rather the original base of the adjective that copies twice or retriplicates, making the three constituents of the reduplicative/retriplicative output transparently distinct, unlike the verb whose three identifiable parts are really six, that is, the base plus its five copies. This basically means that the adjectival base in Akan duplicates or triplicates, depending upon the degree of intensity which the speaker intends to characterise the adjective. The reduplicated and retriplicated forms are listed in (6) above under RED I and RED II, respectively. In the cause of easy reference, we repeat (6) as (6').

(6')

<table>
<thead>
<tr>
<th>Adjective</th>
<th>Gloss</th>
<th>RED I</th>
<th>RED II</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. è-ɲiwú</td>
<td>disgraceful</td>
<td>(a) èɲiwé-èɲiwú / (b) èɲiwé-èɲiwú</td>
<td>(a) èɲiwé-èɲiwú-èɲiwú</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(b) èɲiwé-èɲiwú</td>
<td>(b) èɲiwé-èɲiwé-èɲiwú</td>
</tr>
<tr>
<td>ii. è-ɲɪdɛ</td>
<td>agreeable/</td>
<td>(a) èɲɪdɛ-èɲɪdɛ / (b) èɲɪdɛ-èɲɪdɛ</td>
<td>(a) èɲɪdɛ-èɲɪdɛ-èɲɪdɛ / (b) èɲɪdɛ-èɲɪdɛ-èɲɪdɛ</td>
</tr>
<tr>
<td></td>
<td>entertaining</td>
<td>(b) èɲɪdɛ-èɲɪdɛ</td>
<td></td>
</tr>
<tr>
<td>iii. è-ɲɪtʊ</td>
<td>embarrassing</td>
<td>(a) èɲɪtʊ-èɲɪtʊ</td>
<td>/ (a) èɲɪtʊ-èɲɪtʊ-èɲɪtʊ</td>
</tr>
</tbody>
</table>

30
A completely diverse tone melody features in the alternative phonetic forms, as in (6i.b, ii.b, iii.b, iv.b, v.b, vi.b) under RED II. Apparently, the retiplicant is sited between the base and the reduplicant of the output of RED I. A close study of the output tone melodies of RED I suggests that in the RED II output forms, the italicised copy is the second copy or the retiplicant. The segmental and tone melodies of the rightmost and the leftmost copies are so identical that telling between the base and the reduplicant is an uphill task, an almost impossibility. However, the fact remains that one of the tokens at the edges is the base whilst the other constitutes the reduplicant.

It is worth noting that in the forms under RED II (i.e. 6i.a, ii.a, iii.a, iv.a, v.a), the H of the base is copied twice, that is to say, it is retiplicated but with modifications not similar to those found in the forms under RED I. The cloned H spreads rightwards to the initial L-toned TBU of the following token and displaces it. As noted in some other cases above and generally throughout the Akan tonology, a displaced L floating between two Hs redundantly imposes a pitch-lowering effect on the H it precedes, thereby causing it to receive a lower pitch value than the H preceding it. So, both the reduplicative and the retiplicative templates are realised on identical tone melody.

Two other reliable theories on the middle token of this type of reduplicative output being a recipient of the default L are possible. One theory resides in the hypothesis that both the segmental and tone melodies of the base are copied/cloned twice. This triggers a post-copy tone sandhi process to counterbalance the monotony of identical tone melody characterising all the tokens of the reduplicative construct. The said tone sandhi process involves the tone of the initial TBU of third token which spreads leftwards through all the TBUs to the leftmost boundary of the middle token. Lack of tone perturbation on middle copy of the base clearly suggests that the L-Spread was preceded by erasure of the cloned
tone of the middle token. This explains why the middle token is produced on an L. The derivation below captures this account in graphic terms:

(7)  L  H  
     /     
    e  n  i  w  u  
    L  H  L  H  L  H  Simultaneous Copying/Cloning 
   /           /           / 
  e  n  i  w  u  e  n  i  w  u  e  n  i  w  u  
L1 H1  L2 H  L3 H2  Middle Token Tone Erasure 
   /           /           / 
  e  n  i  w  u  e  n  i  w  u  e  n  i  w  u  
L1 H1  L3 H2  Leftward Spread of L3 
   /           /           / 
  e  n  i  w  u  e  n  i  w  u  e  n  i  w  u  
L1 H1  L3 H2  OCP, Derived Output 
   /           /           / 
  e  n  i  w  u  e  n  i  w  u  e  n  i  w  u  [è  nìwè-ènìwè-ènìwú]

