Imbrication Patterns of Lunda

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This paper examines the imbrication process in Lunda. It is widely acknowledged in the literature that imbrication in Bantu languages is mainly triggered by the perfective or past tense suffix (Bastin 1983). In Lunda, however, this morphophonological process is not only conditioned by the remote past tense inflectional suffix but also caused by derivational extensions that include the applicative, the causative, and to a lesser extent the reciprocal affix when they are attached to a large number of verb bases. Imbrication typically occurs with verb bases containing what is known as an extension, whether productive or frozen. Unlike many Bantu languages, this phenomenon always results in the deletion of the base final consonant and the consonant of the suffix survives. This segmental loss leads to either vowel coalescence between the two adjacent vowels or gliding.

Keywords: imbrication, remote past, applicative, causative, reciprocal, deletion, vowel fusion, gliding

1. Introduction

This paper investigates the patterns of the imbrication process in Lunda, a language spoken in northwest Zambia. Imbrication is a morphophonological pattern whereby the perfective or remote past suffix -ile or -ili is overlaid and fuses with a preceding base (Bastin 1983). It is variously labelled as the formation of a modified base (Ashton et al. 1954; Givón 1970), ablaut (Kisseberth & Abasheik 1974), fusion (De Blois 1975), and intersuffixation (Chebanne 1996). This phonological process has been described in several Bantu languages such as Bemba (Hyman 1995, 1998; Kula 2002), Bena (Morrison 2012), Chiluba (Lukusa 1993), Kaonde (Kawasha 2016), Lungu (Bickmore 2007), Setswana (Chebanne 1996), etc. These studies suggest that imbrication is mainly triggered by the perfective suffix or remote past -ile in Bantu languages. In Lunda, like in most Bantu languages, a few verb forms ending in certain sound sequences do not have regular remote past formation when they attach the remote past morpheme -ili. They show discrepancies and undergo morphophonological modifications (Bastin 1983) resulting in consonant deletion and its associated effect of vowel coalescence or vowel gliding, depending on the vowel features, in order to avoid vowel hiatus. In Lunda, however, this phenomenon is not limited to the remote past morpheme -ili, but also is induced by derivational extensions, primarily the applicative -il, the causative -ish, and, to a lesser extent, the causative -ik, and the reciprocal -ayan. The Lunda data presented in this paper are from the author’s fieldwork in Zambia in 2000 and 2002 in addition to his own knowledge of the language. They are supplemented by a few examples of verb roots from a couple of Lunda novels. The author also checked them with several Lunda speakers who reside in Zambia via numerous email messages, text messages, and telephone conversations. Further, he consulted Fisher (1984b), and White (1957).
In many Bantu languages, the tense/aspect verbal suffix -ile/ili manifests an irregular morphophonemic pattern when it is added to verb stems of certain morphological specifications. It merges with the verb base; the verb base loses its final consonant conditioning other phonological changes. The input /...CVC-ile/ surfaces as [...]CV-i-C-e], as shown by the verb forms from Kaonde in (1a) and Bemba in (1b). The examples in (1a) are drawn from Kawasha (2016), while Bemba data are based on my knowledge of the language.²

(1) Root/Base → Underlying form → Surface form

a. iman-a ‘stand’ /iman-ile/ im-eene
   sangalal-a ‘rejoice’ /sangalal-ile/ sangal-eele
   sambakan-a ‘meet’ /sambakan-ile/ sambak-eene
   songol-a ‘marry’ /songol-ile/ songw-eene

b. ikal-a ‘live, sit down’ /ikal-ile/ ik-eele
   ikat-a ‘hold, arrest’ /ikat-ile/ ik-eete
   ipush-a ‘ask’ /ipush-ile/ ipw-iishe
   pusan-a ‘differ’ /pusan-ile/ pus-eene

In Lunda, however, it is the base final consonant that is deleted, and the consonant of the suffix remains intact. Compare the examples in (2a) and (2b).

(2) a. ku-húmaŋ-a INF-meet-FV
   b. a-a-húmaŋ-ili → /a-a-húmaŋ-ila/ → [a-a-húmáŋeeni] SM2-TNS-meet-RP ‘They met’

   The same can also be said of the applicative suffix -il, as exemplified by the examples in (3a) and (3b) below:

(3) a. ku-zaŋalal-a INF-rejoice-FV ‘to rejoice’
   b. /ku-zaŋalal-il-a/ → /ku-zaŋala-il-a/ → [ku-zaŋáléel-a] ‘to rejoice for’

   The causative suffix shows clearly that it is the consonant of the base that gets deleted rather than that of the suffix.

(4) ku-húmáŋ-eesh-a ← /ku-húmaŋ-ish-a/ INF-meet-CAUS-FV ‘to bring together’

² The Lunda examples in this paper are written in the orthography approved by the Zambian Ministry of Education. Where orthography differs from IPA, the following transcription conventions are used:

<table>
<thead>
<tr>
<th>IPA</th>
<th>Lunda orthography</th>
<th>IPA</th>
<th>Lunda orthography</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ʒ]</td>
<td>&lt;zh&gt;</td>
<td>[tʃ]</td>
<td>&lt;ch&gt;</td>
</tr>
<tr>
<td>[ɲ]</td>
<td>&lt;ny&gt;</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The paper is organized as follows: Section 2 starts with a brief overview of the Lunda verb structure. Section 3 looks briefly at the factors that influence imbrication in Bantu. Section 4 discusses in detail the occurrence of imbrication and its various triggers, and section 5 provides a short conclusion.

2. Overview of verb structure

In Lunda, like other Bantu languages, the verb morphology is complex consisting of a root, prefixes, and suffixes. The root may be preceded by prefixes that include a negative marker, a subject marker, a tense-aspect marker, a relative marker, an optional object marker for animates, and a reflexive/reciprocal morpheme. The post root can be occupied by suffixes, both derivational and inflectional following this order: extensions plus inflectional suffixes. The inflectional suffixes consist of the tense and aspect marker, the final vowel, the imperative marker, and the postverbal morphemes such as third person pronominal object, third person relative subject pronominal, locative markers, and the second negative marker. The example in (5) illustrates a finite verb in the remote past tense.

(5)  w-a-mu-tém-ésh-el-ēṇa-yu
     SM1-PST-OM1-send-CAUS-RP-HAB-OM2
     ‘He used to send it to him.’

The verb form in (5) contains the third person singular (class 1) subject marker wu-, the root tém, the causative extension -esh, another tense marker -eli, the habitual tense aspect marker -ēṇa, and a postverbal secondary object clitic -yu. The remote past affix and the subject prefix in the example lose their vowels as they appear in hiatus.

Derivational suffixes, also known as extensions, can have either syntactic or semantic function, or both when they are attached to verbs. They can affect the verb valence by either adding a new argument to the clause or removing one. Certain suffixes simply add semantic meaning to the verb without any effect on the argument structure. These suffixes are of varying degrees of productivity in Lunda, with the applicative and the causative being more productive than the rest of the suffixes. Though recognizable, some suffixes are limited in use and only appear in a very small number of verb roots. Other verb forms that carry extensions are now fossilized to the root or lexicalized and the apparent verb roots do not have meaning on their own. That is, the verb forms cannot be segmented because the simple verb forms no longer exist in the language. The meaning of the base without the seeming affix is not clear because the base cannot stand as a verb without this extension. Furthermore, a few verb forms exhibit no distinction in meaning between simple verbs and complex ones. Some of these extensions play a major role in the imbrication process. Below is a table listing the various verbal extensions found in Lunda and their approximate functions.

3 Elision affects the final vowel of the remote past affix when it precedes the habitual marker -ēṇa. The habitual marker is -aŋa in other tenses.
4 A detailed study of derivational suffixes is beyond the scope of this paper.
Table 1: Lunda Verb extensions

| Applicative | -il | Contactive | -at |
| Causative | -ish | Positional | -am, -aman |
| Passive | -iw | Causative | -ik |
| Stative | -ik | Manner of walking | -inj |
| Reciprocal | -aŋan | Stative | -al, -alal, -an |
| Associative | -ashan,-akan, | Persistive | -ek, -ezhek |
| Reversive | -ul/-ulul | Intensive | -ish |
| Complettive | -ilil | Persistive/Iterative | -azhal, -azham, -azhol, -oazhol, -uzhol, -oazhok |

Some of these suffixes also express other meanings such as intensive to a certain extent. They include -ashan, -akan, -ol, and -ok.

3. Imbrication

Imbrication is a morphophonemic pattern whereby the perfective or remote past morpheme -ile/-ili is overlaid and fuses with a preceding base (Bastin 1983). It is variously labelled as the formation of a modified base (Ashton et al. 1954, Givón 1970), ablaut (Kisseberth & Abasheik 1974), fusion (De Blois 1975), and intersuffixation (Chebanne 1996). This phonological process has been described in several Bantu languages such as Bemba (Hyman 1995, 1998; Kula 2002), Bena (Morrison 2012), Chiluba (Lukusa 1993), Kaonde (Kawasha 2016), Lungu (Bickmore 2007), Setswana (Chebanne 1996), etc.

3.1 Factors influencing imbrication. There are important factors that influence or restrict imbrication in Bantu. Citing Bastin (1983), Hyman (1995) gives four criteria that can trigger or block imbrication. They include

(6) a. the size of the verb base,
   b. the nature of the final consonant of the verb base,
   c. the nature of the vowel preceding the final consonant of the verb base, and
   d. the identity of the last morpheme of the verb base.

