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PATTERNS OF VOWEL EPENTHESIS IN ICIBEMBA LOANWORDS FROM THE ENGLISH LANGUAGE

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ABSTRACT

This paper discusses vowel epenthesis as a phonological process employed to avoid consonant clusters and codas in iciBemba loanwords from English language. Bemba language is classified as M42 and is spoken in Northern, Muchinga, Luapula, Copperbelt and part of Central Province of Zambia. The aim of this paper was to identify the nature of vowels that are inserted in iciBemba during borrowing and subsequently develop an explanation of the system behind the various phonetic realizations of these vowels. The study used the qualitative research design. Data were collected through elicitation and document analysis methods. The article was underpinned by feature geometry (FG) as an analytical theoretical footing. The findings of the study reveal that consonant clusters and codas in iciBemba loanwords from English language motivate vowel epenthesis. The study also shows that the number of epenthetic vowels depends on the number of consonant clusters in the word in the coda position. Therefore, the choice of the epenthetic vowel in iciBemba is determined by the process of assimilation. The article concludes that, in iciBemba, an epenthetic vowel assimilates to the preceding consonant.

Keywords: *Assimilation, English language, vowel epenthesis, Feature Geometry (FG), IciBemba, phonotactics, vowel insertion.*

1.0 INTRODUCTION

Guthrie (1948) classifies iciBemba as M42. According to Greenberg (1963), in the 1950s, the African languages were classified into families, branches, groups, and sub-groups by putting together those that were thought to have a common ancestor language (Nurse and Philippson, 1999). According to Miti (2006), Greenberg places the Bantu languages in the Niger-Congo branch and within the Bantoid sub-group of Benue-Congo. IciBemba language is thus classified in the Benue-Congo sub-group of African Languages. Furthermore, Greenberg (1963) classifies African languages into four language families, namely; Afro-Asiatic, Congo-

Kordofanian, Nilo-Saharan, and the Khoi-San. The above language families can be described as being indigenous to the African continent. The Congo-Kordofanian language family is further sub-divided into its branches, groups, and sub-groups (Greenberg, 1963). In Greenberg's classification of language families, the two main groups are Niger-Congo and Congo-Kordofanian which he further classifies as 1A and 1B respectively. Therefore, the above sub-categorisation implies that iciBemba language which is in the Niger-Congo branch falls under 1A.

According to Cain (1986); Park (1987); Alkinlabi (1993); Mwihaki (2001); Uffmann (2002, 2005); Kenstowicz (2007); Adomako (2008) and Repetti (2012), vowel epenthesis is considered to be a phonological process used in the adaptation of loanwords in languages. Languages with restrictions on syllable structure allow vowel epenthesis in order to satisfy these restrictions when dealing with borrowing words from other languages (Uffmann, 2006).

It should be noted that consonant clusters except for the nasal compounds are not characteristics of IciBemba. For this reason, when consonant clusters and words ending with coda from English are borrowed into IciBemba, they are modified in one way or another to make the syllables open (Kangwa, 2020). In this paper, what will be discussed are the strategies which are used by IciBemba to modify consonant clusters and codas from English loanwords.

Therefore, the paper deals with how vowel epenthesis comes about in iciBemba and its subsequent realizations during borrowing. The paper covers introduction, literature review, theoretical framework, methodology, results and discussion as well as the conclusion.

2.0 LITERATURE REVIEW

There are many studies conducted on loanwords adaptations in languages by using the strategy of vowel epenthesis. Broselow (1984, 1992) analyzes the adaptation of English loanwords in Egyptian Arabic. According to her, some initial bi-consonantal clusters in English loanwords in Egyptian Arabic motivate internal epenthesis, whereas other types of initial bi-consonantal clusters motivate prosthesis (initial epenthesis). She notes that initial obstruent + sonorant clusters motivate internal epenthesis, whereas voiceless obstruent + stop (ST) clusters trigger prosthesis.

Aor (2021) critically discusses the phonological implications and functions of English loan-words on Tiv grammar. Primary and secondary sources were used to collect data. The researcher used participant-observer technique as his primary source and documentary sources. It was found out that most English loanwords have no substitutes in Tiv; loanwords have expanded the vocabulary of the Tiv grammar; the original syllabic structure of most loanwords changed from close to open syllables; and epenthetic vowels were added to break consonant clusters.