We build the second theory on the oft-quoted hypothesis adopted in this paper, that is, the reduplicant does not copy the tone of the base. Hence, being toneless, each copy may either receive the default L or polarize with the tone of an adjacent token in the reduplicated structure. It is a generally acknowledged fact that all morpheme-initial vocalic segments in Akan (i.e. all nominal, verbal, adjectival and postpositional prefixes in Akan) are intrinsically toneless. Hence, other things being equal, a root morpheme-initial syllabic segment in Akan receives the default L at the p-level. So, here, when the adjective base reduplicates, the first copy or reduplicant may either polarize with the base H or take the default L. However, a second copy or the retriplicant located to either the right or left of the base also polarizes with the tone of the preceding token, that is, whether the direction of tone copying is rightwards or leftwards. Let us study the derivation below for graphic illustration assuming that the direction of copying begins from the left to the right:

(8)  H  
     /  
    e  n  i  w  u  
    H  Simultaneous 1st & 2nd Copies of Segments 
     /  
    e  n  i  w  u  
    H
If the direction of copying were to be leftwards the derived output would be the same as above. On the strength of the forgoing accounts or theories, it would be impossible to establish the base, the reduplicant or the retiplicant.

1.5. TONELESS ADJECTIVES

Some adjectives in Akan are toneless in that they are unspecified for tone at the u-level; therefore, they receive L by default at the p-level (Abakah, 2005a; 2010; Abakah, Caesar and Ababila, 2010). Two types of toneless adjectives are distinguishable in Akan. One type ends in a non-vowel sonorant preceded by a short vowel whereas the other type ends in a long V. These undergo diverse morphophonological processes when they reduplicate and so we study them separately even though in tonological terms, the TBUs of all affixal elements in the reduplicative formation bear the default L.

1.5.1 TONELESS ADJECTIVES: TYPE I

As we have observed in our study of Akan reduplication construction so far, once the segmental melodies of a base have been copied, phonological rules operate to fine-tune them for the p-level. Let us examine the data below for illustration: (9)

(9) | Adj. | Gloss   | RED I                  | RED II                | (RETRIP.)    |
--- | ------ |---------------------------------|----------------------|--------------|
  i. | few   | beautiful                        | fɛé-fɛ́w             | fɛé-fɛééééééé-ɛ́w |
  ii. | Ṽtɛm | salty                            | jɛtɛjį-jɛtɛiń        | jɛtɛjį-jɛtɛjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįjįj
Before we comment on the tonal perturbations associated with reduplication of these toneless adjectives, let us study interesting morphophonological processes that operate during their construction. To begin with, the alternative post-slash outputs of (9vi-vii) present a case of overapplication of reduplication in that a high front V is epenthesized between the initial syllable of the middle token and the following syllable, as the set of rules below illustrates:

(10) Base (3 Copies)  #tortortortor#  #gogowgoswogowg#  #dzndzndzndzn#
Nonfinal Token V-Spread  #tootootootor#  #gogogogogowg#  #dzndzndzndzn#
Palatal High V-Epenthesis  #tootootootor#  #gogogogogowg#  #dzndzndzndzn#
Glide Formation  #toot^mututor#  #gog^*wogogowg#  ------------------
Epenthesized V-Spread  #toot^mututor#  #gog^*wogogowg#  #dzndzndzndzn#
Derived Output  [toot^mututor]  [gog^*wogog]  [dzndzndzndzn]

The V-Place [CORONAL] articulator feature inherent in the epenthesized V conditions the preceding labial V anticipatorily to devocalize into a labial palatal glide if the C preceding the target V is specified as [CORONAL]. But where the C in question is [DORSAL] or [LABIAL], the epenthesized V devocalizes into a labial velar glide, /w/. After the application of the glide formation process, the epenthesized vowel spreads rightwards through all the following segments up to the left boundary of the final token of the entire reduplicative construction. In (10) above, we have summarised the phonological rules that operate on the base and its copies to generate the final output, in the order in which they operate:

It is perceptible from data (10) that the stem vocalism invariably spreads to the stem-final nonvocalic sonorant, except for the rightmost element which is not spared in most Fante varieties. For instance, har and few meaning light and beautiful reduplicate /retriplicate in the Boka variety of Fante as haá-há/haa-háááá-há and fé-féééééé-fé, respectively, replacing the nonvowel sonorant with the base-final vocalism not only in the reduplicative base but also in the copies. The reduction in the final vowel of the rightmost token of the reduplicative construct confirms the fact that the copy elements are attached to the base which is the left(most) token on the right.

In terms of tonology, the bases in (9) under RED I, being toneless, are all realized on L at the p-level with a slight modification brought about by post-mapping tone sandhi process. After the base has characteristically received the default L, the reduplicant takes an opposite tone, the H. After the application of the tone polarization process, the reduplicant’s / right token’s H spreads leftwards across the token boundary to the preceding base-final sonorant and replaces its L acquired by default. The displaced L is absorbed by the L of the initial TBU of the base, the left token. Under RED II, the reti replicant is sandwiched between the leftmost and the rightmost elements of the output of RED I. Unsurprisingly, it takes the H of the surrounding TBUs and is therefore produced on H. (11) below captures this analysis graphically.