In Lunda, however, imbrication is not only triggered by the remote past tense suffix -ili, but it is extended to derivational suffixes such as the applicative -il, causative -ish, and, to a lesser extent, the other causative -ik, and reciprocal extension -aŋan when they are attached to verb bases bearing the reciprocal -aŋan, associative -akan, suffixes such as -al/-alal, -an, the transitive -ul, and, to a lesser extent, -uk.

4. Imbrication triggers

In Lunda, the major triggers of imbrication are the /-iC/ suffixes namely the remote past -ili, the causative -ish, and the applicative –il. Minor triggers are the second causative -ik and the reciprocal -aŋan. Adding the remote past suffix, the applicative, the causative, or the reciprocal derivational extensions shows regular suffixation. Consider the examples of simple infinitive forms in (7a-c). In (8a), the verb form is in the remote past coded by the suffix -ili, while those in (8b-c) are derived
verbs marked with the causative, and applicative extensions corresponding to the simple verb forms in (8b-c) respectively.

(7) a. ku-kos-a ‘to be thin’
   b. ku-chím-a ‘to sew’
   c. ku-kat-a ‘to hurt (intr)’

(8) a. w-a-kós-eli ‘he became thin’
   b. ku-chím-in-a ‘to sew for’
   c. ku-kat-ish-a ‘to hurt (tr)’

Nevertheless, when the same suffixes are attached to a verb base that comprises a root and one of the following suffixes -aŋan, -akan, -an, and -al/-alal imbrication takes place. Some examples of imbricated verbs are given in (9) and (10). The verb underlying forms are in slanted brackets.

(9) a. w-a-zhímb-éeli ‘He got lost’ /w-a-zhimb-al-il-i/
   b. ku-zhímb-el-a ‘to lose for’ /ku-zhimb-al-il-a/
   c. ku-zhímb-esh-a ‘to lose’ /ku-zhimb-al-ish-a/

(10) a. w-a-kísáŋ-eeni ‘He spoiled, destroyed’ /w-a-kis-ąjan-il-i/
   b. ku-kabak-een-a ‘to suffer for’ /ku-kab-akan-il-a/
   c. ku-luwaŋ-esh-a ‘to confuse, muddle’ /ku-luw-ąjan-ish-a/

4.1. Remote past. In Lunda, the remote past tense is expressed by a combination of the preverbal prefix a- and the suffix -ili (Kawasha 2003). It is also attested with the same function in other neighboring Zambian languages, namely, Chokwe, Kaonde (Wright 1977: 137; Kawasha 2016), and Luvale (White 1947, 1949, n.d; Horton 1949; Yukawa 1987). White (1947) points out that this “tense is used to denote a past action prior to yesterday” in Chokwe, Luchazi, Lunda, and Luvale. The suffix is added to the stem in the remote past tense formation, as seen in (11).

(11) a. w-a-d-fíli
   SM1-TNS-eat-RP ‘He ate’
   b. w-a-hít-ili
   SM1-TNS-pass-RP ‘He passed’

The verb roots d ‘eat’ in (11a) and hit ‘pass’ in (11b) are preceded by the class one subject prefix wu- and the tense marker –a, and followed by the remote past suffix -ili.

Lunda has the process of mid vowel height harmony that involves assimilation among vowels. Like most of the languages spoken in Zambia, the process applies to suffixes with an initial high front vowel. The suffixes are the remote past, the causative, the applicative, the second causative, and the stative. If the verb root contains the vowel /i/, /u/, or /a/, the vowel of the suffix is a high front vowel. However, mid vowels /e/ and /o/ trigger a left-to-right direction of harmony targeting the underlying vowel of the suffix /i/, which assimilates completely to the height of the preceding mid vowels and changes to a mid-vowel [e]. This type of harmony occurs across an intervening consonant. Compare the examples of verbs in the remote past in (12) and (13). The verbs on the left are in the simple infinitive forms marked by the infinitive prefix ku-, while those on the
right are the remote past forms. They consist of the class one subject prefix w- in initial slot followed by the tense marker a- attached directly to the verb root with the remote past suffix -ili as the last verbal element.

(12)  
   a.  ku-hít-a  ‘to pass’  w-a-hít-ili  
   ku-shík-a  ‘to arrive’  w-a-shík-ili  
   ku-kís-a  ‘to destroy’  w-a-hít-ili  
   b.  ku-túk-a  ‘to insult’  w-a-túk-ili  
   ku-súp-a  ‘to be foolish’  w-a-súp-ili  
   ku-búl-a  ‘to lack’  w-a-búl-ili  
   ku-lúl-a  ‘to be bitter’  w-a-lúl-ili  
   c.  ku-al-a  ‘to make up bed’  w-a-ál-ili  
   ku-land-a  ‘to buy’  w-a-land-ili  
   ku-táp-a  ‘to stab’  w-a-táp-ili  
   ku-nát-a  ‘to throw’  w-a-nát-ili

(13)  
   a.  ku-hemb-a  ‘to look after, take care of’  w-a-hemb-éli  
   ku-seh-a  ‘to laugh’  w-a-séh-éli  
   ku-ses-a  ‘to chip’  w-a-sés-éli  
   ku-zéy-a  ‘to be tired’  w-a-zéy-éli  
   b.  ku-kós-a  ‘to wash’  w-a-kós-éli  
   ku-poy-a  ‘to dig a hole’  w-a-póy-éli  
   ku-lów-a  ‘to fish’  w-a-lów-éli

On the left in (12) and (13) are verb stems—verb root plus final vowel—, while the inflectional suffix -ili is added to the verb root on the right. The verb roots with non-mid vowels in (12) have a suffix with a high front vowel -ili, while those with mid vowels in (13) contain a suffix with a mid-front vowel -éli.

Furthermore, the high vowel /u/ of the suffix -ul lowers to /o/ when the root has the mid vowel /o/. That is, the suffix has two allomorphs namely -ul and -ol.

(14)  
   a.  ku-hít-a  ‘to pass’  ku-hít-ul-a  ‘to pass and pick up’  
   ku-zhík-a  ‘to stop up’  ku-zhík-ul-a  ‘to unstop’  
   ku-shínd-a  ‘press, rub, hard, press out’  ku-shínd-ulul-a  ‘to rub smooth’  
   ku-shínk-a  ‘to close’  ku-shínk-ul-a  ‘to open’  
   ku-shínt-a  ‘to twine, spin’  ku-shínt-ulul-a  ‘to unravel’  
   ku-kem-a  ‘to bear down with grunt’  ku-kém-un-a  ‘grunt’  
   ku-enzel-a  ‘to close’  ku-enzel-ulul-a  ‘to open’  
   nyet-a  ‘screw’  nyet-ulul-a  ‘unscrew’  
   kw-ál-a  ‘to lay out’  kw-ál-ul-a  ‘to clear away’  
   ku-kam-a  ‘to mold in hands’  ku-kam-un-a  ‘to squeeze out’  
   ku-kás-a  ‘to tie’  ku-kás-unun-a  ‘to untie’  
   ku-búl-a  ‘to cover’  ku-búl-ulul-a  ‘to uncover’  
   ku-fun-a  ‘to fold over, bend in two’  ku-fun-un-a  ‘break’  
   ku-vúj-a  ‘to fold’  ku-vúj-ulul-a  ‘to unfold’  
   b.  ku-homb-a  ‘to be down cast, discouraged’  ku-homb-ol-a  ‘to tame’  
   ku-kós-a  ‘to wash’  ku-kós-olol-a  ‘to rinse’  
   ku-kök-a  ‘to pull’  ku-kök-olol-a  ‘to pull tight’  
   ku-som-a  ‘inset grass into hole’  ku-som-on-a  ‘to take out’  
   ku-tot-a  ‘to peck’  ku-tot-ol-a  ‘to crack open’
Lunda also exhibits nasal consonant harmony that modifies the /l/ of the remote past tense suffix. It turns into an alveolar [n] when the consonant of the preceding syllable is a bilabial nasal /m/ or an alveolar nasal /n/.

5 Vowel height harmony applies to the applicative, causative, neuter as well, while nasal harmony also affects the applicative.

(15) a. ku-dim-a  ‘to cultivate’  w-a-dím-íni
    ku-chiìn-a  ‘to fear’  w-a-chiìn-íni
b. ku-túm-a  ‘to send’  w-a-túm-íni
    ku-fúń-a  ‘to fold over, bend over’  w-a-fúń-íni
c. ku-man-a  ‘to finish’  w-a-mán-íni
    ku-nan-a  ‘to swell, be swollen’  w-a-nán-íni

(16) a. ku-tém-a  ‘to cut a tree’  w-a-tém-eni
    ku-téén-a  ‘to mention’  w-a-téén-eni
b. ku-som-a  ‘to load a gun’  w-a-sóm-eni
    ku-on-a  ‘to snore’  w-ó-ón-eni  /w-a-on-éli/

However, nasal harmony does not affect verbs whose final consonant is a velar or palatal nasal in Lunda, as shown by the verb forms in (17) and (18).

