



## Internal Structure of Anaang Compounds

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### Abstract

The concept of compound is an interesting phenomenon in morphology. Compounds provide motivation for assigning internal structure to words. This is achieved through a process known as compounding. Compounding deals with word structure rules rather than word formation rules. Our focus in this paper is to analyze the phonological constituent processes necessary in Anaang productive words. Data was collected through structured interview using an English word list of 50 compound words. This was administered to fifteen native speakers of Anaang purposely selected. They provided the Anaang equivalence of the word list verbally, which was recorded with a tape recorder. Relevant data was elucidated from the tape, transcribed and used for analysis. Analysis shows that compounding involves the combination of stems from the lexicon into a phrase or word. Anaang compounds are made up of two elements without any further dependency holding between them. This paper therefore asserts that, though compounding is a morph-syntactic process, it has implications on the structure of Anaang phonology in the sense that compounding equally involves certain phonological processes which of course affect the internal structure of the syllable. This work is a contribution to the existing phonological theories, on phonology-morphology interface.

**Key words:** Compounding; Tone; Syllable; Word formation; Internal structure and stem

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### INTRODUCTION

The concept of compound is an interesting phenomenon in morphology (Matthews 1991, katamba 1993, Anderson 1992, Yule 2006, Spencer 1991). Compounds provide motivation for assigning internal structure to words. This is achieved through a process known as compounding. Compounding deals with word structure rules rather than word formation rules. According to Anderson (1992, 1985), a word formation rule operates on a single word (stem) to manipulate it phonological rule by affixation as well as other properties. Compounding in contrast, involves the combination of stems from the lexicon into a phrase or word.

Compounding is viewed as a morph-syntactic process by (Arnorff 1976, Spencer 1991, Anderson 1985 and Andrews 1988), in the sense that elements of a compound may have relations to each other which resemble the relations holding between the constituent of a word, phrase or sentence. These are head modifier, predicate-argument, and opposition. These characteristics are very typical of English compounds. Anaang compounds are made up of two elements without any further dependency holding between them. Although compounding is a morph-syntactic process, it has implications on the structure of Anaang phonology in the sense that compounding equally involves certain phonological processes which of course affect the internal structure of the language. This paper is centered on the description of the various phonological processes that occur as a result of compounding in Anaang.

### 1. COMPOUNDING

There are two types of compounds in the literature (Baker 1988). These are: endocentric and exocentric compounds. Endocentric compound is common in English and has a header. In words like 'blackboard' and 'blackbird', the head words are 'board' and 'bird' respectively.

'Blackboard' describes a board that is black. The head here is black. Endocentric compound are always right headed therefore 'board' here is the head for 'black board.

Exocentric compound on the other hand has no head modifier. For instance, pickpocket, cut-throat, In 'pick pocket', none of the two elements is said to be like-head of the construction but they can be separated into two 'pick' and 'pocket', 'cut' and 'throat' respectively. Pick and cut are predicates, while pocket, throat is the argument type element in cut the throat; pick the pocket.

The analysis of English compounds (Spencer 1991) reveals that English compounds have the following characteristics:

- Endocentric; where one element functions as the head
- Do not include phrases
- All major categories participate in compounding
- Minor categories (function words) are not compounded
- Compound may be either primary (root) or synthetic (verbal).

Primary compounds involve simple concatenated words like 'house # boat' 'houseboat'. Synthetic compounds are formed from verbal head and the non-head fulfils the function of the argument of the verb form which the head is derived as in 'truck driver' (i.e. one who drives truck).

English compounds are stressed on the first syllable, such as, 'blackboard'. All these characteristics are not applicable to Anaang compounds.

Anaang compounds are exocentric since they lack the head of a construct. Anaang compound is simply a conjunction of two elements without further dependency holding between them and often lexicalized. Lexically, compounding is seen as a kind of word formation process, where words are concatenated to form other words. Consider the example in (1) below.

1. ufukajo 'umbrella'
- ikpaukot 'shoes'
- ikoukot 'mug'

The compounds are formed by a concatenation of two meaningful words which are derived as follows;

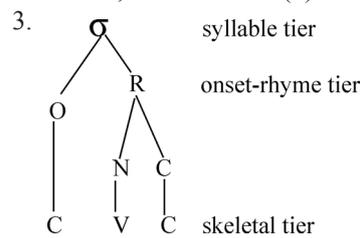
2. úfúk ++ ájò → úfúkájò 'umbrella'  
 covering sun
- ík pá ++ úkòt → íkpáukòt 'shoes'  
 skin leg
- ík ó ++ úkòt → íkóúkòt 'mug'  
 tin wine

## 2. THEORETICAL CONSIDERATION

Fifteen native speakers of Anaang were interviewed using structured word list of 50 English compound words. They provided the Anaang equivalence and read the Anaang version which was recorded with an audio tape recorder. The recorded data was transcribed an elucidated for

analysis. Gloss and interlineal translation is added to the data to for clarity.

