

# **A survey of some aspects of the phonological integration of loanwords in the Lunda speech community**

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*Expansion of a language vocabulary as well as grammar occurs in many different ways and one such is through loanwords and/or neologisms. This paper examines the phonological adaptation of loanwords in Lunda. Loanwords in Lunda seem to have heavily been borrowed from English, Portuguese, Swahili and Luvale. These loanwords undergo certain phonological processes which change the rendition of loanwords to fit the phonemic inventory of Lunda such as epenthesis, substitution and devoicing. This survey used the Optimality Theory (OT) as a lens for interrogating the nature and adaptation of loan words among the Lunda people of Zambia.*

**Keywords:** *borrowing, phonological integration, Lunda speech community, loanwords, phonological processes.*

## **1 Introduction**

Lexical borrowing imports items from one language to another when two or more cultures interact and come into contact over a period of time. It is a primary feature of any acculturative process. But whereas languages such as Hausa (Kirk-Greene 1963), English (Kubová 2009), Shona (Mareva 2014), and Igirukia (Magaiwa 2016) have benefited from a collected study of new loan words, Lunda linguists and in particular lexicographers have, with the notable exceptions of a few entries in the Lunda-Ndembu Dictionary (Fisher 1984a), not paid any attention to the loanwords in Lunda. Therefore, this paper aims at drawing attention to the unexplored field of Lunda borrowings and neologisms.

## **2 Concepts of Lexical Borrowing and Neologisms**

Perhaps the most frequently encountered product of cultural contact is the set of loan words that follow from intercultural communication. Indeed, Sapir (1949: 193) avers that lexical borrowing is an important consequence of language contact. However lexical borrowing occurs when one of those languages in contact is more influential or prestigious than the others. In this case, Lunda as a language has borrowed – as we shall explain later in the paper – from other languages including English.

Linguistic borrowing, as Haugen (1950: 212) defines it, refers to “the attempted reproduction in one language of patterns previously found on another.” That is, a reproduction which, as it turns out, may be quite different from the original. Haugen further distinguishes between what he terms “importations” and “substitution” (ibid). The former refers to loans that are similar enough to the original model so as to be quite readily recognizable to a native speaker. It involves the introduction of foreign sounds and/or structures into the borrowing language. A substitution, on the other hand, is the result of an altered reproduction in which indigenous patterns are used in place of the foreign analogues of the model. The degree of correspondence may be

partial or nil, and in the latter instance the form would not be identifiable at all by a speaker of the donor language.

As noted above, Haugen (1950) posits that borrowing is a process which involves reproduction. This process should however produce a particular form or word as it is in another language. According to Fromkin et. al. (1985: 309), borrowing occurs when “one language takes a word or a morpheme from another language and adds it to its lexicon.” This normally happens as a result of language contact. For instance, for Lunda itself, its adoptive came from different languages within the Bantu group and from the technically dominant European languages, in particular, English, the language of Zambia’s colonizer, which became the formal language of Zambia ahead of its indigenous languages such as Lunda and Luvale. Indeed, Lunda, like any other living language, has its share of borrowings, drawn mostly from the English, Portuguese and Swahili languages with which it has been in contact for the past century or more. It has also borrowed from neighbouring Zambian languages, notably Luvale. Lending his voice to the debate on borrowing Kashoki (1994: 10) says:

By ‘loan word’, ‘loan’, ‘borrowed word’ or ‘adoptive’ [as used interchangeably in sociolinguistics literature] reference is here made to that item borrowed or adopted from one language (whether similar or dissimilar) into another which has a reasonable degree of permanence in the recipient language, is familiar to a wide spectrum of its speakers and is in common use or general currency.

Haspelmath (2009) further observes how the term borrowing has been used in two different senses: (i) As a general term for all kinds of transfer or copying processes, whether they are due to native speakers adopting elements from other languages into the recipient language, or whether they result from non-native speakers imposing properties of their native language onto a recipient language. This general sense seems to be by far the most prevalent use of the term borrowing. But borrowing has also been used in a more restricted sense, (ii) “to refer to the incorporation of foreign elements into the speakers’ native language” (Thomason & Kaufman 1988: 21).