(17) ku-bíɲ-a  ‘to herd cattle’  w-a-bíɲ-íli
    ku-híiɲ-a  ‘to inherit’  w-a-híiɲ-íli
    ku-lúɲ-a  ‘to be carefree’  w-a-lúɲ-íli
    ku-fúń-áɲ-a  ‘to guard’  w-a-fúń-íli
    ku-ha念头-a  ‘to chase’  w-a-ha念头-íli
    ku-mwa念头-a  ‘to spill, scatter’  w-a-mwa念头-íli
    ku-sa念头-a  ‘to mix’  w-a-sa念头-íli
    ku-vm念头-a  ‘to mix’  w-a-vm念头-íli
    ku-he念头-a  ‘to be crooked’  w-a-he念头-éli
    ku-ké念头-a  ‘to love, look for’  w-a-ké念头-éli
    ku-le念头-a  ‘to create’  w-a-le念头-éli
    ku-kó念头-a  ‘to work’  w-a-kó念头-éli
    ku-lo念头-a  ‘to put in order’  w-a-lo念头-éli
    ku-hó念头-a  ‘to divine’  w-a-hó念头-éli

(18) ku-miny-a  ‘swallow’  w-a- miny-íli
    ku-nín-y-a  ‘defecate’  w-a- nín-y-íli
    ku-huny-a  ‘be torn on surface’  w-a- huny-íli
    ku-funy-a  ‘to paw ground’  w-a-fúnıy-íli
    ku-pá念头-a  ‘to file teeth’  w-a-pá念头-íli
    ku-sá念头-a  ‘to wriggle’  w-a-sá念头-íli
    ku-he念头-a  ‘to pull apart’  w-a-he念头-éli
    ku-ké念头-a  ‘to bite off’  w-a-ké念头-éli
    ku-kó念头-a  ‘to put in order’  w-a-kó念头-éli
    ku-hó念头-a  ‘to strike with force’  w-a-hó念头-éli
Most of the verbs display regular suffixation when the remote past morpheme is added to the verb base. Consider the examples of short verb forms in (19a-b) and those of long verb forms in (19c-d).

(19) a. kú-d-a ‘to eat’ w-a-d-íli
   kú-nw-a ‘drink’ w-a-nw-íni
   ku-úm-a ‘to become dry’ w-ó-óm-íni /w-a-úm-íli/
   kw-áš-a ‘shoot, throw’ w-á-áš-íli
   kw-ót-a ‘to warm self’ w-ó-ó-t-éli
   ku-pand-a ‘to prepare magic’ w-a-pánd-íli
   ku-kís-a ‘to spoil, destroy’ w-a-kíís-íli
   ku-shíík-a ‘to promise’ w-a-shíík-íli
   ku-záal-a ‘to shiver, tremble’ w-a-shíík-íli
   ku-zhah-a ‘to kill’ w-a-zháh-íli

   b. ku-ménék-a ‘to set off early’ w-a-ménék-éli
   ku-sónek-a ‘to write’ w-a-sónek-éli
   ku-tékél-a ‘to urineate’ w-a-tékél-éli
   ku-tentek-a ‘to down’ w-a-ténték-éli
   kw-ánúk-a ‘to remember’ w-a-ánúk-íli
   kw-isuk-a ‘to wash hands’ w-e-ésúk-íli
   kw-iteezh-a ‘to admit’ w-é-étéezh-éli

   c. ku-kúmbat-a ‘embrace, take in arms’ w-a- kúmbát-íli
   ku-shakam-a ‘to sit’ w-a-shákam-iní
   ku-shíímat-a ‘to stand firm’ w-a-shíímat-íli
   ku-twámin-a ‘to go ahead, led way’ w-a-twámin-iní
   ku-tánjish-a ‘to teach’ w-a-tánjish-iní

   d. kw-íhužhol-a ‘to ask questions’ w-e-é-íhužhol-éli
   ku-kaníkízh-a ‘to coerce’ w-a-kaníkízh-íli
   ku-khweelal-a ‘to trust’ w-a-khweelal-éli
   ku-lekeel-a ‘to let go, be poised’ w-a-lekeel-éli
   ku-súmbilíl-a ‘to welcome’ w-a-súmbilíl-íli
   ku-shakamík-a ‘to cause to sit’ w-a-shakamík-íli

4.1.1 …CV Verb Base. When the same suffix is, however, adjoined to verb bases that carry some extensions, namely the reciprocal -ajan, associative suffix -akan, the suffixes -an and -al, and the transitive extension -ul, it triggers imbrication (Bastin 1983). This results in the deletion of the final consonant of the base, and the concomitant effects of vowel coalescence or gliding depending on the vowel preceding the base final consonant whether it is /a/ or /u/ to avoid vowel hiatus. The changes affect the last two segment of the verb base. Thus, the input /…Can-ili/ yields the surface form […]Ceeli or […]Ceeni. Examples of cases of imbricated verbs are given in (20):

(20) a. ku-húmańan-a ‘to meet’ w-a-húmań-ẹeni /húmańan-ili/
   b. ku-búlak-a ‘to meet face to face’ w-a-búlák-ẹeni /búlak-ili/
   c. kw-íman-a ‘to stand’ w-ě-ém-ẹéni /íman-ili/
   d. ku-bábal-a ‘to be cunning, clever’ w-a-bá-b-ẹéli /bábal-ili/
Examples of infinitive verb bases that consist of a root and a suffix are given on the left side in (20). Those on the right are in the remote past tense with a class I subject prefix *wu-,* the preverbal tense marker *a-*, and the postverbal tense marker *-ili.* They all show irregular suffixation patterns in that the low vowel of the base coalesces with the initial vowel of the suffix resulting into [ee] due to the loss of the final consonant /n/ of the base. Note also that the suffixal liquid /l/ in (20b -c) becomes /n/ due to the process of nasal harmony.

Some examples of verb bases ending in *-ajan* and *-akan* that exhibit this morphophonemic process are given in (21) and (22) respectively:

(21)  
<table>
<thead>
<tr>
<th>Verb Base</th>
<th>Meaning</th>
<th>Form 1</th>
<th>Form 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>ku-hana-jan-a</td>
<td>‘to dance’</td>
<td>w-a-hán-éeni</td>
<td></td>
</tr>
<tr>
<td>ku-hela-nan-a</td>
<td>‘to hate each other’</td>
<td>w-a-hélán-éeni</td>
<td></td>
</tr>
<tr>
<td>ku-hitajan-a</td>
<td>‘to keep passing from place to place’</td>
<td>w-a-hitaj-éeni</td>
<td></td>
</tr>
<tr>
<td>ku-húmanjan- a</td>
<td>‘to meet together’</td>
<td>w-a-húman-éeni</td>
<td></td>
</tr>
<tr>
<td>ku-kisajan-a</td>
<td>‘to spoil’</td>
<td>w-a-kisaj-éeni</td>
<td></td>
</tr>
<tr>
<td>ku-palajan-a</td>
<td>‘to scatter’</td>
<td>w-a-palaj-éeni</td>
<td></td>
</tr>
<tr>
<td>ku-tíyajan-a</td>
<td>‘to agree’</td>
<td>w-a-tíyaj-éeni</td>
<td></td>
</tr>
<tr>
<td>ku-tálanjan-a</td>
<td>‘to face each other’</td>
<td>w-a-tálaj-éeni</td>
<td></td>
</tr>
<tr>
<td>ku-zuwanjan- a</td>
<td>‘be quarrelsome’</td>
<td>w-a-zúwaj-éeni</td>
<td></td>
</tr>
</tbody>
</table>

(22)  
<table>
<thead>
<tr>
<th>Verb Base</th>
<th>Meaning</th>
<th>Form 1</th>
<th>Form 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>ku-bambakan- a</td>
<td>‘be clever, cunning’</td>
<td>w-a-bambák-éeni</td>
<td></td>
</tr>
<tr>
<td>ku-búlakan-a</td>
<td>‘to meet face to face’</td>
<td>w-a-búlák-éeni</td>
<td></td>
</tr>
<tr>
<td>ku-esekan-a</td>
<td>‘to be equal in size, quantity’</td>
<td>w-e-ések-éeni</td>
<td></td>
</tr>
<tr>
<td>ku-imakan- a</td>
<td>‘be straight ahead’</td>
<td>w-e-émak-éeni</td>
<td></td>
</tr>
<tr>
<td>ku-mwéekan-a</td>
<td>‘to appear’</td>
<td>w-a-mwék-éeni</td>
<td></td>
</tr>
<tr>
<td>ku-pandakan-a</td>
<td>‘to pass beyond’</td>
<td>w-a-pándak-éeni</td>
<td></td>
</tr>
<tr>
<td>ku-shíntakan-a</td>
<td>‘to come close together’</td>
<td>w-a-shíntaj-éeni</td>
<td></td>
</tr>
<tr>
<td>ku-tíyakan- a</td>
<td>‘to be heard’</td>
<td>w-a-tíyaj-éeni</td>
<td></td>
</tr>
<tr>
<td>ku-tumbakan-a</td>
<td>‘to be famous’</td>
<td>w-a-tumbák-éeni</td>
<td></td>
</tr>
</tbody>
</table>

Meeusen (1967) has reconstructed the extensions *-al* and *-an* as *ad-* in Proto-Bantu and suggests that the extension *ad-* appears partly as an expansion, partly as a suffix. Nonetheless, the two morphemes *-an* and *-al* appear to be suffixes in Lunda. The morpheme *-an* is found in a small set of verbs and performs either a semantic or syntactic function when attached to these verbs. It can encode a change in valency or alter the meaning of verb roots. The resultant derived verb is always a one-place verb. Consider the following examples in (23):

