

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 *-añan*.¹ This process only involves verb bases that contain the following extensions: the reciprocal *-añan*, the associative *-akan*, the suffixes *-al/-alal*, and *-an*, the transitive *-ul*, and to a lesser extent *-uk*.

¹ 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-eele
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-húmaŋan-a				
		INF-meet-FV				
	b.	a-a-húmaŋan-ili	→	/a-a-húmaŋa-il-a/	→	[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-záŋáléel-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-húmaŋan-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:

IPA	Lunda orthography	IPA	Lunda orthography
[ʒ]	<zh>	[tʃ]	<ch>
[ɲ]	<ny>		

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-eŋa-yu³
 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 *-eŋa*, 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.⁴ 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 *-eŋa*. 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	-inil
Reciprocal	-aŋan	Stative	-al, -alal, -an
Associative	-ashan, -akan,	Persistentive	-ek, -ezhek
Reversive	-ul/-ulul -ul/-uluk	Intensive	-ish
Completive	-ilil	Persistentive/Iterative	-azhal, -azham, -azhol, -ozhol, -uzhol, -ozhok

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 *-añan*, *-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-ili/
 b. ku-zhímb-el-a 'to lose for' /ku-zhímb-al-il-a /
 c. ku-zhímb-esh-a 'to lose' /ku-zhímb-al-ish-a/
- (10) a. w-a-kísánj-eeni 'He spoiled, destroyed' /w-a-kis-añan-ili/
 b. ku-kabak-een-a 'to suffer for' /ku-kab-akan-il-a/
 c. ku-luwañj-esh-a 'to confuse, muddle' /ku- luw-añan-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-íli
 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 *hít* ‘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-kis-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-lul-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-lánd-ili |
| | | ku-táp-a | ‘to stab’ | w-a-táp-ili |
| | | ku-nat-a | ‘to throw’ | w-a-nát-ili |
| | (13) | a. | ku-hemb-a | ‘to look after, take care of’ |
| 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 *-eli*.

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-shind-a | ‘press, rub, hard, press out’ | ku-shind-ulul-a | ‘to rub smooth’ |
| | | ku-shink-a | ‘to close’ | ku-shink-ul-a | ‘to open’ |
| | | ku-shint-a | ‘to twine, spin’ | ku-shint-ulul-a | ‘to unravel’ |
| | | ku-kem-a | ‘to bear down with grunt’ | ku-kem-un-a | ‘grunt’ |
| | | ku-enzel-a | ‘to close’ | ku-enz-ulul-a | ‘to open’ |
| | | nyet-a | ‘screw’ | nyet-ulul-a | ‘unscrew’ |
| | | kw-al-a | ‘to lay out’ | kw-al-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-bút-a | ‘to cover’ | ku-bút-ulul-a | ‘to uncover’ |
| | | ku-fun-a | ‘to fold over, bend in two’ | ku-fun-un-a | ‘break’ |
| | | ku-vuŋ-a | ‘to fold’ | ku-vuŋ-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-kok-a | ‘to pull’ | ku-kok-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 Compare the examples on the left and those in the right column in (15) and (16).

(15)	a.	ku-dim-a	‘to cultivate’	w-a-dím-íni	
		ku-chíín-a	‘to fear’	w-a-chíín-íni	
	b.	ku-túm-a	‘to send’	w-a-túm-íni	
		ku-fún-a	‘to fold over, bend over’	w-a-fún-íni	
(16)	c.	ku-man-a	‘to finish’	w-a-mán-íni	
		ku-nan-a	‘to swell, be swollen’	w-a-nán-íni	
	a.	ku-tém-a	‘to cut a tree’	w-a-tém-eni	
		ku-téen-a	‘to mention’	w-a-téen-eni	
(16)	b.	ku-som-a	‘to load a gun’	w-a-sóm-eni	
		ku-on-a	‘to snore’	w-ó-ón-eni	/w-a-on-eli/