This work adopts the Onset-Rhyme multi-tier model, which is a syllable-based framework of the Autosegmental model proposed by (Goldsmith 1967, 1990), to provide an in depth analysis to the internal structure of Anaang compounds. The onset rhyme model consists of the syllable head ( $\sigma$ ), which projects the onset (O) and rhyme (R) tiers which in turn dominate the (C)onsonant and (V)owel tiers, as formalized (3).



Every syllable is said to be made up of onset (optional) and rhyme or onset (optional) nucleus (obligatory) and coda (optional). The onset and coda are the marginal elements of the syllable. Onset is the releasing element while coda is the captive or closing element; nucleus constitutes the peak of the syllable (Ewen & Hulst 2001, Davis 1988, 1992, Giegerich 1992). The onset and coda dominate the consonantal elements while the nucleus dominates the vocalic element. The following symbols are used: Low tone = L or [ ' ], high tone = H or [ ' ], becomes =>

## 3. INTERNAL STRUCTURE OF ANAANG COMPOUNDS

Compounds occur more frequently in nouns or nominal than other word classes. Since nouns in Anaang generally begin with a syllabic segment, all compounds must have an initial syllabic element. The internal structure of the Anaang compounds are modified by various phonological processes as presented in the subsequent sub-sections.

Compounding in Anaang involves the alteration of the phonological structure of the underlying constructs. In other words, the internal structure of the syllable can be affected by compounding processes in the following ways.

- Segment weakening/voicing assimilation
- Coda shift
- Vowel deletion/complete vowel assimilation
- Syllable weight alteration
- Tonal alteration
- Resyllabification/disyllabification

### 3.1. Segment Weakening/ Voicing Assimilation

Voiceless stops in Anaang as well as Ibibio (Urua 2000, 2007) are voiced between vowels at word boundary. The intervocalic consonant assimilates to the voicing feature of the vowel. When this applies, the consonant becomes weakened to a tap or fricative respectively as presented in (4).

- 4 i /ákɔ́k/ /úkɔ̀t/ → [ákɔ́kúkɔ̀t] /k/ → [ɸ]  
 branches raffia bamboo  
 ii. /éʃít / /úfɔ́k/ → [éʃírúfɔ́k] /t/ → [r]  
 interior house rooms  
 iii. /idíp/ /áfít/ → [idíβáfít] /b/ → [β]  
 feaces abdomen belly

Compounding here is constructed from noun+noun. Since nouns generally begin with a syllabic prefix in Anaang, the juxtaposition of two nouns produces -VC#V structure if the first noun ends in a consonant while the second noun begins with a vocalic segment. When the first noun in the construct ends with a voiceless stop segment, such as, a segment becomes weakened to its homorganic continuants or tap if it is followed by another noun with an initial vocalic segment as formalized in (5-7).

- 5 Weakening involving /k/  
 Underlying form compounds  
 weakened segments  
 i. / úfúk/ /áʒò/ [úfúβáʒò] /k/ → [ɸ]  
 covering sun umbrella  
 ii. / úfɔ́k/ /úrua/ [ úfɔ́kúrua] /k/ → [ɸ]  
 house market shop  
 iii. /ákɔ́k/ /úkɔ̀t/ [ákɔ́kúkɔ̀t] /k/ → [ɸ]  
 branches raffia bamboo  
 /k/ is weakened to the uvular fricative [ɸ].

- 6 Weakening Involving /t/  
 Underlying form compound  
 weakened segments  
 i. /éʃít/ /íkɔ̀t/ [éʃíríkɔ̀t] /t/ → [r]  
 heart bush bush  
 ii. /èkpát/ /úbɔ́k/ [èkpa` búbɔ́k] /t/ → [r]  
 bag hand hand bag  
 iii. /ítút/ /áfít/ [ítu` ráfít] /t/ → [r]  
 virgina feaces anus  
 /t/ is weakened to [r]