(23)  
<table>
<thead>
<tr>
<th>Verb Base</th>
<th>Meaning</th>
<th>Form 1</th>
<th>Form 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>kw-esek-a</td>
<td>‘to try, attempt’</td>
<td>kw-esek-an-a</td>
<td>‘to be equal’</td>
</tr>
<tr>
<td>ku-dímb-a</td>
<td>‘to deceive’</td>
<td>ku-dímb-an-a</td>
<td>‘to be false, deceitful’</td>
</tr>
<tr>
<td>ku-fw-a</td>
<td>‘to die’</td>
<td>ku-fw-án-a</td>
<td>‘to be deadly, be dangerous’</td>
</tr>
<tr>
<td>ku-zhah-a</td>
<td>‘to kill’</td>
<td>ku-zhah-an-a</td>
<td>‘to kill’9</td>
</tr>
<tr>
<td>ku-kiish-a</td>
<td>‘to withhold from, not give’</td>
<td>ku-kiish-an-a</td>
<td>‘to be mean, stingy’</td>
</tr>
<tr>
<td>ku-sheet-a</td>
<td>‘to be drunk’</td>
<td>ku-sheet-an-a</td>
<td>‘to be intoxicating’</td>
</tr>
<tr>
<td>ku-shim-a</td>
<td>‘to mention a taboo’</td>
<td>ku-shim-an-a</td>
<td>‘to be abominable’</td>
</tr>
<tr>
<td>ku-shiñ-a</td>
<td>‘to curse’</td>
<td>ku-shiñ-an-a</td>
<td>‘to curse habitually’</td>
</tr>
<tr>
<td>ku-süm-a</td>
<td>‘to bite’</td>
<td>ku-süm-an-a</td>
<td>‘to be biting, likely to bite’</td>
</tr>
</tbody>
</table>

Note also that the suffix *-an* can be replaced by other suffixes to derive other verbs. The suffixes add meanings to the roots, as the examples in (24) show.

---

8 Note that not all the verb forms with these two suffixes have reciprocal or associative meanings, e.g. *hajana* ‘dance, *kisajana* ‘destroy, spoil, ruin’, *palajana* ‘be dispersed, scatter’ and *zuwanajana* ‘be bad tempered’.

9 This is reminiscent of the antipassive whereby transitive verb is made intransitive by eliminating the patient.
íman- 'stop, wait a minute' ímazhal- 'stroll, loiter'
imik- 'make to stand, stand upright'
imakan- 'be straight ahead'
leman- 'be wounded'
lemek- 'wound'
búl-aman- 'lie on face, stomach' búl-amik- 'cause to lie face down'
kiŋ-aman- 'lie in obstructing position' kiŋ-amik- 'put in a way to obstruct,
náŋ-aman- 'be piled on top of another' náŋ-amik- 'place on top'
tál-aman- 'stand with legs apart' tál-amik- 'come to stand thus'
zál-aman- 'stand perched on pole' zál-amik- 'stand two objects on pole'

A restricted number of verbs that appear with this suffix either exhibit idiosyncratic meaning (25a) or are fossilized forms (25b).

(25) a. ku-bamb- 'to close in hands’ ku bamb-an- ‘have itching properties’
ku-lem- 'to be heavy' ku-leman- 'to be wounded'

b. ku-búlaman- 'to lie on stomach’ (’ku-búlam)

These verbs imbricate in the remote past. Three examples of imbricated verb forms are given in (26):

(26) a. kw-íman- ‘to stand for; wait for’ w-ém-enien
kw-zhahan- ‘to kill’ w-a-zháh-enien

b. ku-búlaman- ‘to lie on stomach’ a-a-búlám-enien

With respect to the suffix -al and its long form -alal, it is not very productive in present day Lunda. In addition, this affix is frozen in a limited number of verbs since they cannot be segmented, and some of them are lexicalized (27b).

(27) a. ku-fúw- ‘to be half-cooked’ ku-fúw-alal- ‘to be faded, dim’
kúlůw- ‘to be wrong’ ku-lůwalal- ‘to be perverse’
kúluŋ- ‘to rejoice, be glad’ ku-luŋ-alal- ‘to go about rejoicing’
kúzhimba-la ‘to forget, be lost’ ku-zhímba-azhal- ‘to wander (as lost)’
kúsend-alal- ‘to be tilted’ ku-send-elek- ‘to tilt’
kútenaŋ-alal- ‘to incline to one side’ ku-tenaŋ-elek- ‘to incline’

b. ku-bábal- ‘to be sly’ ku-bába
kúinzal- ‘to be full’ kú-inza
kúpap- ‘to pat or mold into shape’ kúpapalal- ‘to be flat’
kúzenz- ‘to rain continuously’ kúzenzalal- ‘to be bowed down’

The remote past suffix conditions imbrication when it is attached to such verbs, as the examples in (28) show.

---

10This verb has a frozen suffix. Mbunda has this verb with the same meaning. However, it does not undergo imbrication in that language (Gowlett 1970:186).

íman- ‘stand, wait, stop’ imanen- ‘stand for, wait for’
Imbrication Patterns of Lunda

(28)  a. ku-fúwal-a ‘to be faded, dim’ w-a-fúw-eéli
     ku-zhímbal-a ‘to forget, be lost’ w-a-zhímmb-eéli
     ku-mwanjal-a ‘to be spilled, scattered’ w-a-mwanj-eéli
     ku-tanjal-a ‘to have confidence’ w-a-tánp-eéli
     ku-tówal-a ‘to be sweet’ w-a-tów-eéli

     b. ku-žanjalal-a ‘to rejoice’ w-a-zánjá-eéli
     ku-zhíbalal-a ‘to blink, doze’ w-a-zhíbál-eéli
     ku-boatagal-a ‘to be in a slanting position’ ch-a-botál-eéli
     ku-zakahalal-a ‘to have hair in disarray’ w-a-zákálal-eéli

Two reduplicated verb roots ending in the segments /al/, kálakála ‘work hard’ and tálatála ‘look about, search for’ which are derived from the verb roots kála ‘be hard’ and tála ‘look’ respectively imbricate in a similar fashion. Since the verb forms end in /al/, they are treated as bases, not two roots, with the last two segments being reinterpreted as a suffix. This is illustrated by the examples (29b) and (29d) which are derived from the verbs in (29a) and (29c) respectively:

(29)  a. ku-kál-a ‘to be hard’ w-a-kál-ili
     b. ku-kála-kál-a ‘to work hard’ w-a-kálák-eéli /kála-kál-ili/
     c. ku-tál-a ‘to look’ w-a-tál-ili
     d. ku-tála-tál-a ‘to look about’ w-a-tálát-eéli /tála-tál-ili/

Surprisingly, verb bases containing the associative extension -ashan do not imbricate even if they meet the imbrication requirements. There is no plausible phonetic explanation for the lack of imbrication considering that the verb forms have a [an] sequence.

(30)  ku-bombashan-a ‘to mix together’ a-a-bómáshásh-ani
     ku-onashan-a ‘to pant’ w-o-nákásh-ani
     ku-selashan-a ‘to pass as from opposite directions’ a-a-sélásh-ani
     ku-táashan-a ‘to be mistaken’ a-a-táásh-ani
     ku-tíyashan-a ‘to agree together’ a-a-tíyásh-ani
     ku-yambashan-a ‘feel confused, uncertain’ w-a-yámásh-ani

There are numerous transitive verb bases containing the suffix -ul which have a corresponding intransitive verb bases ending in -uk. The transitive verb forms are equally susceptible to imbrication. The consonant /l/ undergoes the process of nasal consonant harmony with the stem. It becomes an alveolar nasal when preceding a bilabial or alveolar nasal consonant. The segment /l/ of the base deletes, the round vowel of the base glides before another vowel, and the remaining vowel lengths [...]wii. The same analysis regarding deletion applies to this group of verb bases, as illustrated in (32). Even this example shows that deletion is assumed to apply first:

(31) /w-a-balul-ili/ → /w-a-balu-ili/ → [w-a-bálw-ilí] ‘he split’

Consider the following examples in (32):

(32)  kw-ambul-a ‘to separate, divide’ w-a-ámbw-ílí
     kw-bófol-a ‘to dent’ w-a-bófolkw-ééli

11 The verbs ikala ‘be, stay’ and kátala ‘be lazy, be tired’ do not imbricate, though they contain the segments /al/.
12 The suffixes -ul and -uk are sometimes referred to as separative or reversive.
ku-ihul-a  ‘to ask a question’  w-e-éhw-fil-i
ku-kísul-a  ‘to express thanks’  w-a-kisw-fil-i
ku-lumbulul-a  ‘to explain’  w-a-lumbulw-filili
ku-sakul-a  ‘to select’  w-a-sákú-fil-i
ku-saqul-a  ‘to untwist, unwind’  w-a-sányw-fili
ku-telul-a  ‘to remove pot from fire’  w-a-télw-fili
ku-soŋolol-a  ‘to sharpen to a point’  w-a-soŋolw-éeili
ku-toŋonon-a  ‘to sew, stitch’  w-a-toŋónw-éeni
ku-tóholol-a  ‘to have foreign body in eyes’  w-a-tóholw-éeili
ku-nyámun-a  ‘to lift up’  w-a-nyámw-ííni
ku-bállumun-a  ‘to change’  w-a-bálúmw-ííni
ku-zhiŋunun-a  ‘to untwist, unwind’  w-a-zhiŋunw-ííni
ku-tandumun-a  ‘to spread or stretch out cloth’  w-a-tandumw-ííni

In contrast to the transitive forms, regular remote past tense formation occurs with the corresponding intransitive verbs containing the extension -uk. The remote past of these verb bases is formed through regular suffixation without any morphophonemic alternations, as the following data show:

(33)  kw-ambuk-a  ‘to be separated, divided’  w-a-ámbug-íili
ku-ku-bófok-a  ‘to get dented’  w-a-bófök-eli
ku-lumbuluk-a  ‘to be clear’  w-a-lumbúk-íili
ku-sákuk-a  ‘to be selected’  w-a-sákúk-íili
ku-nyámuk-a  ‘to get up from place’  w-a-nyámúk-íili
ku-bállumuk-a  ‘to turn about, change’  w-a-bálúmmuk-íili
ku-soŋolok-a  ‘to be sharpened to a point’  w-a-soŋolok-eli
ku-toŋonok-a  ‘to come unstitched, unsewn’  w-a-toŋonok-eli

A small group of CVC-VC and VC-VC verb bases, which imbricate, are made up of two morphemes. They are composed of verb forms with related meaning that take different suffixes comprising -am, -ulul, -ok, -uzhol, and -uzhok. As the examples in (34) show, the roots have clear meanings in these verb forms although they do not occur in isolation:

(34)  a.  asul-a  ‘open someone’s mouth’  asam-a  ‘open mouth’
  b.  asul-a  ‘open someone’s mouth’  asulul-a  ‘force mouth open’
  c.  kohol-a  ‘cough’  kohok-a  ‘cough up phlegm’
  d.  ihul-a  ‘to ask’  ihuzhol-a  ‘to ask repeatedly’
  e.  bumbul-a  ‘to slacken’  bumbuzhol-a  ‘to keep falling asleep’

Other CVCVC and VCVC verb forms which seem to consist of a root and the suffix /ul/ can be treated as monomorphemic synchronically since they do not have corresponding counterparts with related meanings. Although the suffix -ul is clearly recognizable, the verb forms are frozen bases. In addition, the seeming root does not appear alone without this extension in the language. It is the entire verb that is meaningful, and not the constituent parts. Some examples of such verbs are given below:

(35)  ku-akul-a  ‘to answer a question’  w-a-ákú-filili
ku-bákul-a  ‘to separate a way’  w-a-bákú-filili
ku-diul-a  ‘to ignore’  w-a-diú-fili
ku-kísul-a  ‘to express thanks’  w-a-kisw-fili
ku-shimbul-a  ‘to last long’  w-a-shímbw-fili

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kw-shímun-a  ‘to tell, relate’  w-a-shímw-ííni
ku-só sól-a  ‘to bring from confinement’  w-a-sólw-éélí
ku-tambul-a  ‘to receive, take from’  w-a-támbw-ílí
ku-téhun-a  ‘to fill with liquid’  w-a-téhw-ílí
ku-telul-a  ‘to remove pot from fire’  w-a-télw-ííni
ku-túbula  ‘to walk with heavy step in water’  w-a-túbw-ííli
ku-tújul-a  ‘to backbite’  w-a-túyw-ííli
ku-vúpul-a  ‘to flog’  w-a-vúpw-ííli

However, there is evidence that suggests that the forms in (35) were historically polymorphemic, even if they are now treated as monomorphemic. Evidence is provided by a group of deverbal nouns formed by affixation of the nominalizing suffix -u and noun class prefixes. When a noun is derived from a simple verb, the nominalizing suffix -u attaches to the root. However, adding the same suffix to a complex verb ending in /ul/ results in the deletion of the suffix. In short, the affix replaces the other suffix and appends to the root which is clearly observable. Compare the examples in (36) and those in (37):

(36)

<table>
<thead>
<tr>
<th>Verb Stem</th>
<th>Meaning</th>
<th>Verb Stem</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>chaata</td>
<td>‘tattoo’</td>
<td>nchaatu</td>
<td>‘tattoo’</td>
</tr>
<tr>
<td>dila</td>
<td>‘cry’</td>
<td>idilu</td>
<td>‘tear drop’</td>
</tr>
<tr>
<td>enda</td>
<td>‘walk, move’</td>
<td>mwendu</td>
<td>‘leg’</td>
</tr>
<tr>
<td>enda</td>
<td>‘walk, move’</td>
<td>lwendu</td>
<td>‘journey, voyage’</td>
</tr>
<tr>
<td>fwa</td>
<td>‘die’</td>
<td>lufu</td>
<td>‘death’</td>
</tr>
<tr>
<td>fwa</td>
<td>‘die’</td>
<td>mufu</td>
<td>‘dead person’</td>
</tr>
<tr>
<td>fweta</td>
<td>‘pay’</td>
<td>wufwetu</td>
<td>‘wages’</td>
</tr>
<tr>
<td>dima</td>
<td>‘cultivate’</td>
<td>mudimu</td>
<td>‘work’</td>
</tr>
<tr>
<td>kaña</td>
<td>‘fry’</td>
<td>chikaju</td>
<td>‘frying pan’</td>
</tr>
<tr>
<td>zhíka</td>
<td>‘cover, plug, stop up’</td>
<td>chizhíku</td>
<td>‘cover, lid, plug, stopper’</td>
</tr>
<tr>
<td>loomba</td>
<td>‘color, dye’</td>
<td>wuloombu</td>
<td>‘paint, color, dye’</td>
</tr>
<tr>
<td>lota</td>
<td>‘dream’</td>
<td>chilotu</td>
<td>‘dream’</td>
</tr>
<tr>
<td>yula</td>
<td>‘govern’</td>
<td>chiyulu</td>
<td>‘government’</td>
</tr>
</tbody>
</table>

(37)

<table>
<thead>
<tr>
<th>Verb Stem</th>
<th>Meaning</th>
<th>Verb Stem</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>diwula</td>
<td>‘ignore, treat with contempt’</td>
<td>kadiwu</td>
<td>‘disregarding, contempt’</td>
</tr>
<tr>
<td>hakula</td>
<td>‘plead, argue case’</td>
<td>ihaku</td>
<td>‘one skilled in arguing case’</td>
</tr>
<tr>
<td>hakula</td>
<td>‘plead, argue case’</td>
<td>wuhaku</td>
<td>‘skill in arguing case’</td>
</tr>
<tr>
<td>ihula</td>
<td>‘ask, ask a question’</td>
<td>lwihu</td>
<td>‘question’</td>
</tr>
<tr>
<td>kisula</td>
<td>‘express thanks’</td>
<td>nkisu</td>
<td>‘blessing’</td>
</tr>
<tr>
<td>kobola</td>
<td>‘cough’</td>
<td>kakohu</td>
<td>‘cough’</td>
</tr>
<tr>
<td>leŋula</td>
<td>‘make jokes’</td>
<td>maleŋu</td>
<td>‘fun, jokes’</td>
</tr>
<tr>
<td>lambula</td>
<td>‘offer tribute’</td>
<td>mulambu</td>
<td>‘tribute, offering’</td>
</tr>
<tr>
<td>shimuna</td>
<td>‘tell, relate’</td>
<td>chishimu</td>
<td>‘tale, parable, story’</td>
</tr>
<tr>
<td>tuŋula</td>
<td>‘backbite’</td>
<td>matuŋu</td>
<td>‘backbiting, gossip’</td>
</tr>
</tbody>
</table>

As is seen in (36) and (37), both the prefix and the nominalizing suffix appear on the verb root, but not on the verb base.

It has been observed up to this juncture that imbrication occurs when the remote past morpheme attaches to a verb base that is made up of a root and one of the following suffixes: -an, -al, and -ul. Nevertheless, two verb forms whose final consonant is the palatal nasal /ɲ/ imbricate. They are káŋanya  ‘fail’ and táfunya  ‘chew’. It is obvious here that the suffix loses its consonant after the infixation of the initial vowel of the prefix /i/ before the last consonant of the

13 There are several monosyllabic verb stems that end with the [an] sequence, but they do not undergo imbrication.
base which remains unaffected. Consonant deletion occurs because language does not permit consonant clusters. Since there is no plausible synchronic explanation as to why these verbs imbricate, this may suggest that Lunda had the type of imbrication characteristic of most of the Bantu languages historically but lost it and developed the current one. These are the only traces left of the old imbrication in Lunda.  

(38) a. ku-kán-a ‘to fail’ w-a-kán-éenyi /kán-ily-
    b. ku-ta-funy-a ‘to chew’ w-a-tá-fínyi /ta-fíny-

4.1.2 CVVC bases. A few CVVC-type verbs that display the sequence [al] or [an] (CaaC) optionally allow imbrication with the exception of one verb form, as seen below.

(39) a. ku-há-an-a ‘to handover’ w-a-h-éení ~ w-a-hání
    ku-shá-al-a ‘to stay, remain’ w-a-sh-éeli ~ w-a-shálí
    ku-twá-al-a ‘to take’ w-a-tw-éeli ~ w-a-twáál-ilí
    ku-wá-an-a ‘to find’ w-a-w-éení ~ w-a-wáán-ilí
    b. ku-vwá-al-a ‘to bear a child’ w-a-vv-éeli

Some verb bases with exactly the same structure do not imbricate. There is no plausible phonological explanation for this behavior. Consider the examples in (40) below:

(40) a. ku-fwá-an-a ‘to be like, resemble’ w-a-fwáán-ilí
    ku-ká-an-a ‘to refuse’ w-a-káán-ilí
    ku-swá-an-a ‘to inherit, succeed’ w-a-swáán-ilí
    b. ku-vwá-al-a ‘to dress, wear’ w-a-vváál-ilí
    ku-záa-la ‘to shiver’ w-a-záá-ilí

Although these verbs could be treated as monomorphemic synchronically in Lunda and the seeming suffix could be analyzed as part of the verb root, Meeussen (1967) reconstructs CVVC verb bases as consisting of a root plus a frozen VC expansion. There is evidence to suggest that the VC (-an and -al) was once an extension that was very productive historically, but it has lost its semantic content or function. It is thus a relic of the past which is fossilized, and the verb forms are lexicalized in contemporary Lunda. For example, there are two verb forms shíáála ‘remain’ and vwáála ‘get dressed, put on’ which provide evidence that the -al is undoubtedly a suffix since it alternates with other suffixes such as such as the causative -ik, the reversive -ul, and the morpheme -iy. Examples are given in (41) below.  