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-biŋ-a	‘to herd cattle’	w-a-bíŋ-íli	
		ku-hiiŋ-a	‘to inherit’	w-a-híŋ-íli	
		ku-luŋ-a	‘to be carefree’	w-a-lúŋ-íli	
		ku-fúuŋ-a	‘to guard’	w-a-fúúŋ-íli	
		ku-haaŋ-a	‘to chase’	w-a-hááŋ-íli	
		ku-mwááŋ-a	‘to spill, scatter’	w-a-mwááŋ-íli	
		ku-saŋ-a	‘to mix’	w-a-sáŋ-íli	
		ku-vwaŋ-a	‘to mix’	w-a-vwááŋ-íli	
		ku-heeŋ-a	‘to be crooked’	w-a-hééŋ-éli	
		ku-kééŋ-a	‘to love, look for’	w-a-kééŋ-éli	
		ku-leeŋ-a	‘to create’	w-a-lééŋ-éli	
		ku-kóóŋ-a	‘to work’	w-a-kóóŋ-éli	
		ku-looŋ-a	‘to put in order’	w-a-lóóŋ-éli	
	ku-hooŋ-a	‘to divine’	w-a-hóóŋ-éli		
(18)		ku-miny-a	‘swallow’	w-a- miny-íli	
		ku-niny-a	‘defecate’	w-a- niny-íli	
		ku-huny-a	‘be torn on surface’	w-a- huny-íli	
		ku-funy-a	‘to paw ground’	w-a- fúny-íli	
		ku-pany-a	‘to file teeth’	w-a- pány-íli	
		ku-sany-a	‘to wriggle’	w-a- sány-íli	
		ku-heny-a	‘to pull apart’	w-a- hény-éli	
		ku-keny-a	‘to bite off’	w-a- kény-éli	
		ku-kóny-a	‘to put in order’	w-a- kóny-éli	
	ku-hony-a	‘to strike with force’	w-a- hóny-éli		

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

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-ili/
		kw-ás-a	'shoot, throw'	w-á-ás-ili
		kw-ót-a	'to warm self'	w-ó-ót-éli
		ku-pand-a	'to prepare magic'	w-a-pánd-íli
		ku-kis-a	'to spoil, destroy'	w-a-kís-íli
		ku-shúk-a	'to promise'	w-a-shúk-íli
		ku-zaal-a	'to shiver, tremble'	w-a-shúk-íli
		ku-zhah-a	'to kill'	w-a-zháh-ili
	b.	ku-mének-a	'to set off early'	w-a-mének-eli
		ku-sónek-a	'to write'	w-a-sónék-eli
		ku-tékel-a	'to urinate'	w-a-tékél-eli
		ku-tentek-a	'to down'	w-a-ténték-eli
		kw-ánuk-a	'to remember'	w-a-ánúk-ili
		kw-isuk-a	'to wash hands'	w-e-ésúk-ili
	c.	ku-iteezh-a	'to admit'	w-é-étéézh-eli
		ku-kúmbat-a	'embrace, take in arms'	w-a-kúmbát-ili
		ku-shakam-a	'to sit'	w-a-shákám-ini
		ku-shímat-a	'to stand firm'	w-a-shímát-íli
		ku-twámin-a	'to go ahead, led way'	w-a-twámin-ini
	d.	ku-tánjish-a	'to teach'	w-a-tánjish-ili
		kw-ihuzhol-a	'to ask questions'	w-e-ehúzhól-eli
		ku-kanjíkizh-a	'to coerce'	w-a-kánjíkizh-ili
		ku-kuhweelel-a	'to trust'	w-a-kúhwélel-eli
		ku-lekelel-a	'to let go, be poised'	w-a-lékélel-eli
		ku-sámbilil-a	'to welcome'	w-a-sámbilil-ili
		ku-shakamik-a	'to cause to sit'	w-a-shákámik-ili

4.1.1 ...CV Verb Base. When the same suffix is, however, adjoined to verb bases that carry some extensions, namely the reciprocal *-ayan*, associative suffix *-akan*, the suffixes *-an* and *-al*, and the transitive extension *-ul*, it triggers imbrication (Bastin 1983).⁶ 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.⁷ 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-húmaṅan-a	'to meet'	w-a-húmaṅ-eeeni	/húmaṅan-ili/
	b.	ku-búlakan-a	'to meet face to face'	w-a-búlák-eeeni	/búlakan-ili/
	c.	kw-íman-a	'to stand'	w-é-ém-ééni	/íman-ili/
	d.	ku-bábal-a	'to be cunning, clever'	w-a-báb-ééli	/bábal-ili/

⁶ There are many verbs that carry the suffix *-ul*, but their meaning is not reversible in the language.