(11) i L Base Tone Mapping L
    \ |  \ (Default L Assignment) \ |  

7 See Abakah (2003a) for a detailed study of the phonological processes that operate on the base and the copied units to generate the final output.
The output tone melody could also be analysed as the direct result of postcopy mapping where the tones carried by the TBUs of the disyllabic constituents of the leftmost token polarize; as the initial TBU takes L, the second TBU takes H. Thereafter, the H spreads rightwards through to the rightmost boundary of the entire reduplicative construction. Based basically on principles of association condensed in the foregoing brief analysis, we can capture this account vividly as (12) demonstrates. Here, the base and all the copies are assigned just an LH melody mapped and spread as (12):

(12) Mapping

The above graphic account clearly captures clearly the application of the principles of mapping and spreading to generate the final output. In this context, it is difficult to settle on the sites of the base and the reduplicant even though the site of the retriplicant is indisputably the middle token of the entire reduplication construction.

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8 To refresh readers’ memory, we repeat the principles of mapping and spreading in the words of Durand (1990: 249) as follows:

“Mapping: Associate vowels with tones in a one-to-one fashion from left to right until we run out of tones or vowels.

“Spreading: If after applying mapping some vowels are still free link them to the last tone on the right.”

We modify these two principles of association by replacing vowels with TBUs inasmuch as vowels are not the only segments that bear tones in Akan. Glides, depending upon phonetic environment in which they occur, are also tone-bearing in Akan.
1.5.2. TONELESS ADJECTIVES: TYPE II

Toneless adjective type II ends in a long V each of which is syllabic and redundantly a TBU. These abound in the Akan language and, like the other types of the adjective in Akan, their segmental melodies are cloned when reduplicated as exemplified by (13):

<table>
<thead>
<tr>
<th>Toneless Adjective</th>
<th>Gloss</th>
<th>RED I</th>
<th>RED II</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. pikaa</td>
<td>thick (said of fluids)</td>
<td>pìkà-pìkàà</td>
<td>pìkà-pìkàà-pìkàà</td>
</tr>
<tr>
<td>ii. sokoo</td>
<td>rosy (said of life)</td>
<td>sòkò-sòkòò</td>
<td>sòkò-sòkò-sòkòò</td>
</tr>
<tr>
<td>iii. trokaa</td>
<td>slippery</td>
<td>tòrókà-tòrókàà</td>
<td>tòrókà-tòrókà-tòrókàà</td>
</tr>
<tr>
<td>iv. peteɛɛ</td>
<td>loose/muddy</td>
<td>pètɛɛ-pètɛɛɛɛ</td>
<td>pètɛɛ-pètɛɛ-pètɛɛɛɛ</td>
</tr>
<tr>
<td>v. bɔnaa</td>
<td>slow/depressed</td>
<td>bɔnà-bɔnàà</td>
<td>bɔnà-bɔnà-bɔnàà</td>
</tr>
<tr>
<td>vi. sɔtei</td>
<td>oily (said of foods)</td>
<td>sɔtei-sɔtei</td>
<td>sɔtei-sɔtei-sɔtei</td>
</tr>
<tr>
<td>vii. mɔsɔɔ</td>
<td>melancholy</td>
<td>mɔsɔ-mɔsɔɔɔ</td>
<td>mɔsɔ-mɔsɔ-mɔsɔɔ</td>
</tr>
<tr>
<td>viii. bɛteɛɛ</td>
<td>weak/soft</td>
<td>bɛtɛ-bɛtɛɛɛ</td>
<td>bɛtɛ-bɛtɛ-bɛtɛɛ</td>
</tr>
<tr>
<td>ix. pɔtɔɔ</td>
<td>dirty</td>
<td>pɔtɔ-pɔtɔɔ</td>
<td>pɔtɔ-pɔtɔ-pɔtɔɔ</td>
</tr>
<tr>
<td>x. kusuu</td>
<td>dim</td>
<td>kùsù-kùsùù</td>
<td>kùsù-kùsù-kùsùù</td>
</tr>
</tbody>
</table>

The long V inherent in the base is always shortened in the reduplicant as well as the replicant. In RED I, the left token, on the strength of its output tone melody being the default L, is unquestionably the reduplicant and is prefixed to the base. Nevertheless, it is not straightforward to determine the phonetic environment in which the replicant is sited. Is it located in the boundary between the base and the reduplicant of RED I or prefixed to the derived output of RED I, seeing that the leftmost and the middle tokens are realized on identical segmental and tone melodies?

Be that as it may, the initial TBU of the right(most) element bears an H otherwise all the TBUs in the entire reduplicative construction would be produced on L. This is diametrically opposite to that of toneless adjectives type I by which all the TBUs would have been H-toned had it not been for the L on the initial TBU of the output. In type II adjectives under RED II, the rightmost token is the base inasmuch as it contains all the segmental melodies of the base as well as the inherent prosodic feature of nasality which, other things being equal, is not copiable in the Akan reduplication construction.