This survey has adopted a loan word meaning to refer to words taken into a language from another language which are completely assimilated to the prevailing phonological patterns of the borrowing language. This sets a distinction with neologisms. Neologisms on the other hand are very important in the generative capacity of natural languages. It should be noted therefore that the fate of neologisms in a language life differs. Some of them are widely used and versatile. Others live like a short spark: being bright signs appearing at a certain time or stage in the society development, they become obsolete and disused (Marchenko & Boyko 2016). According to Rosen (1991: 8), these words are one-day words, the words with “no future”, and they can be kept in historians and sociologists’ memory as “the words-witnesses of the age.” Marchenko and Boyko (2016) further note that the words – witnesses of the age on colloquial level are the most visible in the language of young speakers.

In light of the above brief literature review, the current study, thus, focuses on borrowing, particularly, loan words in Lunda as well as its contribution to the language, as this process, in our view, has been given scanty attention by researchers, particularly African and Africanist linguists in recent years.

### 3 Factors Responsible for Loanwords in Lunda

Lunda is one of the seven regional lingua francas used for radio broadcasting, literacy, and as a school subject in Zambia. Lunda people are found in North-western Zambia, particularly in Zambezi, Mumbeji, Manyinga, Kabompo, and Mwinilunga Districts. As Mutunda (2011: 2020) observes, the language is not only spoken in Zambia, but also in Eastern Angola, and in the Southern part of the Democratic Republic of Congo, albeit with some linguistic variations such as tonality, palatalization, and morphological features.

Guthrie (1967) classifies Lunda as L52. Lunda, like any other living language, has its share of borrowings, drawn mostly from English, Portuguese and Swahili with which it has been in contact for the past century or more. It has also borrowed from neighbouring languages, notably Luvale. This phenomenon can be attributed to various factors including trade, colonisation, westernisation, introduction of moneyed capitalist economy, the institution of formal education, public administration, commerce and industry, migration and urbanisation, among others (Kashoki 1994). The reasons for the process of borrowing are normally many and varied such as the aforementioned. Moreover, the need or desire to refer to new objects in the environment, to discuss new ideas and concepts, to express new experiences, to stylistically distinguish one's manner of speaking, and so on can also contribute to borrowing.

### 4 Theoretical Basis of the Study

This survey uses Optimality Theory (OT) as a lens for interrogating the nature and adaptation of loan words in Lunda. Prince and Smolensky (1993) introduced Optimality Theory (OT) as a framework for linguistic analysis. Kager (1999) gives an entry-level introduction to OT, McCarthy (2002) surveys advanced topics within phonology, (OT) has largely supplanted rule-based frameworks. OT has also been applied to syntax and semantics, although not as widely; Legendre, Grimshaw, and Vikner (2001) provide an overview of current work in OT syntax. Generation of utterances in OT involves two functions namely Generator (GEN) and Evaluator (EVAL).

The core universal elements of the OT architecture are summarized in (1):

- (1) Basic OT architecture

input → GEN → candidates → EVAL → • output

GEN (Generator) takes an input and returns a (possibly infinite) set of output candidates. Some candidates might be identical to the input, others modified somewhat, others unrecognizable. EVAL chooses the candidate that best satisfies a set of ranked constraints; this optimal candidate becomes the output. The constraints of EVAL (Evaluator) are of two types. Two basic types of constraints are distinguished in OT, namely faithfulness and markedness. Faithfulness constraints require identity between the input and the output candidate under evaluation, using the record of input/output disparity supplied by GEN. Markedness constraints evaluate the form of the output candidate, favouring certain structural configurations (e.g., syllables with onsets, accusative objects) over others (e.g., syllables without onsets, dative objects). Constraints of both types are undoubtedly necessary. Without faithfulness constraints, all distinctions made by input forms would be reduced to some least marked output. And without markedness constraints, there would

be no way to account for languages differing systematically in the structures they permit (their inventories). Interaction between faithfulness and markedness constraints is a key element of any OT analysis (McCarthy 2002). In other words, Markedness constraints enforce well-formedness of the output itself, prohibiting structures that are difficult to produce or comprehend, such as consonant clusters or phrases without overt heads. Faithfulness constraints enforce similarity between input and output, for example requiring all input consonants to appear in the output. Markedness and faithfulness constraints can conflict, so the constraints' ranking—which differs from language to language—determines the outcome. One language might eliminate consonant clusters by deleting consonants, despite the resulting faithfulness violations; another might retain all input consonants, violating the markedness constraint.