(41) a. vwá-al /vú-al/ ‘get dressed, put on’ vwík-a /vú-ik/ ‘dress, clothe’
    vúul-a /vú-ul/ ‘undress’

---

14 Another relic of the old imbrication is the defective verb kwééti ‘have, possess, own’ which was obviously derived from the verb kwáta ‘catch, hold, seize, arrest’ via the imbrication process. Consequently, the latter verb no longer imbricates in Lunda.

15 The verb base shíáyla, which has a frozen suffix, is lexicalized, and is the only verb that possesses this morpheme in the language. In some Bantu languages such as Bemba and Ila, spoken in Zambia, the intransitive verb base sháála is derived from the transitive simple verb root sha.

16 Kaonde, a related language spoken in Zambia, provides another evidence that the Lunda verbs haana and waana are bimorphemic. The language has cognates verb bases paana ‘give’ and naana ‘find’ which imbricate (Kawasha 2016). In addition, there is systematic correspondence between the Kaonde /p/ and the Lunda /h/.
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As can be seen in (41), the verb forms on the left side are semantically related to those on the right side as they both contain a common root and exhibit the root-suffix structure.

While imbrication occurs with verb bases ending in -ul, it does not affect CV-ul verb bases. The roots of these verb forms also appear in corresponding verbs with the causative suffix -ik with related meaning. Consider the two verb forms in (42b).

<table>
<thead>
<tr>
<th>a.</th>
<th>b.</th>
</tr>
</thead>
<tbody>
<tr>
<td>túul-a</td>
<td>túul-a</td>
</tr>
<tr>
<td>w-a- túul-íli</td>
<td>w-a- vúul-íli</td>
</tr>
<tr>
<td>‘put load down’</td>
<td>‘undress’</td>
</tr>
</tbody>
</table>

There is only one monosyllabic verb base of the shape CVC which exceptionally imbricates even though it does not contain an extension. The /n/ of the base deletes when it comes into contact with the remote past morpheme. It therefore presents an exception to imbrication generalization.

(43) ku-món-a ‘to see, experience’ w-a-mw-éni ‘He saw’

4.2 Applicative. The applicative affix -il adds an argument to the valency of the verb. Like many Bantu languages, derived applicative verbs are marked with the extension -el and its variants -in and -en. The morpheme appears on numerous verb bases without causing imbrication. Given in (44a-c) are some examples of simple infinitive verb forms on the left and applicativized verb forms on the right without imbrication.

<table>
<thead>
<tr>
<th>a.</th>
<th>b.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ku-hít-a</td>
<td>ku-lel-a</td>
</tr>
<tr>
<td>ku-kás-a</td>
<td>ku-télék-a</td>
</tr>
<tr>
<td>ku-tál-a</td>
<td>ku-kok-a</td>
</tr>
<tr>
<td>ku-vúun-a</td>
<td>ku-sónek-a</td>
</tr>
<tr>
<td>‘to pass’</td>
<td>‘to raise a child’</td>
</tr>
<tr>
<td>‘to tie’</td>
<td>‘to cook’</td>
</tr>
<tr>
<td>‘to look’</td>
<td>‘to pull, drag, draw’</td>
</tr>
<tr>
<td>‘to fold’</td>
<td>‘to write’</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>ku-hít-il-a</td>
<td>ku-lel-el-a</td>
</tr>
<tr>
<td>ku-kás-il-a</td>
<td>ku-télék-el-a</td>
</tr>
<tr>
<td>ku-tál-il-a</td>
<td>ku-kok-el-a</td>
</tr>
<tr>
<td>ku-vúun-il-a</td>
<td>ku-sónek-el-a</td>
</tr>
<tr>
<td>‘to pass by’</td>
<td>‘to raise a child for’</td>
</tr>
<tr>
<td>‘to tie for’</td>
<td>‘to cook for’</td>
</tr>
<tr>
<td>‘to expect’</td>
<td>‘to draw near to’</td>
</tr>
<tr>
<td>‘to fold for’</td>
<td>‘to write for/at’</td>
</tr>
</tbody>
</table>

However, as stated at the beginning of the paper, imbrication is not only limited to the remote past; it also occurs with the applicative, causative, and other verbal extensions as well in Lunda. Bastin (1983: 89) notes in passing that the applicative participates in imbrication and the causative less frequently. She neither discusses the imbrication process triggered by the two suffixes, nor does she provide examples. On the other hand, Hyman (1995: 32-33) refers to imbrication caused by the verb extension other than the remote past as “secondary imbrication” because it is
only confined to verb bases ending in *ul*. The applicative imbrication follows the same pattern and behavior and occurs in the same environments as the imbrication process triggered by the remote past. First, it affects verb bases ending in the suffixes -*akan*, -*agan*, -*al*, and -*an* leading to exactly the same phonological processes.\(^{17}\)

\[(45)\] ku-zaňalal-il-a \(\rightarrow\) ku-zaňala-il-a \(\rightarrow\) ku-zaňal-eel \(\rightarrow\) ‘to rejoice for’

Consider the data of the infinitive verb forms in (48) through (51). The surface form could be accounted for by the /l/ deletion of either the base or that of the suffix. The discussion of the causative in the next section will, however, show that it is actually the verb base that elides.

\[(46)\] kw-anakan-a ‘to think’ \(\rightarrow\) kw-anak-een-a ‘to feel sorry for another’  
ku-kabakan-a ‘to suffer’ \(\rightarrow\) ku-kabak-een-a ‘to suffer’  
ku-mwéék-an-a ‘to be visible’ \(\rightarrow\) ku-mwéék-een-a ‘to be visible at’\(^{18}\)  
ku-tíyakan-a ‘to be heard’ \(\rightarrow\) ku-tíyak-een-a ‘to be heard from’

\[(47)\] kw-anzaň-an-a ‘to divide out’ \(\rightarrow\) kw-ananza-een-a ‘to share among selves’  
ku-húman-an-a ‘to meet’ \(\rightarrow\) ku-human-een-a ‘to meet at’  
ku-tíyan-an-a ‘to agree’ \(\rightarrow\) ku-tíyan-een-a ‘to agree for’

\[(48)\] ku-zaňalal-a ‘to rejoice’ \(\rightarrow\) ku-zaňal-eel-a ‘to rejoice for’  
ku-zhibalal-a ‘to blink rapidly’ \(\rightarrow\) ku-zhibal-eel-a ‘to blink rapidly for’  
ku-zhimb-al-a ‘to be lost’ \(\rightarrow\) ku-zhimb-eel-a ‘to be lost for’  
ku-kák-al-a ‘to be unyielding’ \(\rightarrow\) ku-kák-eel-a ‘cling to, adhere to’

\[(49)\] kw-íman-a ‘to stand’ \(\rightarrow\) kw-ím-een-a ‘to stand for, wait for’

With regard to reduplicated verbs, they imbricate in a similar way to verbs described above. However, the last two segments of the reduplicant should only be *al*.

\[(50)\] ku-kalakal-a ‘to work hard’ \(\rightarrow\) ku-kalak-eel-a ‘to labor for’

The verb base *waan* ‘find’ also undergoes imbrication when it attaches the applicative suffix, as shown in (51).

\[(51)\] ku-waان-a ‘to find’ \(\rightarrow\) ku-weapon-a\(^{19}\) ‘to find for’

As with the remote past, imbrication triggered by the applicative suffix follows the same pattern when the affix is attached to verb bases containing the transitive suffix -*ul/-ol* which alternates with the intransitive -*uk*. Compare the verb forms with -*ul* in (52) and those bearing the suffix -*uk* in (53).\(^{20}\)

\(^{17}\) There is suffix -*man*, but there eists a verb root *man* ‘finish’ in Lunda.

\(^{18}\) The verb *mwéékana* is fossilized and lexicalized. Its root is not verb *mwéék* based on the static interpretation just like *tiyakana* ‘be heard, audible’. It is historically derived from the verb *môna* ‘see’ plus -*ik* and -*an*, which in other Bantu languages is either *monëka* or *onekana* in Swahili.

\(^{19}\) The example below is drawn from (Chilayi 1969: 17). The verb *waana* ‘find’ imbricates into *weena* (*waan-APPL*).

\[\ldots\] chiña wú-sambili ku-tu-ween-a mu-ntu wa-kashinshi \(\ldots\)  
should SM2SG-begin-SUB INF-OM1PL-find-APPL-FV 1-person AG1-reliability  
‘You should begin by finding a reliable person for us.’