⁷ Unlike many Bantu languages where the consonant of the suffix deletes, imbrication involves the deletion of the final consonant of the base in Lunda.

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 1 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 *-añan* and *-akan* that exhibit this morphophonemic process are given in (21) and (22) respectively:⁸

- | | | | |
|------|----------------|---------------------------------------|-------------------|
| (21) | ku-hañan-a | ‘to dance’ | w-a-háñ-éeni |
| | ku-helañan-a | ‘to hate each other’ | w-a-héláñ-eeeni |
| | ku-hitañan-a | ‘to keep passing from place to place’ | w-a-hítáñ-eeeni |
| | ku-húmañan-a | ‘to meet together’ | w-a-húmáñ-eeeni |
| | ku-kisañan-a | ‘to spoil’ | w-a-kísáñ-eeeni |
| | ku-palañan-a | ‘to scatter’ | w-a-páláñ-eeeni |
| | ku-tíyañan-a | ‘to agree’ | w-a-tíyáñ-eeeni |
| | ku-tálañan-a | ‘to face each other’ | w-a-táláñ-eeeni |
| | ku-zuwañan-a | ‘be quarrelsome’ | w-a-zúwáñ-eeeni |
| (22) | ku-bambakan-a | ‘be clever, cunning’ | w-a-bámák-eeeni |
| | ku-búlakan-a | ‘to meet face to face’ | w-a-búlák-eeeni |
| | ku-esekan-a | ‘to be equal in size, quantity’ | w-e-ésék-éeni |
| | ku-imakan-a | ‘be straight ahead’ | w-e-émák-éeni |
| | ku-mwéekan-a | ‘to appear’ | w-a-mwéék-eeeni |
| | ku-pandakan-a | ‘to pass beyond’ | w-a-pándák-eeeni |
| | ku-shíntakan-a | ‘to come close together’ | w-a-shínták-eeeni |
| | ku-tíyakan-a | ‘to be heard’ | w-a-tíyák-eeeni |
| | ku-tumbakan-a | ‘to be famous’ | w-a-túmbák-eeeni |

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) | kw-esek-a | ‘to try, attempt’ | kw-esek-an-a | ‘to be equal’ |
| | ku-dúmb-a | ‘to deceive’ | ku-dúmb-an-a | ‘to be false, deceitful’ |
| | kú-fw-a | ‘to die’ | ku-fw-án-a | ‘to be deadly, be dangerous’ |
| | ku-zhah-a | ‘to kill’ | ku-zhah-an-a | ‘to kill’ ⁹ |
| | ku-kiish-a | ‘to withhold from, not give’ | ku-kiish-an-a | ‘to be mean, stingy’ |
| | ku-sheet-a | ‘to be drunk’ | ku-sheet-an-a | ‘to be intoxicating’ |
| | ku-shim-a | ‘to mention a taboo’ | ku-shím-an-a | ‘to be abominable’ |
| | ku-shíinj-a | ‘to curse’ | ku-shíinj-an-a | ‘to curse habitually’ |
| | ku-súm-a | ‘to bite’ | ku-súm-an-a | ‘to be biting, likely to bite’ |

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. *hañana* ‘dance’, *kisañana* ‘destroy, spoil, ruin’, *palañana* ‘be dispersed, scatter’ and *zuwañana* ‘be bad tempered’.

⁹ This is reminiscent of the antipassive whereby transitive verb is made intransitive by eliminating the patient.

(24)	íman-a	‘stop, wait a minute’	ímazhal-a	‘stroll, loiter’
			ímik-a	‘make to stand, stand upright’
	leman-a	‘be wounded’	ímakan-a	‘be straight ahead’
	búl-aman-a	‘lie on face, stomach’	lemek-a	‘wound’
	kiŋ-aman-a	‘lie in obstructing position’	búl-amik-a	‘cause to lie face down’
	náŋ-aman-a	‘be piled on top of another’	kiŋ-amik-a	‘put in a way to obstruct,’
	tál-aman-a	‘stand with legs apart’	náŋ-amik-a	‘place on top’
	zál-aman-a	‘stand perched on pole’	tál-amik-a	‘come to stand thus’
			zál-amik-a	‘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-a	‘to close in hands’	ku bamb-an-a	‘have itching properties’
		ku-lem-a	‘to be heavy’	ku-leman-a	‘to be wounded’
	b.	ku-búlaman-a	‘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-a	‘to stand for; wait for’	w-é-em-eeeni ¹⁰
		ku-zhahan-a	‘to kill’	w-a-zháh-eeeni
	b.	ku-búlaman-a	‘to lie on stomach’	a-a-búlám-eeeni