In standard OT, constraints are strictly ranked and violable. Strict ranking means that a candidate violating a high-ranking constraint cannot redeem itself by satisfying lower-ranked constraints (constraints are not numerically weighted, and lower-ranked constraints cannot gang up on a higher-ranked constraint). Violability means that the optimal candidate need not satisfy all constraints. EVAL can be viewed as choosing the subset of candidates that best satisfy the top-ranked constraint, then, of this subset, selecting the sub-subset that best satisfy the second-ranked constraint, and so on. Analysis is presented on a tableau where all the generated possible outputs are arranged in vertical columns and constraints are in horizontal columns. The present survey is conceived on the understanding that loanwords are adapted in Lunda and their adaptation is hinged on the aspect of constraint ranking whereby the optimal candidate is picked for use in Lunda.

## 5 Data Collection

The data for this study comprised loan words collected from *Lunda-Ndembu Dictionary* (Fisher 1984a), a bilingual dictionary published by Lunda-Ndembu Publications in Ikelengi, Zambia. The dictionary identifies loan words in Lunda by indicating their meanings in English as well as their immediate donor language. It should be noted that a few number of loan words are identified in the dictionary. It should, however be pointed out that the dictionary has not identified all loan words partly because linguists have not studied Lunda extensively to isolate all loan words and the fact that the compiler of the Lunda dictionary, though he lived for several years in Lunda land, did not invest more time on identifying borrowings. Other sources of data collection include the following: *Zambian languages: Orthography approved by the Ministry of Education*, published in Lusaka (1977) by Zambia Education Publishing House (ZEPH), and *Lunda-Ndembu Handbook*, compiled by Mrs. M.K. Fisher and published in Lusaka (1984b) by National Educational Company of Zambia (NECZAM). Finally, we also consulted *a Lunda Handbook* published by Kalene Mission Hospital (2011). This English-Lunda handbook is designed to help new non-Lunda medical personnel such as doctors and nurses, to learn the basic Lunda terms so as to communicate with local people in the area who visit the hospital. Data were also collected from Zambia National Broadcasting co-operation (ZNBC) television and radio programmes in Lunda. The television and radio programmes helped in providing information on the new world pandemic (COVID 19). This helped to record loan words that were not recorded in the source books but are now used in the recent times due to new developments such as the new world pandemic COVID19.

## 6 Sources of Lunda Loanwords

The Lunda language has many sources of neologisms. These Loanwords can be classified under different categories, depending on their source and nature of formations. For instance, there are many neologisms formed from technology, social life, importation of words from other foreign languages and through linguistic changes due to cultural influences from outsiders as illustrated below, in table 1 to table 10.

### 6.1 Loanwords Categories

#### Abbreviation Used

The abbreviations indicated below pertain to the languages that represent the immediate donor languages of loanwords:

English	<i>Eng.</i>
Portuguese	<i>Port.</i>
Swahili	<i>Sw.</i>

Table1: Buildings and Construction materials

English (source word)	Borrowed (Singular)	Plural	Immediate donor	Indigenous
office	<i>ofesi</i>	ma-	Eng.	-
hospital	<i>chipateli</i>	yi-	Eng.	-
bank	<i>banki</i>	ji	Eng.	Chipau
plank	<i>ipalanga</i>	ma-	Eng.	-
cement	<i>samenda</i>	-	Eng.	-

Table 2: Clothing (outfit, footwear)

English (source word)	Borrowed (Singular)	Plural	Immediate donor	Indigenous
Clock, watch	<i>nkoloku</i>	Ji-	Eng.	-
shoe	<i>insapatu</i>	ma-	Port.	-
trouser	<i>toloshi</i>	-	Eng.	-
blouse	<i>blauzi</i>	ma-	Eng.	Ckikobelu (pl.-yi)
shirt	<i>sheti</i>	-ma	Eng.	chikobelu/mulosa
dress	<i>dresi</i> <sup>1</sup>	-	Sw./Eng	nkanji
gumboots	<i>jombu</i>	-	Eng.	-
petticoat	<i>pitikoti</i>	-	Eng.	-
skipper	<i>sikipa</i>	-	Eng.	-
skirt	<i>siketi</i>	-	Eng.	-
socks	<i>sokosi</i>	-	Eng.	-
suit	<i>suti</i>	-	Eng.	-
sweater	<i>sweta</i>	-	Eng.	-