It is interesting to note that tone polarization occurs in both types of adjective in the base. However, the striking tonal differences between the outputs of types I and II adjectives reside in the fact that in type I, the second TBU of the base, the left(most) token, takes an H in polarity with the default L of the initial TBU. The polar tone then runs through all the TBUs in the reduplication construction. In type II, on the other hand, the initial TBU of the base, the right(most) token, also takes an H in polarity with the default L of the preceding and the following TBU(s). Finally in type I, the default L turns out to be the only L in the entire output whereas in type II, the polar H remains the odd tone in the entire reduplication construction. Thus, in the toneless adjective type I, all the copies are consistently attached to the base on the right whereas in type II, all the copies are regularly attached to the base on the left. In the cause of easy reference let us look at two examples from each type as (13').
2. REDUPLICATION OF NOUNS

Reduplication of nouns in Akan operates on principles which are practically identical with those found in reduplication of verbs and adjectives but with some differences. Both singular and plural nouns may be reduplicated in Akan, as data (14) and (15) below illustrate.

<table>
<thead>
<tr>
<th>(14)</th>
<th>Noun</th>
<th>Gloss</th>
<th>Plural/Base</th>
<th>RED</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>i.</td>
<td>bòsò’m</td>
<td>month</td>
<td>à-bòsò’m</td>
<td>àbòsò’m-àbòsò’m</td>
<td>many months</td>
</tr>
<tr>
<td>ii.</td>
<td>kó’kó</td>
<td>hill</td>
<td>à-kó’kó</td>
<td>àkókó-àkó’kó/àkókó-àkó’kó</td>
<td>many hills</td>
</tr>
<tr>
<td>iii.</td>
<td>ó-wú</td>
<td>death</td>
<td>______</td>
<td>ë-wú-wú-wú-wú-ë/wú-wú-ë/wú</td>
<td>(many) deaths</td>
</tr>
<tr>
<td>iv.</td>
<td>àŋgóá</td>
<td>oil</td>
<td>______</td>
<td>àŋgóá-àŋgóá/àŋgóá-àŋgóá</td>
<td>oily</td>
</tr>
<tr>
<td>v.</td>
<td>jëtejë</td>
<td>salt</td>
<td>______</td>
<td>jëtejë-jëtejë/ jëtejë-jëtejë-jëtejë-jëtejë</td>
<td>salty awfully salty</td>
</tr>
<tr>
<td>vi.</td>
<td>pów</td>
<td>knot</td>
<td>à-pów</td>
<td>à-pów-à’pów/àpów-àpów</td>
<td>knotty</td>
</tr>
<tr>
<td>vii.</td>
<td>bènjë</td>
<td>male/man</td>
<td>m-bènjë-m</td>
<td>bènjë-m-bènjë</td>
<td>tomboyish</td>
</tr>
<tr>
<td>viii.</td>
<td>bèsiá</td>
<td>female/woman</td>
<td>m-bèsiá-fó</td>
<td>bèsié-bèsiá</td>
<td>effeminate</td>
</tr>
<tr>
<td>ix.</td>
<td>àmàn</td>
<td>mucus</td>
<td>______</td>
<td>àmàn-àmàn</td>
<td>mucous</td>
</tr>
</tbody>
</table>

Whereas reduplicated plural nouns essentially emphasize the plurality of the noun or quantify the noun (Dolphyne, 1988), as in (14i-iii), the reduplicated singular noun invariably changes its word class into an adjective, as in (14iv-ix). This is not to obscure the fact that some reduplicated plural nouns could function as adjective (as exemplified by the post-slash form in (14ii). Temporal nouns when reduplicated function differently as illustrated by (15) below:

<table>
<thead>
<tr>
<th>(15)</th>
<th>Temp. Noun</th>
<th>Gloss</th>
<th>RED Form</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>i.</td>
<td>ànàpá</td>
<td>morning</td>
<td>ànàpá-ànàpá</td>
<td>only in the mornings</td>
</tr>
<tr>
<td>ii.</td>
<td>èqiàbìí</td>
<td>afternoon</td>
<td>èqiàbìí-èqiàbìí</td>
<td>only in the afternoons</td>
</tr>
<tr>
<td>iii.</td>
<td>èqiìmbìí</td>
<td>evening</td>
<td>èqiìmbìí-èqiìmbìí</td>
<td>only in the evenings</td>
</tr>
<tr>
<td>iv.</td>
<td>ànàjá</td>
<td>night</td>
<td>ànàjá-ànàjá</td>
<td>only at nights</td>
</tr>
<tr>
<td>v.</td>
<td>dá’kór</td>
<td>one day</td>
<td>dákó-dá’kór</td>
<td>once in a while</td>
</tr>
<tr>
<td>vi.</td>
<td>dàpéñ</td>
<td>week</td>
<td>dàpéñ-dàpéñ</td>
<td>weekly/once in a while</td>
</tr>
</tbody>
</table>
vii. bōsṓm month bōsṓm-bōsṓm monthly/once in a month
viii. àficiel one full year àficielàficiel every year/once a year
ix. àfii year àfii-àfii year on year

A reduplicated temporal noun (15i-viii), for instance, functions as an adverbial which consistently indicates that the action encoded by the verb it modifies happens routinely. However, if a temporal noun reduplicates in its plural form as in (14iii) the plurality of the noun is amplified and/or quantified. To facilitate reference, let us repeat here an example from (15), bōsṓm ‘a month’ whose plural form being àbōsṓm ‘months’, reduplicates as àbōsṓm-àbōsṓm to mean ‘many months’.