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-a	‘to be half-cooked’	ku-fúw-alal-a	‘to be faded, dim’
		ku-lúw-a	‘to be wrong’	ku-lúwalal-a	‘to be perverse’
		ku-luŋ-a	‘to rejoice, be glad’	ku-luŋ-alal-a	‘to go about rejoicing’
		ku-zhímba-la	‘to forget, be lost’	ku-zhím-b-azhal-a	‘to wander (as lost)’
		ku-send-alal-a	‘to be tilted’	ku-send-elek-a	‘to tilt’
		ku-tenañ-alal-a	‘to incline to one side’	ku-tenañ-elek-a	‘to incline’
	b.	ku-bábal-a	‘to be sly’	*ku-bába	
		kw-inzal-a	‘to be full’	*ku-inza	
		ku-pap-a	‘to pat or mold into shape’	ku-papalal-a	‘to be flat’
		ku-zenz-a	‘to rain continuously’	ku-zenzalal-a	‘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-a ‘stand, wait, stop’

ímanen-a ‘stand for, wait for’

- | | | | | |
|------|----|---------------|--------------------------------|------------------------------|
| (28) | a. | ku-fúwal-a | ‘to be faded, dim’ | w-a-fúw-eeli |
| | | ku-zhímbal-a | ‘to forget, be lost’ | w-a-zhímb-eeli |
| | | ku-mwaŋal-a | ‘to be spilled, scattered’ | w-a-mwaŋ-eeli |
| | | ku-taŋal-a | ‘to have confidence’ | w-a-táŋ-éeli |
| | | ku-tówal-a | ‘to be sweet’ | w-a-tów-eeli |
| | b. | ku-zaŋalal-a | ‘to rejoice’ | w-a-záŋal-eeli ¹¹ |
| | | ku-zhíbalal-a | ‘to blink, doze’ | w-a-zhíbal-eeli |
| | | ku-botalal-a | ‘to be in a slanting position’ | ch-a-bótál-eeli |
| | | ku-zakalal-a | ‘to have hair in disarray’ | w-a-zákáal-eeli |

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-eeli /kála-kál-ili/ |
| | c. | ku-tál-a | ‘to look’ | w-a-tál-ili |
| | d. | ku-tála-tál-a | ‘to look about’ | w-a-tálat-eeli /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-bómbáshan-ini |
| | ku-onashan-a | ‘to pant’ | w-o-nákáshan-ini |
| | ku-selashan-a | ‘to pass as from opposite directions’ | a-a-seláshan-ini |
| | ku-taŋashan-a | ‘to be mistaken’ | a-a-táŋáshan-ini |
| | ku-tíyashan-a | ‘to agree together’ | a-a-tíyashan-ini |
| | ku-yambashan-a | ‘feel confused, uncertain’ | w-a-yámáshan-ini |

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.¹² 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 lengthens [...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-íili] ‘he split’

Consider the following examples in (32):

- | | | | |
|------|------------|-----------------------|-----------------|
| (32) | kw-ambul-a | ‘to separate, divide’ | w-a-ámbw-íili |
| | ku-bófol-a | ‘to dent’ | w-a-bófókw-éeli |