<sup>1</sup> In Table 2, the word *Dresi* could be borrowed from Swahili and English as Lunda has interacted with both languages

tie	<i>tayi</i>	-	Eng.	-
jacket	<i>jeketi</i>	-	Eng.	Ka-huma (pl. tu-)
short	<i>Kaputula/putula</i>	-	Sw.	-
sandals/flip flop	<i>Patapata</i>	-	Sw.	-
cotton	<i>kotoni</i>	-	Eng.	wanda

Table 3: Education

English (source word)	Borrowed (Singular)	Plural	Immediate donor	Indigenous
ink	<i>inki</i>	-	Eng.	wulombu
school	<i>shikola</i>	ma-	Eng.	-
book	<i>buku</i>	ma-	Eng.	mukanda (pl. nyi-kanda)

Table 4: Food and Drink

English (source word)	Borrowed (Singular)	Plural	Immediate donor	Indigenous
wine	<i>vinyu</i>	-	Eng.	-
pawpaw	<i>papaya</i>	ma-	Eng.	-
sugar	<i>sukili/shuga</i>	-	Eng.	-
watermelon	<i>sawasawa</i>	-	Sw.	mahapwa
cake	<i>keki</i>	-	Eng.	dinkendi
soup	<i>supu</i>	-	Eng.	muzong'u
orange	<i>orangi</i>	-	Eng.	malalanja
lemon	<i>lemoni</i>	-	Eng.	ndimu
onion	<i>anyenzi</i>	-	Eng.	sapola
tomato	<i>tomatu</i>	-	Eng.	machamacha

Table 5: Health

English (source word)	Borrowed (Singular)	Plural	Immediate donor	Indigenous
hospital	<i>chipateli</i>	yi-	Eng.	-
soap	<i>sopu</i>	-	Eng.	nulola, njapau
doctor	<i>ndotolu</i>	-	Eng.	ɲaɲa (pl. aɲaɲa)
nurse	<i>nasi</i>	-	Eng.	-

Table 6: Home items/furniture

English (source word)	Borrowed (Singular)	Plural	Immediate donor	Indigenous
spoon	<i>supuni</i>	-	Eng.	ɲutu, katuwa
table	<i>mesa</i>	-	Sw.	chitamba
bottle	<i>botolu</i>	-	Eng.	mulondu/mutumwa
key	<i>ɲfung'uula</i>	-	Sw.	nsapi

Table 7: Professions/Occupations

English (source word)	Borrowed (Singular)	Plural	Immediate donor	Indigenous
driver	<i>dalajiva</i>	ma-	Eng.	-
governor	<i>nguvulu</i>	-	Eng.	-
carpenter	<i>kapenta</i>	-	Eng.	mukwakusonga
teacher	<i>ticha</i>	-	Eng.	ntanjishi
minister	<i>minista</i>	a-	Eng.	-
flour	<i>flawa (uŋa wa flawa)</i>	-	Eng.	-
		-	-	-
mechanic	<i>makenika</i>	-	-	-

Table 8: Religion

English (source word)	Borrowed (Singular)	Plural	Immediate donor	Indigenous
angel	<i>kaŋelu</i>	aŋelu	Eng.	-
cross	<i>kulusu</i>	-	Eng.	-
demon	<i>ndemoni</i>	a-	Eng.	-
amen	<i>amena</i>	-	Eng.	dimu
apostle	<i>kapostolu</i>	-	Eng.	-
baptise	<i>papatisha</i>	-	Eng.	-
baptism	<i>chipapatisu</i>	-	Eng.	-
bible	<i>baibu</i>	-	Eng.	mukanda wa nzambi
chapter	<i>chapita</i>	-	Eng.	kapetulu
Jehovah	<i>yehova</i>	-	Eng.	nzambi
Hebrew	<i>hebelu</i>	-	Eng.	-

Table 9: Transport

English (source word)	Borrowed (Singular)	Plural	Immediate donor	Indigenous
bicycle	<i>inkiŋa</i>	ji-	Sw-	kaluwasha
motor-car	<i>motoka</i>	ny-	Eng.	munyau
wheelbarrow	<i>ngolofwana</i>	-	Sw.	-
railway train	<i>masuwa</i>	-	Sw.	-

## 6.2 COVID-19 Related Terms

Human language is creative as well as dynamic and not static, these qualities support a language to survive and grow. It is a fact that the lexicons of all languages are developing day by day. Therefore, the new editions are in the form of neologisms. With the world being hit by the global pandemic – Corona Virus Disease 2019 abbreviated as COVID-19 – new words have been coined

and used at a global platform and these words have been introduced in the world's languages in order to send the right message to different speech communities about the world pandemic.