\(^{20}\) White (n.d.) notes that imbrication of bases containing the reversional suffix is very common with the applicative and causative in Chokwe.
(52) ku-hakul-a ‘to plead’ ku-hakw-il-a ‘to plead for’
ku-tabul-a ‘to tear’ ku-tabw-il-a ‘to tear for’
k‐tambul-a ‘to receive’ ku‐tambw-il-a ‘to receive for’
k‐bålumun-a ‘to change’ ku‐bålumw‐iin‐a ‘to change for’
k‐nyåmun-a ‘to lift up’ ku‐nyåmw‐iin‐a ‘to lift up for’
k‐kåsunun-a ‘to unfasten’ kukåsunw‐iin‐a ‘to unfasten for’
k‐kåtok̑-a ‘to snap’ ku‐kåtow‐eel‐a ‘to snap for’
k‐låkol-a ‘to pierce’ ku‐låkow‐eel‐a ‘to pierce for’
k‐nyåtomon-a ‘to twist’ ku‐nyåtomw‐een‐a ‘to twist for’
k‐tootomon-a ‘to shake out’ ku‐tootomw‐eel‐a ‘to shake out for’
k‐hunjunun-a ‘to pour out’ ku‐hunjunw‐iin‐a ‘to pour out on/for’

(53) kw‐ambuk‐a ‘to separate’ kw‐ambuk‐il‐a ‘to separate for’
k‐tabuk‐a ‘to tear’ ku‐tabuk‐il‐a ‘to tear for’
k‐kåtuk‐a ‘to cut’ ku‐kåtuk‐il‐a ‘to cut for’
k‐bålumuk‐a ‘to change’ ku‐bålumuk‐il‐a ‘to change for’
k‐nyåmuk‐a ‘to lift up’ ku‐nyåmuk‐il‐a ‘to lift up for’
k‐hålok‐a ‘to drop’ ku‐hålok‐el‐a ‘to drop for’
k‐kåtok‐a ‘to snap’ ku‐kåtok‐el‐a ‘to snap for’
k‐lålok‐a ‘to pierce’ ku‐lålok‐el‐a ‘to pierce for’
k‐låtok‐a ‘to rush in order to catch’ ku‐låtok‐el‐a ‘to pounce upon’
k‐nyåtomok‐a ‘to be twisted’ ku‐nyåtomok‐eel‐a ‘to be twisted for’
k‐tootomok‐a ‘to be shaken out’ ku‐tootomok‐eel‐a ‘to be shaken out for’
k‐hunjunuk‐a ‘to be poured out’ ku‐hunjunuk‐eel‐a ‘to be poured out for’

In (53), imbrication does not take place when the suffix -il follows the extension -uk, while the verb bases ending in -ul (52) imbricate.\(^{21}\) If it did create imbrication, the forms would sound the same and there would be no difference in meaning.\(^{22}\)

Like the remote past tense imbrication, one CVC verb root is an exception to imbrication.

(54)

ku‐måna ‘to see, experience’
ku‐mån‐a ‘to see’
ku‐mån‐en(a) ‘to care for’
ku‐mån‐en(a) ‘to take care of’

The two verb bases ending with the palatal nasal consonant that imbricate in the remote past undergoes the same phenomenon with the applicative. The consonant of the suffix deletes rather than that of the base, as shown by the examples in (55).

(55)
a. ku‐kåñjana ‘to fail’ ku‐kåñj‐eeny‐a / kåñj‐eeny‐il‐a ‘to fail because of’
b. ku‐táfuny‐a ‘to swallow’ ku‐táfuny‐iiny‐a / táfuny‐iil‐a ‘to swallow at’

4.3 Causative. The causative suffix -ish or -izh is one of the verbal extensions that increases the valence of a verb by assigning causation semantics to the verb. For example, a causer subject can be added to the verb structure. Consider some examples of verb forms below in (55):

(56)

ku‐amw‐a ‘to suck at breast’ ku‐amw‐ish‐a ‘to feed at breast’
ku‐kåän‐a ‘to refuse’ ku‐kåän‐ish‐a ‘to forbid’
ku‐ovwah‐a ‘to be soft’ ku‐ovwah‐ish‐a ‘to soften’
ku‐håt‐a ‘to pass’ ku‐håt‐ish‐a ‘to let pass’

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\(^{21}\) Gowlett (1970: 186) observes that the final /n/ of the base deletes in Mbunda when the applicative extension is suffixed to verbs forms ending only in /un/.

\(^{22}\) As a reviewer noted, the blocking of imbrication with this suffix could “be the language’s strategy” to avoid ambiguity and confusion.
kw-anuk-a  ‘to remember’  kw-anuk-ish-a  ‘to remind’
kukééh-a  ‘to be short’  kusèék-esh-a  ‘to shorten’
ku-hêt-a  ‘to be rich’  ku-hét-esh-a  ‘to enrich’
ku-mwéén-a  ‘to be quiet’  mwéén-esh-a  ‘to quieten, soothe’
ku-séék-a  ‘to be without interest’  ku-séék-esh-a  ‘to lose interest in’
ku-kol-a  ‘to be strong’  ku-kol-esh-a  ‘to make strong’
ku-kol-a  ‘to be strong’  ku-kol-esh-a  ‘to make strong’
ku-zow-a  ‘to be wet’  ku-zow-esh-a  ‘to wet, drench’

On the left are simple infinitive verb stems, while those on the right have an added causative suffix -ish.

There is a subset of verb roots that takes the causative suffix -ish which has a voiced consonant in Lunda. However, there seems to be no phonological motivation or explanation for the voicing of the consonantal segment. The choice of the causative suffix is idiosyncratic. Some examples are given in (57).

(57)  kw-esék-a  ‘to try’  kw-esék-izh-a  ‘to compare’
ku-fwík-a  ‘to be like, resemble’  ku-fwík-izh-a  ‘to liken to, pretend’
ku-kok-a  ‘to pull’  ku-kok-izh-a  ‘to persuade’
ku-loog-a  ‘to be straight’  ku-loog-izh-a  ‘to put away tidily’
ku-shik-a  ‘to arrive’  ku-shik-izh-a  ‘to welcome’
ku-tah-a  ‘to draw water’  ku-tah-izh-a  ‘to water something’
ku-lamik-a  ‘stick on, seal’  ku-lamik-izh-a  ‘to wring confession by threatening’

The derived causative verb forms in the right column in (56) and (57) are extended with the causative suffixes in a linear order. In other words, they display regular suffixation.

The causative suffix -ish also triggers imbrication when it is attached to verb bases ending with one of the three suffixes -akan, -aŋan, and -al. The final consonant of the base gets deleted resulting in either vowel coalescence or gliding depending on the final vowel of the base. Both fusion and gliding are followed by vowel lengthening because of the loss of a segment of the base. Compare the non-imbricated verb bases on the left side column and the causativized ones in the right column in (58) through (61).

(58)  ku-hünd-aŋan-a  ‘to struggle against odds’  ku-hünd-éesh-a  ‘to harass’
ku-húman-a  ‘to meet together’  ku-húman-éesh-a  ‘to cause to meet’
ku-kúman-a  ‘to gather together’  ku-kúman-éesh-a  ‘to cause to gather’
ku-luwa-an-a  ‘to be confused’  ku-luwa-éesh-a  ‘to confuse’
ku-pala-aŋ-an-a  ‘to be scattered’  ku-pala-aŋ-éesh-a  ‘to scatter’
ku-zuwa-an-a  ‘to be quarrelsome’  ku-zuwa-éesh-a  ‘to illtreat’

(59)  ku-búlakan-a  ‘to meet’  ku-búlak-éesh-a  ‘to bring together’
kw-esek-an-a  ‘to be equal in size’  kw-esek-eezh-a  ‘to compare with’
ku-kaba-an-a  ‘to suffer’  ku-kaba-eezh-a  ‘to cause to suffer’
ku-kúda-an-a  ‘to be intimate’  ku-kúda-eezh-a  ‘to bring together’
ku-tíyakan-a  ‘to be famous,’  ku-tíyak-eezh-a  ‘to make be known’
ku-tuumbakan-a  ‘to be exalted’  ku-tuumbak-eezh-a  ‘to exalt, glorify’

(60)  ku-mwéék-an-a  ‘to be visible’  ku-mwéék-eezh-a  ‘to reveal’
ku-sémwakan-a²³ ‘to be born of the same family’
ku-sémwak-eesh-a ‘to bring family together’

(61) kw-andal-a ‘to be sick, be an invalid’
ku-babal-a ‘to beware’
ku-fúwal-a ‘to be faded, dim’
ku-zhímbal-a ‘to be lost’
ku-humanañ-a ‘to meet’
ku-hundañ-a ‘struggle against odds’
ku-kakal-a ‘to be unyielding’
ku-tówal-a ‘to be sweet’

kw-and-eesh-a²⁴ ‘to look after invalid’
ku-bab-eesh-a ‘to warn’
ku-fúw-eesh-a ‘to blacken by burning’
ku-zhīmmb-eesh-a ‘to lose’
ku-humanañ-eesh-a ‘to bring together’
ku-hundañ-eesh-a ‘to harass’
ku-kak-eesh-a ‘to urge, hold on to’
ku-tów-eesh-a ‘to sweeten’

As can be seen in (58) through (61), the base loses its final consonant /n/ or /l/ and fusion between /a/ and /i/ takes place resulting in a lengthened /ee/. This type of imbrication pattern is also attested in Chiluba (Lukusa 1993).

Thus, the causative imbrication causes the input /…Can-ishi/ to become […]Ceesh] on the surface. This is illustrated in (62):

(62) /ku- kábakan-a/ → /ku-kabaka-ishi-a/ (loss of /n/) → ku- kábak-eesh-a

Imbrication coalescence

One verb base ending in the static positional suffix -am is also susceptible to imbrication following exactly the same pattern observed up to this point.

(63) ku-kundam-a ‘to be near to’
ku-kund-eesh-a ‘to comfort’

When the suffix is attached to verb bases ending in the transitive extension ul- to derive causative verbs, /l/ deletion causes glide formation of the round vowel before the high vowel of the suffix which lengthens as a result.