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-fhul-a	‘to ask a question’	w-e-éhw-fíl-i
ku-kísul-a	‘to express thanks’	w-a-kísw-fíl-i
ku-lumbulul-a	‘to explain’	w-a-lúmbúlw-fíli
ku-sakul-a	‘to select’	w-a-sákw-fíl-i
ku-sañul-a	‘to untwist, unwind’	w-a-sáñw-fíli
ku-telul-a	‘to remove pot from fire’	w-a-télw-fíli
ku-soṅolol-a	‘to sharpen to a point’	w-a-soṅólw-éeli
ku-toṅonon-a	‘to sew, stitch’	w-a-tóṅónw-eeni
ku-tóholol-a	‘to have foreign body in eyes’	w-a-tóhólw-éeli
ku-nyámun-a	‘to lift up’	w-a-nyámw-fíni
ku-bálumun-a	‘to change’	w-a-bálúmw-fíni
ku-zhiṅunun-a	‘to untwist, unwind’	w-a-zhiṅunw-fíni
ku-tandumun-a	‘to spread or stretch out cloth’	w-a-tandumw-fíni

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-ámúk-ili
	ku-ku-bófok-a	‘to get dented’	w-a-bófók-eli
	ku-lumbuluk-a	‘to be clear’	w-a-lúmbúk-ili
	ku-sakuk-a	‘to be selected’	w-a-sákúk-ili
	ku-nyámuk-a	‘to get up from place’	w-a-nyámúk-ili
	ku-bálumuk-a	‘to turn about, change’	w-a-bálúmuk-ili
	ku-soṅolok-a	‘to be sharpened to a point’	w-a-soṅólok-eli
	ku-toṅonok-a	‘to come unstitched, unsewn’	w-a-tóṅónok-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’	bumbuzhok-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-ákw-fíli
	ku-bákul-a	‘to separate a way’	w-a-bákw-fíli
	ku-diwul-a	‘to ignore’	w-a-diw-fíli
	ku-kísul-a	‘to express thanks’	w-a-kísw-fíli
	ku-shimbul-a	‘to last long’	w-a-shímbw-fíli

kw-shímun-a	'to tell, relate'	w-a-shímw-fini
ku-solol-a	'to bring from confinement'	w-a-sólw-éli
ku-tambul-a	'to receive, take from'	w-a-támbw-fíli
ku-téhun-a	'to fill with liquid'	w-a-téhw-fíli
ku-telul-a	'to remove pot from fire'	w-a-télw-fini
ku-túbul-a	'to walk with heavy step in water'	w-a-túbw-íli
ku-tuṅul-a	'to backbite'	w-a-túṅw-íli
ku-vúpul-a	'to flog'	w-a-vúpw-fíli

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)	chaata	'tattoo'	nchaatu	'tattoo'
	dila	'cry'	idilu	'tear drop'
	enda	'walk, move'	mwendu	'leg'
	enda	'walk, move'	lwendu	'journey, voyage'
	fwa	'die'	lufu	'death'
	fwa	'die'	mufu	'dead person'
	fweta	'pay'	wufwetu	'wages'
	dima	'cultivate'	mudimu	'work'
	kaṅa	'fry'	chikaṅa	'frying pan'
	zhíka	'cover, plug, stop up'	chizhíku	'cover, lid, plug, stopper'
	loomba	'color, dye'	wuloombu	'paint, color, dye'
	lota	'dream'	chilotu	'dream'
	yula	'govern'	chiyulu	'government'
(37)	diwula	'ignore, treat with contempt'	kadiwu	'disregarding, contempt'
	hakula	'plead, argue case'	ihaku	'one skilled in arguing case'
	hakula	'plead, argue case'	wuhaku	'skill in arguing case'
	ihula	'ask, ask a question'	lwihu	'question'
	kisula	'express thanks'	nkisu	'blessing'
	kohola	'cough'	kakohu	'cough'
	leṅula	'make jokes'	maleṅu	'fun, jokes'
	lambula	'offer tribute'	mulambu	'tribute, offering'
	shimuna	'tell, relate'	chishimu	'tale, parable, story'
	tuṅula	'backbite'	matuṅu	'backbiting, gossip'

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 /j/ imbricate. They are *káṅanya* 'fail' and *táfunya* 'chew'.¹³ 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.

- b. sháál-a /shi-al/ 'to remain' shífy-a /shi-iy/ 'to leave behind, abandon'

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).

- (42) a. túul-a 'put load down' w-a- túúl-íli
vúul-a 'undress' w-a- vúúl-íli
- b. túul-a 'put load down' w-a-twík-a 'put load on one's head'
vúul-a 'undress' vwík-a 'dress, clothe'

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-eeeni '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 *-il* and its variants *-el*, *-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.