The Latin word 'corona' means 'crown'. The virus is called 'corona' because of its crown-like shape and spikes. In the wake of the COVID-19 outbreak, to define new situations new words have been coined and they are widely used on print and social media. As Asif et. al (2020) observe, in January 2020, the words mainly used for naming and describing the virus were coronavirus, SARS, virus, human-to-human, respiratory, and flu-like. By March 2020, the keywords reflect the social impact of the virus, and issues surrounding the medical response: social distancing, self-isolation and self-quarantine, lockdown, non-essential (as in non-essential travel), and postpone are all especially frequent, as are Personal Protective Equipment (PPE) and ventilator.

In the wake of the global pandemic (COVID-19), neologisms/loanwords related to covid-19 cannot be overlooked. People around the world have used the formation of different words in their respective languages to effectively communicate the message during the outbreak of the disease. Consequently, the Lunda language is also playing its role in disseminating information on the virus and how to protect oneself from contracting it as well as spreading it to others. As Crystal (2001) apprises, neologisms are the foundation of new lexical items acceptable within a speech community at a specific time.

Table 10: Covid-19 related terms

Laon word	Plural	Source	Indigenous	English
<i>Korona</i>	-	Eng.	-	Corona
<i>Kovid-19/kovit-19</i>	-	Eng.	-	Covid-19
<i>Korona vayiras</i>	-	Eng.	-	Corona Virus
<i>Masiki</i>	-	Eng.	-	Mask
<i>Sanitajizi</i>	-	Eng.	-	Sanitise
<i>Sanitajiza</i>	<i>masanitaiza</i>	Eng.	-	Sanitizer

While a few Covid-19 related terms have been borrowed, the rest of the terms such as *self-isolation, Lockdown, social distancing, symptoms, asymptomatic* and *quarantine* are also used in an explanatory way as there is no single word that is an equivalent in Lunda; these words undergo paraphrasing. It is easier to deduce the reason for this borrowing in the wake of new world pandemic. As stated by Haugen (1950) and whitely (1963), the need or desire to refer to new objects or subjects in the environment, to discuss new ideas and concepts, to express new experiences, to stylistically distinguish one's manner of speaking and so on, prompt people to create new words.

## 7 Discussion

As mentioned previously, lexical borrowing is a process which involves reproduction (Haugen 1950). In this vein, Nkhata & Jimaima (2020: 71) avers that language is productive, and productivity is subject to the dimension of time. This follows that some words have been lost to the idea of historicity [. . .] new words have been coined with time and [. . .] should be seen as an outcome of the creativity of language as well as productivity. The creation of these new words in



a language through the aspects of neologisms or borrowing has to be done in such a way that it fits into the linguistic system of that particular language.

### 7.1 Phonological Description

In order to understand some of the peculiarities of loanwords in any language from a phonological perspective, it is first important to describe the phonology of the recipient language. Lunda has typically a five vowel system and a twenty-three consonantal inventory. The phonemic inventory of Lunda is as follows, as approved by Ministry of Education (1977):

Table 11: The Phonemic Inventory of Lunda- Vowels

	Front	Back
High	i	u
Mid	e	o
Low		a

Table 12: The Phonemic Inventory of Lunda- Consonants<sup>2</sup>

	Bilabial	Labio-dental	Alveolar	Post-alveolar	Palatal	Velar	Glottal
Nasal	m		n		ɲ	ŋ	
Stop	p b		t d			k g	
Fricative		f v	s z	ʃ ʒ			h
Affricate				tʃ dʒ			
Approximants Liquid glides	w		l		j	w	

### 7.2. Rendition of Vowels

English is one of the immediate donor languages of loan words in Lunda and has 12 pure vowels (monophthongs), eight diphthongs and five triphthongs. Monophthongs are ones who in their articulation, the position of the tongue is relatively stable whereas with diphthongs and triphthongs, the tongue moves from one position to the other either twice or three times respectively. It is seen therefore that when a word is borrowed from such a language, the vowels in the recipient language, (Lunda) in this case, will change them and substitute to ensure they fit into the vocalic inventory of Lunda as shown in table 13 below:

<sup>2</sup> It should be mentioned that in Table 12 (The Phonemic Inventory of Lunda- Consonants), symbols to the right in a cell are voiced and those to the left are voiceless.