- 7 Weakening Involving /p/  
 Underlying form Compound  
 Weakened segments  
 i. /íʃíp/ /áʒòp/ [íʃíβa` ʒòp] /p/ → [β]  
 nut oil palm coconut  
 ii. /idíp/ /áfít/ [idíβáfít] /p/ → [β]  
 belly feaces abdomen

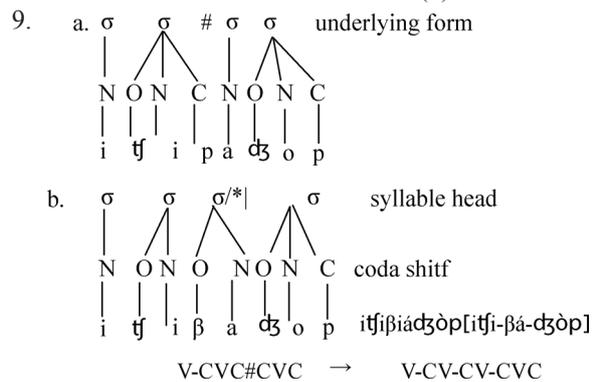
The intervocalic voiceless stops /p k t/ are realized as voiced and are subsequently weakened to their homorganic continuants and tap respectively. Weakening here is only possible at intervocalic position. Since the examples here involve Noun#Noun construction, it is possible for the second construct to have an initial vowel segment since nouns in Anaang must have initial syllabic element. The result of the intervocalic weakening is the absence of obstruction and voicing (Udoh1998) in the production of these sounds where /p t k/ are weakened to /β r ɸ/ respectively. These sounds are voiced and are produced with friction or tap respectively rather than with an obstruction at the vocal fold.

### 3.2 Coda Shift

In another situation compounding or the juxtaposition of two words can result in the alteration of the internal structure of the syllable, where the crisp captive coda of a preceding syllable is released to become an onset of a following onsetless syllable.

8. Noun # noun compound structure  
 V-CVC V-CVC V-CV-CV-CVC  
 i.. /úbɔ́k/ # /èlèm/ [úbɔ́Rèlèm]  
 hand back bribe  
 ii. /èkpát/ # /úbɔ́k/ [èkpaɔ́úbɔ́k]  
 bag hand hand bag  
 iii. /íʃíp/ # /áʒòp/ [íʃíβáʒòp]  
 nut oil palm coconut

The second syllable that was initially closed by a coda becomes open while the coda shifts to a following syllable thereby producing the structure as presented in (9b) using Onset –Rhyme theory. Coda in Anaang has a kind of transitional characteristic depending on the environment. If a close syllable occurs before another word /morpheme with an initial vocalic element, the coda element will automatically shift to the following syllable. The phonological processes that alter string of segments under the pressure of constraints on syllable shape can conspire to supply an onset to a following syllable that had no inherent onset as illustrated in (9).



The illustration indicates that the alteration occurs at the internal structure of the syllable whereas the numbers of the syllable that were underlyingly four, still surfaced as four after the alteration. Coda shifts is only possible in the environment of a consonant at word boundary before a following onsetless (vocalic) syllable (Michael 2009a). This shows that syllabification process does not count on word boundary.

### 3.3 Vowel Assimilation

The examples (9) involved compounds with word final consonant only. Let us consider compound construction where the first noun ends in a vowel.

13. Noun # noun compound  
 i. N-CV-CV V-CV N-CV--CVV-CV  
 /m̀bàrá/ /ékpè/ [m̀bàrékpè]

|      |         |          |              |
|------|---------|----------|--------------|
|      | nails   | tiger    | bramble      |
| ii.  | V-CV    | V-CVC    | V-CVV-CVC    |
|      | /íkpa/  | /a' rɔŋ/ | [íkpa' rɔŋ]  |
|      | skin    | heaven   | sky          |
| iii. | N-CVC   | V-CVC    | N-CV-CV-CVC  |
|      | /mbòró/ | /ébo'k/  | [mbòrébo'k]  |
|      | banana  | monkey   | black banana |