- (44) a. ku-hít-a 'to pass' ku-hít-il-a 'to pass by'
ku-kás-a 'to tie' ku-kás-il-a 'to tie for'
ku-tál-a 'to look' ku-tál-il-a 'to expect'
ku-vúuŋ-a 'to fold' ku-vúuŋ-il-a 'to fold for'
- b. ku-lel-a 'to raise a child' ku-lel-el-a 'to raise a child for'
ku-télek-a 'to cook' ku-télek-el-a 'to cook for'
ku-kok-a 'to pull, drag, draw' ku-kok-el-a 'to draw near to'
ku-sónek-a 'to write' ku-sónek-el-a 'to write for/at'
- c. ku-man-a 'to finish' ku-man-in-a 'to finish at'
ku-súm-a 'to bite/sting' ku-súm-in-a 'to bite/sting on'
ku-tém-a 'to cut down tree' ku-tém-en-a 'to cut down tree for'
ku-shindam-a 'to press' ku-shíndam-in-a 'to press'
ku-kúnam-a 'to be deep' ku-kúnam-in-a 'to peep into deep water'

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*, *-aṅan*, *-al*, and *-an* leading to exactly the same phonological processes.¹⁷

- (45) ku-zaṅalal-il-a → ku-zaṅala-il-a → ku-zaṅal-eel-a ‘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’ kw-anak-een-a ‘to feel sorry for another’
 ku-kabakan-a ‘to suffer’ ku-kabak-een-a ‘to suffer for’
 ku-mwéékan-a ‘to be visible’ ku-mwéék-een-a ‘to be visible at’¹⁸
 ku-tíyakan-a ‘to be heard’ ku-tíyak-een-a ‘to be heard from’

- (47) kw-anzaṅan-a ‘to divide out’ kw-anzaṅ-een-a ‘to share among selves’
 ku-húmaṅan-a ‘to meet’ ku-humaṅ-een-a ‘to meet at’
 ku-tíyaṅan-a ‘to agree’ ku-tíyaṅ-een-a ‘to agree for’

- (48) ku-zaṅalal-a ‘to rejoice’ ku-zaṅal-eel-a ‘to rejoice for’
 ku-zhíbalal-a ‘to blink rapidly’ ku-zhíbal-eel-a ‘to blink rapidly for’
 ku-zhimb-al-a ‘to be lost’ ku-zhimb-eel-a ‘to be lost for’
 ku-kákal-a ‘to be unyielding’ ku-kák-eel-a ‘cling to, adhere to’

- (49) kw-íman-a ‘to stand’ 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’ 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-waan-a ‘to find’ ku-ween-a¹⁹ ‘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 exists a verb root *man* ‘finish’ in Lunda.

¹⁸ The verb *mwéékana* is fossilized and lexicalized. Its root is not verb **mwéék* based on the stative interpretation just like *tiyakana* ‘be heard, audible’. It is historically derived from the verb *móna* ‘see’ plus *-ik* and *-an*, which in other Bantu languages is either *moneka* or *onekana* in Swahili.

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

... chiña wú-sambil-i ku-tu-ween-a mu-ntu wa-kashinshi ...
 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 reversive suffix is very common with the applicative and causative in Chokwe.