Table 13: Rendition of Monophthongs

Word	English	Lunda	Source language vowel	Lunda Rendition of Vowels
Clock	klɒk	<i>nkoloku</i>	ɒ	o
School	sku:l	<i>shikola</i>	u	o
Shirt	ʃɜ:t	<i>Shati</i>	ɜ	a
Cement	sɪmənt	<i>samenda</i>	ɪ ɛ	a e
Sanitiser Teacher	sanɪtaɪzə ti:tʃə	<i>Sanitaiza</i> <i>titfa</i>	ə	a

A clear instance of the influence of the Lunda vowel system is seen here. This is because the extreme range of the English vowel continuum is not covered by the underlying African systems of Bantu languages. This can be attributed to the tendency by Lunda speakers to transfer rules of Bantu language pronunciations to English (Simo Bobda 2000). In addition, languages differ with respect to syllable structure along various dimensions. This is expressed in the structural well-formedness constraint Onset in (2) (Itô 1989; Prince & Smolensky 1993, in Kager 2004):

- (2) Onset  
\*[σ V ('Syllables must have onsets.')

This constraint requires that syllables must not begin with vowels; it is satisfied only by syllables that have an initial consonant, or onset. Another constraint that applies is that of no coda (3):

- (3) No-Coda  
\*C] σ ('Syllables are open.')

This constraint requires that syllables must not end in a consonant, or coda. Languages in which No-Coda is undominated have open syllables only (ibid), and Lunda is a language that has such syllable constraints. Syllables in Lunda have to conform to the Consonant-vowel (CV) structure as that is what the phonotactics of Lunda requires.

Table 14: Rendition of Diphthongs

Loan word	English	Lunda	Source diphthong	Lunda rendition
Change	/tʃeɪndʒ/	/tʃendʒi/	eɪ	e
Voice	/vɔɪs/	/vojisi/	ɔɪ	o
Brake	/breɪk/	/breki/	eɪ	e
Cake	/keɪk/	/keki/	eɪ	e
Council	/kaʊnsl/	/kanso/	aʊ	a

As shown in the table above, the loan words adopted in Lunda are rendered as monophthongs. This is so because Bantu languages typically do not have diphthongs (Miti 2004) hence the vowel simplification of diphthongs to monophthongs. Batibo (1994), in an article on loan diphthongs in Swahili, also suggests more or less the same adaptation rules. He shows that Swahili has the

syllable structure CVCV, and therefore does not allow a sequence of VVs in the language. Triphthongs on the other hand are modified by insertion of semi-vowels [j] and [w] between the vowels as shown in Table 15 below.

Table 15: Rendition of Triphthongs

Loan words	English	Lunda	Source triphthong	Lunda rendition
Diamond	/daiəmənd/	<i>dajimani</i>	aɪə	aji
Flour	/flaʊə/	<i>Fulawa</i>	aʊə	awa
Towel	//taʊəl/	<i>tawelu</i>	aʊə	awa

The triphthongs are treated somewhat in a different way from diphthongs in that the triphthong /aɪə/ is simplified in such a way that the /i/ is rendered as a semi vowel /j/ and /ɔ/ as /w/ in the triphthong/aʊə/. This can be seen to strongly show how within the Lunda syllable, the CV structure is optimally projected. From table 15, *fulawa* shows the CVCVCV structure as other words do so too.

Table 16: OT application to towel

INPUT /taʊəl/	DEP IO	Ident IO	NO CODA
Tawel		*!	*!
Tawelu	**		
taʊəl			*!

### 7.3 Rendition of Some Consonants

In the pronunciation of consonants such as /d/, /t/, /s/ and /θ/, the assimilatory process of voicing comes in to harmonize the consonant sounds as shown in the example (4) below:

- (4)
- a. Covid-kovit -aspect of d-devoicing
  - b. Cement -samenda- /t/-voicing
  - c. School-shikola where /s/ becomes /ʃ/
  - d. Sink-zink /s/-voicing
  - e. Driver- dulaiva -/r/- lateralisation
  - f. Sabath-sabata /θ/ - /t/
  - g. Thirty /θ/ - /s/

In the case of word *covid* in (4a), there seems to be d-devoicing. This could be attributed to the fact that in the word *covid*, there is no epenthesis hence the case of d-devoicing. The word *samenda* ‘cement’ in (4b) on the other hand employs epenthesis which assimilates the /t/ to /d/.