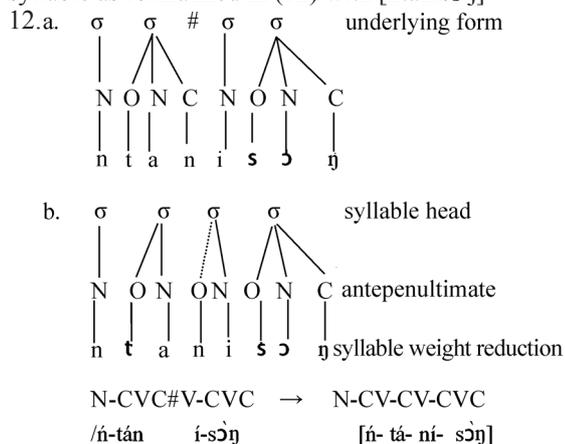
V<sub>1</sub>#V<sub>2</sub> is created in example (10). This is made possible since most nouns in Anaang begin with a vowel and end with a vowel. Since Anaang does not permit vowel hiatus in most cases, where there is any occurrence of V<sub>1</sub>#V<sub>2</sub>, one of the V<sub>1</sub>#V<sub>2</sub> is either deleted or gets completely assimilated to the adjacent vowel. It should however be observed that V<sub>1</sub> assimilates V<sub>2</sub> in (10 i-iii). In this case, a relatively low vowel becomes assimilated to a relatively high vowel (10 i). Assimilation here is determined by the tonal structure. Vowels with like-tonal structure cannot undergo assimilation process. Based on this, assimilation does not occur in (13iii), rather it involves the deletion of V<sub>1</sub>.

### 3.4 Syllable Weight Alteration

When two independent morphemes are compounded into one word, there is bound to be an alteration of the weight unit of the syllable. The weight of the syllable can be increased or reduced depending on the internal structure of the affected word as follows.

|      |                  |                    |
|------|------------------|--------------------|
| 11.  | Noun # noun      | compound structure |
|      | V-CVC V-CVC      | V-CV-CV-CVC        |
| i.   | /u-sún # u-fòk   | [u-su-ŋu-fòk]      |
|      | road house       | door               |
| ii.  | /i-tɔŋ # ú-bɔ'k/ | [i-tɔ-ŋú-bɔ'k]     |
|      | neck hand        | wrist              |
| iii. | /úbóm # áfùm/    | [úbómáfùm]         |
|      | canoe air        | aeroplane          |
| iv.  | /ńtán # ísɔŋ     | [ńtánísɔŋ]         |
|      | sand ground      | soil               |

This weight unit of the second syllable is reduced from heaven to light syllable structure as is indicated by the narrow to the right. This occurs when the crisps captive coda in CVC syllable is released to onset a following V syllable as formalized in (12) with [ńtánísɔŋ]



Underlyingly, the weight unit of the second syllable is a heavy CVC structure, while the penultimate syllable has

a light V structure. The closing consonant of the second syllable becomes resyllabified to the third syllable. This in turn leads to the alteration of the weight unit of the syllable from underlying heavy to light structure.

### 3.5 Resyllabification/Desyllabification

All the processes in compounding result in resyllabification. This is illustrated in (13)

|       |        |       |             |
|-------|--------|-------|-------------|
| 13.i. | /íkpa  | àŋɔŋ/ | [íkpaàŋɔŋ]  |
|       | skin   | up    | sky         |
| ii.   | /íkpa  | úkót/ | [íkpaúkót]  |
|       | skin   | leg   | shoes       |
| iii.  | /élemè | íkán/ | [élemèíkán] |
|       | tongue | fire  | flame       |
| iv.   | /àkpó  | ébót/ | [àkpóébót]  |
|       | male   | goat  | he-goat     |

This is formalized in 14. as follows.

|       |                   |                 |
|-------|-------------------|-----------------|
| 14.i. | V-CV-V-CVC        | V-CVV-CVC       |
|       | í-kpa -à-ŋɔŋ      | í-kpaà-ŋɔŋ      |
| ii.   | V-CV-V-CVC        | V-CVV-CVC       |
|       | í-kpa- ú-kót      | í-kpaú-kót      |
| iii.  | V-CV-CV-V-CVC     | V-CV-CVV-CVC    |
|       | é- lé- mè -í- kán | é- lé- mèí- kán |
| iv.   | V-CV- V-CVC       | V-CVV-CVC       |
|       | à-kpó- é-bót      | à- kpeé-bót     |

In example (14 i-iv), the penultimate syllable desyllabifies to a preceding syllable.