- | | | | | |
|------|---------------|-----------------------------|------------------|------------------------|
| (52) | ku-hakul-a | 'to plead' | ku-hakw-iil-a | 'to plead for' |
| | ku-tabul-a | 'to tear' | ku-tabw-iil-a | 'to tear for' |
| | ku-tambul-a | 'to receive' | ku-tambw-iil-a | 'to receive for' |
| | ku-bálumun-a | 'to change' | ku-bálumw-iin-a | 'to change for' |
| | ku-nyámun-a | 'to lift up' | ku-nyámw-iin-a | 'to lift up for' |
| | ku-kásunun-a | 'to unfasten' | kukásunw-iin-a | 'to unfasten for' |
| | ku-kótol-a | 'to snap' | ku-kótw-éel-a | 'to snap for' |
| | ku-lókol-a | 'to pierce' | ku-lókw-eel-a | 'to pierce for' |
| | ku-nyótomon-a | 'to twist' | ku-nyótomw-éen-a | 'to twist for' |
| | ku-tootomon-a | 'to shake out' | ku-tootomw-eel-a | 'to shake out for' |
| | ku-huḡunun-a | 'to pour out' | ku-huḡunw-iin-a | 'to pour out on/for' |
| (53) | kw-ambuk-a | 'to separate' | kw-ambuk-il-a | 'to separate for' |
| | ku-tabuk-a | 'to tear' | ku-tabuk-il-a | 'to tear for' |
| | ku-kétuk-a | 'to cut' | ku-kétuk-il-a | 'to cut for' |
| | ku-bálumuk-a | 'to change' | ku-bálumuk-il-a | 'to change for' |
| | ku-nyámuk-a | 'to lift up' | ku-nyámuk-il-a | 'to lift up for' |
| | ku-hólok-a | 'to drop' | ku-hólok-el-a | 'to drop for' |
| | ku-kótok-a | 'to snap' | ku-kótok-el-a | 'to snap for' |
| | ku-lókok-a | 'to pierce' | ku-lókok-el-a | 'to pierce for' |
| | ku-lótok-a | 'to rush in order to catch' | ku-lótok-el-a | 'to pounce upon' |
| | ku-nyótomok-a | 'to be twisted' | ku-nyótomok-él-a | 'to be twist at' |
| | ku-tootomok-a | 'to be shaken out' | ku-tootomok-el-a | 'to be shaken out for' |
| | ku-huḡunuk-a | 'to be poured out' | ku-huḡunuk-il-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-món-a | 'to see, experience' | ku-mw-éen-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-káḡany-a | 'to fail' | ku-káḡ-eeny-a | / káḡany-il-a/ | 'to fail because of' |
| | b. | ku-táfuny-a | 'to swallow' | ku-táfw-iiny-a | / táfuny-il-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 (56):

- | | | | | |
|------|------------|---------------------|----------------|---------------------|
| (56) | ku-amw-a | 'to suck at breast' | ku-amw-ish-a | 'to feed at breast' |
| | ku-káan-a | 'to refuse' | ku-káán-ish-a | 'to forbid' |
| | ku-ovwah-a | 'to be soft' | ku-ovwah-ish-a | 'to soften' |
| | ku-hít-a | 'to pass' | ku-hít-ish-a | 'to let pass' |

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’
ku-kééh-a	‘to be short’	ku-kééh-esh-a	‘to shorten’
ku-het-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 lost 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 *-izh* 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-esek-a	‘to try’	kw-esek-ezh-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-ezh-a	‘to persuade’
	ku-looŋ-a	‘to be straight’	ku-looŋ-ezh-a	‘to put away tidily’
	ku-shik-a	‘to arrive’	ku-shik-izh-a	‘to welcome’
	ku-tah-a	‘to draw water’	ku-táh-ezh-a	‘to water something’
	ku-lamik-a	‘stick on, seal’	ku-lamak-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*, *-añan*, 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-húnd-añan-a	‘to struggle against odds’	ku-húndañ-éesh-a	‘to harass’
	ku-húmañan-a	‘to meet together’	ku-húmañ-éesh-a	‘to cause to meet’
	ku-kúmañan-a	‘to gather together’	ku-kúmañ-éezh-a	‘to cause to gather’
	ku-luwañan-a	‘to be confused’	ku-luwañ-éesh-a	‘to confuse’
	ku-palañan-a	‘to be scattered’	ku-palañ-éesh-a	‘to scatter’
	ku-zuwañan-a	‘to be quarrelsome’	ku-zuwañ-éesh-a	‘to illtreat’
(59)	ku-búlahan-a	‘to meet’	ku-búlak-eesh-a	‘to bring together’
	kw-esekan-a	‘to be equal in size’	kw-esek-eezh-a	‘to compare with’
	ku-kabakan-a	‘to suffer’	ku-kábak-eesh-a	‘to cause to suffer’
	ku-kudakan-a	‘to be intimate’	ku-kundak-eesh-a	‘to bring together’
	ku-tíyakan-a	‘to be famous,’	ku-tíyak-eesh-a	‘to make be known’
	ku-tuumbakan-a	‘to be exalted’	ku-tuumbak-eesh-a	‘to exalt, glorify’
(60)	ku-mwéékan-a	‘to be visible’	ku-mwéék-eesh-a	‘to reveal’