The briefest inspection of the above data (14) and (15) reveals the fact that segmentally, some nouns undergo total reduplication. In (14i, iv, v-x), for instance, since both the segmental and tone melodies are identical, it is totally impracticable to tell between the base and the reduplicant. Downstepping occurs in a number of outputs due to tone sandhi rules. In the pre-slash forms of (14iii, iv, vi) and (15ix), for instance, the H of the left token spreads to the initial L of the right token of a base and dislodges it. The dislodged L floats between its original TBU and the H of the following TBU(s) to cause all the TBUs following it to receive a downstep H. This account is captured graphically by (16) below:

(16)  
\[
\begin{array}{c|c|c|c}
\text{L} & \text{H} & \text{Underlying Representation} \\
\hline
\text{a} & \text{p} & \text{cw} \\
\text{L} & \text{H} & \text{L} & \text{H} \\
\text{a} & \text{p} & \text{cw} & \text{a} & \text{p} & \text{cw} \\
\text{L} & \text{H} & \text{L} & \text{H} & \text{Base Cloning} \\
\text{a} & \text{p} & \text{cw} & \text{a} & \text{p} & \text{cw} \\
\text{L} & \text{H} & \text{L} & \text{H} & \text{Rightward H₁-Spread} \\
\text{a} & \text{p} & \text{cw} & \text{a} & \text{p} & \text{cw} \\
\text{L} & \text{H} & \text{L} & \text{H} & \text{Resyllabification/w-Onsetting} \\
\text{a} & \text{p} & \text{cw} & \text{a} & \text{p} & \text{cw} & \text{Derived Output} \\
\text{a} & \text{p} & \text{cw} & \text{a} & \text{p} & \text{cw} & \text{[àpòw-ápòw]} \\
\end{array}
\]

In the alternative, post-slash outputs in (14), the segmental melodies are copied minus tones as (16) captures graphically. Hence, the reduplicant receives the default L. However, the H of the base spreads to the prefixal, toneless plural formative at the base-initial position. The following derivation presents a graphic representation of the above account:

(17)  
\[
\begin{array}{c|c|c|c}
\text{H} & \text{Underlying Representation} \\
\hline
\text{a} & \text{p} & \text{cw} & \text{a} & \text{p} & \text{cw} \\
\text{H} & \text{H-Spread to Base-initial Toneless TBU} \\
\end{array}
\]

\[38\]
It is clear from (17) that when a base begins with an onsetless V syllable and ends in a nonvowel syllabic sonorant (S), a heterosyllabic S-V sequence occurs at the boundary between the leftmost and the rightmost tokens of the reduplicated form, as (14 i, vi, ix) and (15 ii, iii) demonstrate. The S and V become tautosyllabic through resyllabification to onset and nucleus positions, respectively. The S loses its TBU status in the left token and its default L co-settles on the nucleus of the new syllable with the spreading H to generate the final output.

Bases of temporal nouns as in (15i-ix) copy both the segmental and tone melodies once with various segmental modifications and tonal perturbations, thereby redundantly producing only two tokens in the entire reduplicative structure. Some phonological processes identical to those we have discussed above occur at the boundary between the two tokens of the reduplicative output. Besides, where a base begins with a C and ends in an S, a CC sequence, unattested in any of the varieties of Akan, occurs thereby eliciting the truncation of the S. The base in (15v), for instance, is dákôr which when reduplicated, dákôr-dárôr is generated causing unattested r-d of a CC sequence to occur at the boundary between the base and the reduplicant. The /r/ has to be truncated to generate the derived output, dákô-dárôr.

In terms of tonology, even though the initial V of the base is L-toned, the initial tone of the right token of the reduplicated output is realized on an H. This gives credence to our theory that all nominal prefixes in Akan are toneless. It, therefore, comes as no surprise that all nominal prefixes in Akan take the tone of the preceding token-final H. However, where the temporal noun does not have a nominal prefix but terminates in a nasal C [m, n], both the segmental and tone melodies are cloned, as in (15vi, vii) which we present below as (18) to facilitate reference.