### 3.6 Tonal Modification

Apart from proper noun, other compound nouns in Anaang have a fixed tonal pattern. The tone on the penultimate syllable is usually high, whereas the last syllable carries a low tone irrespective of the tonal pattern of the underlying construct. Example (8) is repeated here as (18) to illustrate our point.

|      |                 |                |       |
|------|-----------------|----------------|-------|
| 18.  | underlying form | compounds      | tones |
| i.   | idàk étó LLHH   | idàRéto LLHL   |       |
|      | shade tree      | shade          |       |
| ii.  | úbók èlèm HHLL  | úbóRélèm HHHL  |       |
|      | hand back       | bribe          |       |
| iii. | úru'k íkót HHHH | úru'Ríkòt HHHL |       |
|      | robe bush       | snake          |       |
| iv.  | úfòk úruà HLLL  | úfòBúruà HLHL  |       |
|      | house market    | shop           |       |
| v.   | ákók úkòt HHHH  | ákóBúkòt HHHL  |       |
|      | branches raffia | bamboo         |       |

There are cases in Anaang where two root words are juxtaposed to form a word without necessarily resulting in compound formation. Let us consider the following examples.

|       |                   |            |
|-------|-------------------|------------|
| 19.i. | Útuéné++íkán      | utuénéíkán |
|       | lightening++ fire | lantern    |
| ii.   | fèhè++ itók       | fèhé itók  |
|       | run++ race        | run        |
|       | ìdiók++èchit      | ìdiókèchit |
|       | bad++ heart       | bitterness |

|                 |          |
|-----------------|----------|
| iii. mkpá++idém | mkpáidém |
| doubt++ body    | shock    |

The examples in (19) are not good cases of Anaang compound words, but they can be treated as compound phrase.

Compounding is subject to semantics drift. Example; in a word like ‘echirikot’ echit- ikot ‘interior bush’, ‘écht’ has inward meaning attached to the heart but at the same time is used to refer to the interior part of the bush. Anaang compounds have a special characteristics known as morphological integrity; where one part of their elements cannot be split up by other words or phrases or by parenthesis. Example follows.

4. i. ébèn ++ mbákára → ébèmbákára ‘avocado’  
pear White man  
ii.\* ébènkeetmbákára

If an epenthetic segment/word is introduced, it will affect the meaning of the construct as presented in (4d-f)

The different morphological constituents in the above examples acquire completely idiosyncratic meanings far removed from their original sources.

Compounding process in Anaang cuts across phonology morphology interface. Morphologically, it is one of the processes for language enrichment, where new words are produced from the existing ones. The compound words can be segmented by affixation process. Phonologically, compounding is regulated by certain phonological processes, which have to comply with the phonotactic restriction constraints of the Anaang syllable. Anaang segments are said to be closely tied up with the internal structure of the syllable (Michael 2009a, 2009b) to the extent that certain segments in a word are constrained from certain syllable positions. Anaang phonotactics therefore plays a vital role in defining a well-formed word. Segments in words that cannot be syllabified are regarded as extrasyllabic and as such get deleted by stray erasure. This in essence shows that phonological processes are determinant in Anaang word formation.

## CONCLUSION

In this work, we have examined the various processes in compounding, concluding that Anaang compounds have no head modifier relationship. The two concatenated words in compound formation are subject to semantic drift in the sense that the underlying meaning of the words most of the time have no correlation with the compound construct. All Anaang compounds are defined by the phonotactic restriction constraints of the language. This implies that the concatenated words must comply with the Anaang phonotactics.

As stated earlier, compounding is viewed as a morpho-syntactic process in the sense that elements of a compound may have relations to each other which resemble the relations holding between the constituent of

a sentence. These are head modifier, predicate-argument, and opposition. These characteristics are very typical of English compounds. Compounding in English shares a common morphological process by joining two roots, words or bases. In some cases, these are separated by hyphen, while in other cases, hyphen have been made to disappear with the passage of time. In some other cases, the compounds appear as two separate words as seen in the following English construction, such as, black board, black bird, paper-bag, boy friend, teargas, goldfish, block-head, duty free, brain-washing etc. This level of inconsistent representation has however, been arrested by the Anaang orthography, which states that Anaang compounds should be represented as one word without any hyphen (Michael and Obot 2001).

The internal structure of Anaang compounds is made up of simple consonant without clusters of any form since Anaang phonotactics does not accept consonant clusters. The phonotactic equally constrained the co-occurrence of syllable internal coda element except where such an element occurs as geminate structure. The tones are equally affected since Anaang is a tonal language. Tonal pattern in Anaang compounds are fixed just like in other Lower Cross languages (Urua 2007). The final tone must be low while the tone on the penultimate syllable must be high irrespective of the tonal structure of the underlying construct.

Generally, although the concept of compounding is morpho-syntactic bound, it equally employs phonological phenomenon for analysis. This is made possible since every well formed word must comply with the phonotactics of the language. Phonotactics here defines constraints for segment combination within a syllable or a word. This shows that phonological information can necessary be applied in solving grammatical problems.

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