(64) ku-zambul-ishi-a → ku-zambul-ishi-a → ku-zambul-ishi-a ‘to take across water’

/l/ deletion gliding

Examples of some causativized infinitive verb forms are given in the right column in (65):

(65) kw-awul-a ‘to ferry across’
ku-ihul-a ‘to ask’
ku-samb-ul-a ‘to catch a disease’
ku-sumb-ul-a ‘to marry a woman’
ku-zambul-a ‘to take out of water’
ku-bóbol-a ‘to talk loudly’
ku-kókol-a ‘to pull tight’
ku-konkol-a ‘to fetch back’
ku-nyejumun-a ‘to wind around’
ku-kenjul-a ‘to gather things together’

kw-aw-iish-a ‘to take across a river’
kw-ihw-iish-a ‘to ask insistently’
kw-sambw-iish-a ‘to infect a disease’
ku-sumbwiish-a ‘to arrange marriage’
ku-zambw-iish-a ‘to take across water’
ku-bobw-eesh-a ‘to reprove’
ku-kokw-eesh-a ‘to persuade’
ku-kenkw-eesh-a ‘to nag’
ku-nyejumw-iish-a ‘to encircle’
ku-kenjw-iish-a ‘to collect things into one place’

Most of the verbs in (66) have a corresponding intransitive counterpart with the suffix -uk.

²³ This verb form with the associative suffix -akan in (60) undergo imbrication for the second time.
²⁴ A reviewer has suggested that the causative could be analyzed as a case of replacing another suffix rather than imbrication. However, this does not seem to be the correct analysis because substitution would not account for vowel coalescence and compensatory lengthening. This is due to the loss of the final segment of the verb base.
While the remote past, and the applicative do not trigger imbrication in certain verb bases that is found with the intransitive extension -uk, a number of causative verbs are derived from intransitive verbs that bear this. These verbs do not have corresponding transitive verbs displaying the extension -ul. The final /k/ of the base deletes when it precedes the causative suffix. Examples of such verbs are given below:

(66) kw-awul-a ‘to ferry across a river’ kw-awuk-a ‘to cross a river’
    ku-sumbul-a ‘to marry a woman’ ku-sumbuk-a ‘to be married (of a woman)’
    ku-zambul-a ‘to take out of water’ ku-zambuk-a ‘to cross a river’
    ku-nyeŋumun-a ‘to rotate, make revolve’ ku-nyeŋumuk-a ‘to go round’

Like for the remote past and the applicative, the verb form káŋanya ‘fail’ imbricates when it attaches the causative suffix although it does not contain a suffix. Since imbrication has been extended to this verb, it is possible that speakers of the language could have reanalyzed the verb as a combination of a root and a suffix laŋany by analogy with the reciprocal extension -añan. The two forms are or less similar as both have similar vowels preceding two nasal consonants.

(68) ku-káŋany-a ‘to fail’ ku-káŋ-éesh-a ‘to make fail’

Like the remote past and applicative, the monosyllabic CVC móña “see” also exceptionally imbricates with the causative.

(69) ku-món-a ‘to see, experience’ ku-mw-eesh-a ‘cause to experience’

4.4. Causative -ik. The second causative suffix -ik is used to derive a transitive verb from an intransitive one by adding an agent argument, —the causer—, as the subject of the sentence and the object. The following examples illustrate regular suffixation of the affix to verb roots and bases.

(70) a. zhil-a ‘be forbidden’ zhil-ik-a ‘forbid’
    kak-a ‘be ugh, unyielding’ kak-ik-a ‘make firm’
    káám-a ‘sleep’ káám-ik-a ‘put to sleep’
    kiŋ-a ‘obstruct’ kiŋ-ik-a ‘put in way to obstruct’
    láb-a27 ‘delay, be late’ láb-ik-a ‘cause to delay’

25 This is common with neighboring languages such as Chokwe (White n.d.), and Mbunda (Gowlett 1970). In Mbunda, the process is optional with disyllabic verb bases.
26 Lunda has a noun ikañesha ‘failure’ derived from this verb.
27 This verb form has a variant in labama.
Imbrication Patterns of Lunda

<table>
<thead>
<tr>
<th>Root</th>
<th>Meaning</th>
<th>Root</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>lam-a</td>
<td>‘take care of’</td>
<td>lam-ik-a</td>
<td>‘stick on, to make adhere’</td>
</tr>
<tr>
<td>léy-a</td>
<td>‘dodge, avoid’</td>
<td>léy-ek-a</td>
<td>‘avoid the issue’</td>
</tr>
<tr>
<td>sháál-a</td>
<td>‘remain’</td>
<td>sháál-ik-a</td>
<td>‘say farewell’</td>
</tr>
<tr>
<td>shind-a</td>
<td>‘press’</td>
<td>shínj-ik-a</td>
<td>‘push, shove’</td>
</tr>
<tr>
<td>________</td>
<td></td>
<td>lad-ik-a</td>
<td>‘cause to sleep’</td>
</tr>
<tr>
<td>swáan-a</td>
<td>‘inherit’</td>
<td>swáan-ik-a</td>
<td>‘install a chief’</td>
</tr>
<tr>
<td>b. lumbam-a</td>
<td>‘be piled up’</td>
<td>lumb-ik-a</td>
<td>‘pile up’</td>
</tr>
<tr>
<td>shakam-a</td>
<td>‘sit’</td>
<td>shakam-ik-a</td>
<td>‘cause to sit’</td>
</tr>
<tr>
<td>twamin-a</td>
<td>‘lead way, go ahead’</td>
<td>twam-ik-a</td>
<td>‘send ahead’</td>
</tr>
<tr>
<td>vumbam-a</td>
<td>‘be highly esteemed’</td>
<td>vumb-ik-a</td>
<td>‘praise, glorify’</td>
</tr>
<tr>
<td>c. íman-a</td>
<td>‘stand’</td>
<td>ím-ik-a</td>
<td>‘stand an object up’</td>
</tr>
<tr>
<td>zhimín-a</td>
<td>‘go under water’</td>
<td>zhim-ik-a</td>
<td>‘immerse’</td>
</tr>
<tr>
<td>kundamin-a</td>
<td>‘lean against’</td>
<td>kundam-ik-a</td>
<td>‘put in leaning position’</td>
</tr>
<tr>
<td>d. ku-send-alal-a</td>
<td>‘be tilted, be inclined’</td>
<td>ku-send-elek-a</td>
<td>‘tilt, incline’</td>
</tr>
<tr>
<td>ku-tenaj-alal-a</td>
<td>‘be tipped, slant’</td>
<td>ku-tenaj-elek-a</td>
<td>‘tip, slant’</td>
</tr>
<tr>
<td>ku-zenz-alal-a</td>
<td>‘be bowed down (of heavy grain)’</td>
<td>ku-zenz-elek-a</td>
<td>‘hang do so that they hang down’</td>
</tr>
</tbody>
</table>

The intransitive verb forms are in the left column in (70), while those in the right column are the derived transitive verbs marked by adding the causative suffix -ik to the verb root or base.

Imbrication triggered by the second causation suffix is restricted to only two verb bases that contain the suffixes -an and -am. Moreover, it is the only suffix that brings about imbrication to a verb base ending in -am. Examples are given below in (71).

(71) a. ku-diímban-a ‘to be false’               ku-diímb-eeek-a ‘to cajol’
b. ku-swaam-a ‘to hide’                        ku-sw-eeek-a ‘to hide, put away’

The derived transitive verbs on the right in (73) derive from the intransitive verbs on the left. As can be seen, the same imbrication effects such as loss of the base final nasal consonant as well as fusion of the two non-identical adjacent vowels into a long vowel /ee/ are observed here.

4.5. Reciprocal -aŋan. The reciprocal extension -aŋan also causes imbrication with a couple of verb bases displaying the suffix -ul/-un following exactly the same phenomena observed with the remote past, applicative, and causativeConsider the examples in (74):

(72) ku-sumbul-a ‘to marry’                  ku-sumbw-aŋan-a ‘to marry each other’
    ku-shímun-a ‘to tell/relate’             ku-shímw-aŋan-a ‘to tell each other’

A similar pattern is also observed with the associative suffix -akan when it is added to one verb base ending with the intransitive suffix -uk.

(73) ku-sémuk-a ‘to be born’                 ku-sémw-aakan-a ‘to be born into the same family’
5. Conclusion

This paper has shown that imbrication in Lunda is not only triggered by the remote past tense inflectional suffix but is also induced by derivational suffixes that include the applicative, the causative, and to some degree the second causative, and reciprocal affixes in Lunda. The process involves at most verb bases that take one of the following extensions: the reciprocal-**ayan**, the associative **-akan**, the suffixes **-al/-alal**, and **-an**, the transitive **-ul**, and to a lesser extent **-uk**. Imbrication results in the deletion of the base final consonant leading to the fusion of the affixal vowels. The merger between /a/ and /i/ brings about a single long vowel [e], while the vowel /u/ or /o/ glides before /i/. When the extension is bimorphemic, the imbrication process affects only its last two phonological segments which are normally /an/ or /al/.

**Abbreviations**

Numbers in glosses refer to the various noun classes.

APPL: applicative  
ASSOC: associative  
C: consonant  
CAUS: causative  
EXT: verb extension  
FV: final vowel  
HAB: habitual aspect  
OM1: primary object  
OM2: secondary object  
PERF: perfective  
PST: past tense  
RC: reciprocal  
RP: remote past  
SM: subject prefix/agreement  
V: vowel

**References**


Imbrication Patterns of Lunda


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