<table>
<thead>
<tr>
<th>(18) Temp. Noun</th>
<th>Gloss</th>
<th>RED Form</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. dàpêń</td>
<td>week</td>
<td>dàpêń-dàpêń</td>
<td>weekly/once a week</td>
</tr>
<tr>
<td>ii. bósóńm</td>
<td>month</td>
<td>bósóńm-bósóńm</td>
<td>monthly/once in a month</td>
</tr>
</tbody>
</table>

Finally, in bases with inherent/underlying downstep H, if the base terminates in a nasal C then the entire base might be duplicated in the reduplicant as in (15vi-vii) or (18i-ii) above. However, where the base does not end in a nasal C, but any other nonvowel S that does not create any unattested CC sequence at the boundary between the base and the
reduplicant, the lexical floating L that conditions downstepping of the following H in the left element, spreads rightwards to dislocate the following linked H in that element as exemplified by (15v), dá’kó́ř. We graphically account for this tonal process with the following derivation (19).

(19) 

\[
\begin{array}{c|c|c|c}
\text{H} & \text{L} & \text{H} & \text{UR} \\
\hline
\text{d a k Y} \\
\hline
\text{d a k o r} \quad \text{d a k o r} \\
\hline
\text{d a k o} \quad \text{d a k o r} \\
\hline
\text{d a k o} \quad \text{d a k o r} \\
\end{array}
\]

Reduplicate/Base Cloning

S/r-Truncation Plus

Reduplicant Floating L-Spread

Derived Output

In (19), after the base/UR has reduplicated by way of copying both its segmental and tone melodies, the SC sequence created at the boundary between the base and the copy is simplified through truncation of the S. The floating L in the reduplicant then spreads rightwards to dislodge the H on its right thereby removing the downstep in the output.

2.1. REDUPLICATION OF DEVERBAL NOUNS

Through the process of nominalization, a verb in Akan can be transformed into a noun but the tonal perturbation it might undergo would depend principally on the class to which it belongs (Abakah, 2005b). Transforming a class I or III verb root (VR) into a noun educes prefixation of a toneless vocalic nominal formative to the VR which does not undergo any tonal perturbation. However, if a class II verb undergoes nominalisation, none of its underlying segmental melodies goes through any alternation, albeit its lexical tone melodies undergo perturbations. (20) exemplifies nominalisation of verbs and their reduplicated forms. (20i-iii), (20iv-vi) and (20vii-ix) represent examples of nouns derived from classes I, II and III verbs, respectively, plus their reduplicated forms.

\[
\begin{array}{l|l|l|l}
\text{Verb} & \text{Gloss} & \text{Deverbal Form} & \text{Reduplicated Form} \\
\hline
\text{i. sáw} & \text{to dance} & \text{à-sáw} \ ‘dancing’ & \text{-----------} \\
\text{ii. tő́m} & \text{insult} & \text{ń-tő́m} \ ‘insult’ & \text{-----------} \\
\text{iii. sú} & \text{to weep} & \text{ò-sú} \ ‘weeping’ & \text{-----------} \\
\text{iv. bísá} & \text{to ask} & \text{bí-sá} \ ‘asking’ & \text{è-bísá-bí-sá} \ ‘investigating’ \\
\text{v. kásà} & \text{to speak} & \text{(́)ká-sá} \ ‘speaking’ & \text{à-kásà-ká-sá} \ ‘wrangle’ \\
\text{vi. dán} & \text{to change} & \text{á-dăn} \ ‘changing’ & \text{à-dän-dắń} \ ‘the act of changing’ \\
\text{vii teí́ře} & \text{to teach} & \text{ò-teí́ře} \ ‘teaching’ & \text{à-teí́ře-teí́ře} \ ‘the act of teaching’ \\
\end{array}
\]
viii. sômá to send ð-sômá ‘sending’ ñ-sômá-sômá ‘the act of sending someone on (an) errand(s)’
ix. sùmá ò-sômá ‘hiding’ è-sùmè-sú ‘the act of hiding’

More often than not, nouns derived from Class I verbs do not undergo reduplication in Akan, which fact is discernible from (20i-iii). However, nouns derived from Classes II and III verbs do reduplicate and, like regular nouns in the language, they do not reduplicate more than once. It is invariably the plural forms of these nouns that serve as the base for reduplication. Nouns derived from class II verbs, as illustrated by (20iv-vi), do not regularly take nominal prefix but their reduplicated form indicates that the plural morpheme is prefixed to the left token of the entire reduplicative structure. Like the regular nouns, their reduplicated forms emphasise the plurality or quantification of the noun.

Interestingly, even though classes I and II verbs are produced on HL and LH, respectively, nouns derived from them are produced on identical tone melodies when reduplicated. This presents a remarkable tonological difference between reduplication of the regular nouns and the derived ones in Akan. Moreover, the reduplicant which is prefixed to the base is redundantly produced on the default L whilst the base tone melody does not receive any perturbation. Hence, it is straightforward to tell between the base and the reduplicant. It is fascinating to note that in the case of reduplication of the verb, the reduplicants of the classes II and III verbs are invariably suffixed to the base as noted above. However, the reduplicants of nouns derived from these verbs are invariably prefixed to the base.