### 7.4 Epenthesis to Repair Illicit Consonant Clusters

The phonotactics of Lunda typically allows consonant clusters of a particular type. Lunda like many other Bantu languages have consonant clusters that are of a homogenous type. Typically, only a sequence of three consonants are allowed and are made of a nasal, any consonant and a semi-vowel. For instance, the word *nswana* ‘successor’ has one of such. This therefore tends to

apply as the syllable structure of Lunda is just one made of consonant-vowel (CV) structure. Hence any words that are borrowed from other languages tend to follow this structure to avoid any illicit consonant clusters from the source language. Epenthesis is seen in words such as mask which is rendered as *masiki*. Bottle */bɔtl/* - *botolu*

The consonant cluster *tl* in the second syllable is broken down by insertion. Insertion is not done to break the illicit consonant clusters but to also create the syllable structure that is of a CV nature. Typically, vowels are inserted word medially and finally. Insertion at the beginning of a word does not occur as Lunda does not take augments like other Bantu languages. When a word ends in a consonant, a vowel is inserted syllable/word finally and these are seen in words such as:

- (5) a. *Botolu*
- b. *Supuni*
- c. *Keki*
- d. *Samenda*

According to OT, in Lunda the CV structure does not allow coda so basically it is of a CV structure, so once a word is received in the grammar of Lunda, all possible inputs are tasted and one that has less violation is considered as the optimal candidate. The syllable is a major ingredient of phonological generalizations. According to Kager (2004: 91), this is crucial in defining phonotactic patterns: well-formed sequences of segments, in particular of consonants and vowels. The syllable also governs patterns of epenthesis and deletion. This then explains why there is epenthesis to break any consonant clusters that are not allowed in Lunda as indicated above and illustrated in table 17 below. The universal principle illustrated here is that of lack of coda in the syllable structure of languages.

Table 17: OT

INPUT /bɔtl/	MAX IO	DEP IO	NO CODA
<b>Botol</b>		*!	*!
<b>Botolu</b>	*	**	

‘It is well known that every language admits consonant-initial syllables .CV~ and that some languages allow no others; that every language admits open syllables ~V., and that some admit only those’ (Prince & Smolensky 2004: 105).

Interestingly though, the word *nkoloku* has quite an interesting structure; one would expect insertion of only vowels but that does not seem to be the case as a consonant is inserted word initially and then vowels word medially and finally. This gives a consonant cluster which is allowed in Lunda in other words such as *nkwash* ‘helper’, *nkanka* ‘grandparent’, *nkunyi* ‘hatred’. These and many other words show how the velar stop /k/ is preceded by the nasal and this is the case in the word *nkoloku*. Only nouns with the velar /k/ are prenasalised in Lunda, verbs are not. As advanced by Odden (2015), the two kinds of (apparent) consonant clusters that have a central status in Bantu, namely, homorganic nasal-consonant (NC) sequences, often termed “prenasalized consonants,” and Consonant-glide (CG) sequences, can overlap to yield triconsonantal nasal-consonant-glide (NCG) sequences.

### 7.5 Adaptation of Non-Native Consonant Clusters

Despite having restrictions on the consonant clusters allowed in Lunda, there seems to be instances where certain consonant clusters are allowed in words such as:

- (6) a. *Kapostolu* - ‘apostle’
- b. *Spreji* - ‘spray’
- c. *Spana* - ‘spanner’
- d. *plastiki* - ‘plastic’
- e. *stolu* - ‘store’

The consonant cluster *-st-* and *-sp-* do not exist in the phonotactics of Lunda however, in this rare case they seem to be rendered as they are without breaking them up through epenthesis. These have been adapted as they are. Syllabic well-formedness will turn out to be yet another instantiation of the basic conflict between faithfulness and markedness (or structural well-formedness). The range of syllable types allowed by individual languages arise by interactions of syllabic well-formedness constraints and segmental faithfulness constraints (Kager 2004).

## 8. Conclusion

It is generally argued that every language has its own phonological system: its own collection of available speech sounds and its own roles for combining these sounds into pronounceable words. The observations in this study are indicative of the influence that the Lunda phonological system has on loan words taking into consideration the ability to freely choose optimal candidates that best suit the communicative purpose of the Lunda speech community. This accounts for the observable pronunciation trends seen through the phonological processes of epenthesis, dissolution of consonant clusters and assimilation among others which help in the adaptation of loanwords in Lunda.

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