	ku-sémwakan-a ²³	'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'	kw-and-eesh-a ²⁴	'to look after invalid'
	ku-babal-a	'to beware'	ku-bab-eesh-a	'to warn'
	ku-fúwal-a	'to be faded, dim'	ku-fúw-eesh-a	'to blacken by burning'
	ku-zhímbal-a	'to be lost'	ku-zhímb-eesh-a	'to lose'
	ku-humaṅan-a	'to meet'	ku-humaṅ-eesh-a	'to bring together'
	ku-hundaṅan-a	'struggle against odds'	ku-hundaṅ-eesh-a	'to harass'
	ku-kakal-a	'to be unyielding'	ku-kak-eezh-a	'to urge, hold on to'
	ku-tówal-a	'to be sweet'	ku-tów-eezh-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-ish-a/ (loss of /n/)	→ ku- kábak-eesh-a
	Imbrication	coalescence

One verb base ending in the stative 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-eezh-a	'to comfort'
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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-ish-a → ku-zambu-ish-a → ku-zambw-iish-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'	kw-aw-iish-a	'to take across a river'
	ku-ihul-a	'to ask'	kw-ihw-íish-a	'to ask insistently'
	ku-samb-ul-a	'to catch a disease'	ku-sambw-iish-a	'to infect a disease'
	ku-sumb-ul-a	'to marry a woman'	ku-sumbw-iish-a	'to arrange marriage'
	ku-zambul-a	'to take out of water'	ku-zambw-iish-a	'to take across water'
	ku-bóbol-a	'to talk loudly'	ku-bobw-éesh-a	'to reprove'
	ku-kókol-a	'to pull tight'	ku-kokw-éesh-a	'to persuade'
	ku-konkol-a	'to fetch back'	ku-konkw-éesh-a	'to nag'
	ku-nyejumun-a	'to wind around'	ku-nyejumw-iish-a	'to encircle'
	ku-kuṅul-a	'to gather things together'	ku-kuṅw-iizh-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.

(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-nyejumun-a	‘to rotate, make revolve’	ku-nyejumuk-a	‘to go round’

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*.²⁵ The final /k/ of the base deletes when it precedes the causative suffix. Examples of such verbs are given below:

(67)	ku-bázumuk-a	‘to be startled’	ku-bázúmw-iish-a	‘to startle, shock’
	ku-báwuk-a	‘be possessed’	ku-báw-íish-a	‘to cause to be possessed’
	ku-dimbuk-a	‘to fall down’	ku-dímbw-íish-a	‘to cause to fall’
	ku-hinduk-a	‘to wake up’	ku-híndw-íish-a	‘to wake up someone’
	ku-komok-a	‘to be amazed’	ku-kómw-éesh-a	‘to cause to be amazed’
	ku-kusuk-a	‘to be healed of wound’	ku-kúsw-íish-a	‘to heal, dress a wound’
	ku-sambuk-a	‘to be infectious’	ku-sambw-iish-a	‘to infect with disease’
	ku-tembuk-a	‘to have first menstruation’	ku-tembw-iish-a	‘to perform rites on girl at puberty’
	ku-zejuk-a	‘to become tender in cooking’	ku-zejw-iish-a	‘to cook till tender’

Like for the remote past and the applicative, the verb form *káñanya* ‘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 /*añany*/ 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-káñany-a	‘to fail’	ku-káñ-éesh-a	‘to make fail’ ²⁶
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Like the remote past and applicative, the monosyllabic CVC *móna* “see” also exceptionally imbricates with the causative.

(69)	ku-món-a	‘to see, experience’	ku-mw-eesh-a	‘cause to experience’
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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-a ²⁷	‘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*.

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

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-dímban-a	'to be false'	ku-dímb-eek-a	'to cajol'
	b.	ku-swaam-a	'to hide'	ku-sw-eek-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 *-añan*. The reciprocal extension *-añan* 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 causative. Consider the examples in (74):

(72)	ku-sumbul-a	'to marry'	ku-sumbw-aañan-a	'to marry each other'
	ku-shímun-a	'to tell/relate'	ku-shímw-aañan-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'
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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

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