2.2. LEXICAL REDUPLICATION

Lexical reduplication refers to lexically reduplicated stems which do not have any related unreduplicated stem attested in a language. In Akan abound such lexemes which do not only cut across all word classes but are also subcategorizable into two types.

2.2.1. LEXICAL REDUPLICATION TYPE I

The data below, extracted from verbs, adjectives and nouns only, illustrate type I of lexical reduplication:

<table>
<thead>
<tr>
<th>(21)</th>
<th>Verbs</th>
<th>Adjectives</th>
<th>Nouns</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>i.</td>
<td>sù-sù</td>
<td>to measure</td>
<td>gídzi-gídzi</td>
<td>impetuous mìpà-mìpà pap</td>
</tr>
<tr>
<td>ii.</td>
<td>sò-sò</td>
<td>to change</td>
<td>pósó-pósó</td>
<td>senile  nôkô-nôkô cough</td>
</tr>
<tr>
<td>iii.</td>
<td>sì-sì</td>
<td>to cheat</td>
<td>nępú-nępú</td>
<td>very dirty sì-sì bear</td>
</tr>
<tr>
<td>iv.</td>
<td>sì-sì</td>
<td>to calculate</td>
<td>húntú-húntú</td>
<td>pulvèrisèd sà-sàw lobster</td>
</tr>
<tr>
<td>v.</td>
<td>tòn-tòn</td>
<td>to praise</td>
<td>krôn-krôn</td>
<td>holy     mûrô-mûrô kidney</td>
</tr>
<tr>
<td>vi.</td>
<td>kôñ-kôñ</td>
<td>to hang about</td>
<td>dôkô-dôkô</td>
<td>sweet    dôkô-dôkô duck</td>
</tr>
<tr>
<td>vii.</td>
<td>fëm-fën</td>
<td>to challenge</td>
<td>nêm-nêmji</td>
<td>wrenched nôsî-ôsî ants</td>
</tr>
<tr>
<td>viii.</td>
<td>piê-piêw</td>
<td>to analyse</td>
<td>dâ'-dâ(ô)</td>
<td>old  sûn'-sûn spirit</td>
</tr>
<tr>
<td>ix.</td>
<td>nûnè-nûnè</td>
<td>to frighten</td>
<td>fô'-fôf</td>
<td>new kû-kûw stump</td>
</tr>
<tr>
<td>x.</td>
<td>tsi-tsi</td>
<td>to worry</td>
<td>frêkô-frêkô</td>
<td>grubby  fô'-fôf sweat</td>
</tr>
<tr>
<td>xi.</td>
<td>tsi-tsi</td>
<td>to train</td>
<td>tsi-tsi</td>
<td>ancient kôô-kôô piles</td>
</tr>
<tr>
<td>xii.</td>
<td>dâá-dâá</td>
<td>to deceive</td>
<td>kôbô-kôbô</td>
<td>smooth (skull) sô-sôw axe</td>
</tr>
</tbody>
</table>
With the exception of the noun in the above data, the verb and the adjective can be further reduplicated as long as the breadth would allow as in ɲwá-ɲwá (verb: ‘to examine exceedingly thoroughly’) and kò-kò (adjective: ‘extremely sweet beyond belief’). In the former example, it is obvious that the initial token, on the strength of the tone melody of the construction, is the base whereas all the suffixal tokens are copies of the base. In the latter example, on the other hand, it is absolutely impossible to tell the base and the reduplicant apart since the segmental and tone melodies of the base are absolutely cloned. It is also evident from (21) that bases and reduplicants do not have fixed sites inasmuch as the reduplicant is either prefixed or suffixed to the base.

2.2.2. LEXICAL REDUPLICATION TYPE II

The type II of lexical reduplication’s construction does not harmonize with the reduplication paradigm attested in the language. A brief examination of all the previous examples, irrespective of word class, reveals that Akan operates complete reduplication category by which the entire segmental melody of the base is copied, followed by application of phonological rules that simplify consonantal or vocalic sequences unattested in the language at the juncture between the base and the reduplicant. Nevertheless, type II of lexical reduplication is of the partial variety that copies only a syllable or two from the base and erases all unlicensed material. For this reason, we can effortlessly determine not only the base and the reduplicant but also the affixal location where the constituent tokens of the reduplication structure are sited. Whereas some of the reduplicants are prefixed, others are suffixed to the base. Observe that as the tone of some licensed material polarizes its tone with that of the base, others copy the tone of the base. Let us examine data (22) for illustration noting that lexemes belonging to the various word classes are mixed up in line with our focus in terms of determining the affixal site of the base and the reduplicant.

(22) (a) 1st Token Base   Gloss   (b) 2nd Token Base   Gloss
i. fínì-m   middle kò-kò   weasel
ii. kàsíú-kà giant/giantess pà-pàtí   type of children’s game
iii. kwástí   a destitute person kwáá-kwáánámòwá   shell of an octopus
iv. bòrò-bò testicles kwáá-kwáádèbí   crow
v. kàkrà-kà big dò-dòbén   a species of plant
vii. sòótpùr’-pùr’ type of plant tsì-tsiùpbír   ginger
ix. kòkòdù-dù a species of fish kò-kòtúé   a species of fish
x. kwááçùçú   a man of straw kòj-kònsà   gossip
xi. kùsùkùú   a thick fog/mist tsì-tsiùkòòró   amulet
xii. sùpùr’-pù   river turtle kò-kòsí   warthog

Forms under “1st Token Base” and “2nd Token Base” do suffix and prefix, respectively, their respective reduplicants to the base. Here, only part (usually a syllable or a disyllabic piece) is copied and the unlicensed material chopped off. Let us study
derivations (23) and (24) in which the mode of copying and the general reduplication construction is demonstrated graphically.

In (23) and (24), the underlying representations display the bases with their lexical tone melodies. The next stage copies the segmental melodies minus the tone melodies. In both derivations, since it is the initial syllable only that is licensed by the templatic constraint they are retained as the reduplicant, whereas since all the syllables following or preceding the initial one (depending upon the type) are unlicensed, they are summarily weeded out of the reduplication construction. The only difference between derivations (23) and (24) is that in the former the reduplicative template is suffixed to the base whilst that of the latter is prefixed to the base. On the tonal front, the licensed, copiable, material receives the default L.

It is noteworthy that in some cases, it is only the final and not the initial syllable that gets licensed by the templatic control and is therefore redundantly suffixed to the base.
whereas all the syllables preceding it are deleted, as (22x-xi) under “1st Token Base” illustrate. In such cases, the syllables close to the base are all truncated. In kwààcùí-cùí and kùsùkùú-kùú, for instance, the copy takes the following forms kwààcùí-kwààcùí and kùsùkùú-kùsùkùú, respectively. However, inasmuch as only the final syllables, -cùí and -kùú, are licensed by the templatic constraint, they do not receive any modifications even as they constitute the reduplicants in the reduplicative output. The unlicensed materials are then erased as follows:

(25) Copy (the Base) #kwààcùí+kwààcùí#        #kùsùkùú+kùsùkùú#
Truncate Unlicensed Material #kwààcùí+kwààcùí#        #kùsùkùú+kùsùkùú#
Derived Output          #kwààcùí+ cùí#        #kùsùkùú+ kùú#        [kwààcùí-cùí] [kùsùkùú-kùú]

3. CONCLUDING REMARKS

In this paper, a number of approaches to reduplication construction in Akan have been considered demonstrating that whereas some principles apply across reduplication constructions, others are restricted to particular types of reduplication. It has also been demonstrated in this paper that in the Akan reduplication construction, the reduplicant is not invariably prefixed to the base as obtains in the existing literature. The reduplicant could be suffixed to the base depending on the word class and the class to which a particular lexeme belongs within that word class, especially in the case of verbs. We have also shown in this paper that the entire output of a reduplicative construction in Akan can serve as the base for further reduplication. In such cases, the reduplicant may be prefixed, suffixed or sited between the rightmost and leftmost tokens of the base, the output of RED I. In other types of reduplicative production, it is difficult to determine which token constitutes the base or the reduplicant because both the segmental and tone melodies of the base are cloned.

This paper has also revealed that reduplication in Akan is basically of the total type and that once copying of segmental melodies has happened, some phonological processes naturally operate on the entire reduplication construction to yield the final output. It is not only the reduplicant that undergoes segmental and tonal modifications but also the base undergoes modifications within the context of Akan phonotactics, depending upon the affixal location of the reduplicant. Segmental modifications include agreement of adjacent vocalic segments in a couple of dimensions of VH and simplification of junctural consonantal sequences unattested in the language by truncating the C₁ to satisfy the Akan phonotactic constraints. Tonal modifications result from tonal polarization and spreading, among others. In all the foregoing reduplication patterns, all the segmental melodies are licensed to the reduplicative paradigm and, for this reason, the final outputs display total reduplication, save the phonological processes referred to.

We have also noted that Akan operates partial reduplication as well by which only the initial or final syllable of the base are copied as the reduplicant whereas all the remaining syllables, being unlicensed to the reduplicative parameter, are weeded out. This kind of reduplication resides in the history of the language and is therefore associated with lexical reduplication by which the identifiable bases have fallen into disuse in the language. Finally, in this paper, we have not captured reduplication of phrases, sentences, adverbs, and ideophones, which present interesting segmental and tone sandhi processes. These
surely constitute potential topics for future study of Akan reduplication which we have shown in this paper to be a productive morphophonological process.

REFERENCES