The study by Alqahtani & Musa (2014) discuss vowel epenthesis as a phonological process utilized to avoid codas in Arabic loanwords in Hausa language in light of Optimality Theory (OT), as an analytical framework, even though this language permits codas in heavy syllables of the form Consonat Vowel Consonant CVC (cf. Caron, 2011). This process results in having disyllabic, trisyllabic, or qadri-syllabic words (words with four syllables) depending on the forms of Arabic loanwords as well as mono-syllabic words with final bi-consonant clusters. This paper concludes that codas in Arabic loanwords in Hausa motivate vowel epenthesis either once or twice, depending on the forms of words, that is, disyllabic or monosyllabic. The study also shows that the

number of vowel insertion depends on the number of consonants in the coda position, that is, /CVCC/→ vowel epenthesis→ [CVC.CV] or [CV.CV.CV]. This literature is necessary during the analysis of vowel insertion in iciBemba in monosyllabic, bisyllabic and trisyllabic structures that are formed during borrowing.

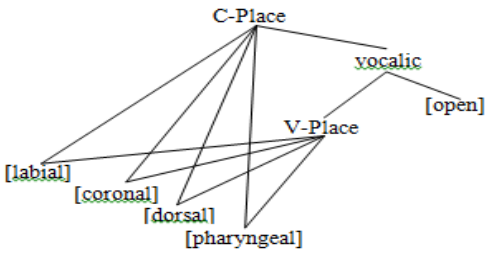
Iribemwangi & Karũrũ (2012) explore the various phonological strategies used by Gĩ-Gĩchũgũ dialect of Gĩkũyũ language in borrowing words from Kiswahili. To do this, the paper applies the Source-Similarity model, one of the most recent strands of Optimality Theory. This model exploits loanword specific faithfulness constraints that impose maximal similarity between the perceived source form and its corresponding spoken loanword. Using the Source-Similarity model, this paper shows that Gĩ-Gĩchũgũ uses such strategies as deletion, preservation, substitution as well as importation of consonants. On the other hand, the adaptation strategies used for vowels are insertion, preservation, and substitution. These strategies ensure that the borrowed words stay as similar as possible to the source forms. The above study is important during identification and analysis of phonological strategies that are employed during vowel insertion when borrowing from iciBemba to the English language.

Augusto (2012) looks at the rephonologisation of Portuguese words in Kimpombo, a variety of Kikongo spoken in Sanza Pombo which is one of the 17 municipalities of the northern Angolan province of Uíge. The main focus of the study was on how processes such as vowel and glide epenthesis, as well as vowel deletion conspire to maintain the syllable structure of the receiving language (Kimpombo). The findings of this study reveal that there are four main strategies that Kimpombo utilizes in order to accommodate the new lexical items in the language to its syllable structure. This is done by breaking consonant clusters through epenthetic vowels, breaking diphthongs and triphthongs and/or vowel sequences either by glide epenthesis or vowel deletion, as well as opening closed syllables by the means of an epenthetic vowel. The findings show that the phonological system of the language does not allow complex onsets, codas, and complex syllable nuclei in its phonological structure. These phonological processes are motivated by the fact that the acceptable syllable structure in Kimpombo is of the CV (consonant-vowel) structure. The generative CV phonology model of syllable structure (Clements & Keyser, 1983; Blevins, 1995) is applied to analyze the processes. The above findings are of great value in the present study during the analysis of vowel epenthesis in iciBemba.

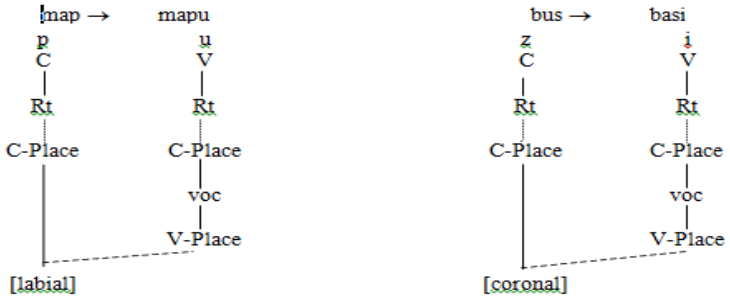
2.1 Theoretical Framework

The theoretical model of Feature Geometry (FG) was adopted as a core framework for this research. According to Clements & Hume (1995) and Odden (1994), feature geometry is very appropriate for descriptive details and final analysis of place features for vowels and consonants, and by doing so, accounts for the predictability of epenthetic materials and segmental replacements or substitutions. Below is a summary representation of the major characteristics of feature geometry:

The geometry of place features (Clements/Hume 1995, Odden 1994)



General strategy: C-spreading (if C={[labial], [coronal]}



FG basically groups speech sounds according to place features via place of articulation (McCarthy, 1988). McCarthy adds that representations postulated by FG at once, provide a plausible interface between phonology and articulation, and affords a simple but comprehensive description of common phonological phenomena with a minimal set of operations. In recent years, it has become widely accepted that the basic units of phonological representations are not segments but the features, the members of a small set of elementary categories which combine in various ways to form the speech sounds of human languages.

Kadenge (2012) restates the contributions of FG as it does not merely depict default insertions or repairs, but also shows the predictability of consonant and vowel interactions. In respect to the present paper, FG has been used to account for why particular vowels are inserted within clustered environments and in coda positions of iciBemba loanwords from English. The findings of this study will contribute to the general body of knowledge of feature geometry. It should be mentioned that although FG also deals with delinking, in this paper only spreading has been discussed.

3.0 METHODOLOGY

This research used a qualitative descriptive approach because all of the data that are analyzed in this research are presented in the form of words and sentences and not in numbers (Mutch, 2005; Siame & Banda, 2021, 2024a; Siame, 2023). Denzin and Lincoln (1998) show that qualitative research uses a variety of qualitative inquiry in collecting the data such as observation, documenting, narrating, publishing text, etc. This is what the present research used.

Primary data were collected from Kasama district in Northern Province of Zambia. The study had four informants who were native speakers of iciBemba and were selected purposively (Siame, 2022). The same informants worked as primary sources of information during data

collection and analysis. Out of the four informants, two provided raw data while the other two verified the collected data and analysed data on iciBemba language for its correctness.

Data were collected through elicitation document analysis and introspection methods. Some of the documents analysed include Kashoki (1999, 2012) and Kangwa (2020). Being a native speaker of iciBemba, the lead author's intuitions were relevant in judging the facts and significance of the collected data (Siame, 2024b). Data analysis went hand in hand with data collection (Mugenda & Mugenda, 1999). The collected data were then analysed using feature geometry backed by analytical and thematic skills. Therefore, data were analysed using three main themes and fourteen sub-themes.

4.0 RESULTS AND DISCUSSION

4.1 Onset Clusters

The first to be discussed are the clusters that occur in the word initial position (onset clusters). The following English consonant clusters occur in the initial position of a word:

/pr/, /br/, /pl/, /tr/, /dr/, /gr/, /kl/, /kr/, /gl/, /bl/, /fl/, /fr/, /s+c/

4.1.1 English Consonant Cluster /pr/

In iciBemba, the consonant cluster /pr/ is broken up by either inserting a back-mid vowel [o] or a back high vowel [u]. The following examples illustrate the above description:

(1) English	IciBemba
profit	polofiti
promote	polomota
president	puleshitenti
principal	pulinshipo
project	polocekiti
printer	pulinta
prefect	pulifekiti

From the above examples, two things were noticed. First, all the /pr/ clusters are broken up by an epenthetic vowel either [o] or [u]. Secondly, the choice of the epenthetic vowel is determined by the process of assimilation. Assimilation in this case can be seen as occurring in two ways. First, the epenthetic vowel assimilates to the preceding consonant. In most of the examples given above, the realisation of the epenthetic vowels **u** and **o** is due to the influence of the preceding bilabial consonants such as the voiceless bilabial plosive/stop [p]. The same influence of bilabial consonants on the realisation of back epenthetic vowels in iciBemba has also been noticed in other Bantu languages such as Northern Sotho (Kruger, 1965) and Shona (Chimhundu, 1982). Back vowels, like bilabial consonants, involve lips in their production. This may be the reason for a back vowel, particularly **u** to be inserted after the bilabial consonants.

The study shows that vowel assimilation is also a common situation during vowel epenthesis in iciBemba as can be seen in the examples below:

(2) English		IciBemba
/pli:z/	'please'	pilishi
/brɪdʒ/	'bridge'	bilici

The above illustrations show that in most cases, the vowel [u] follows labial consonants but in some cases it is [i] and other vowels. The two examples above reveal that there is regressive assimilation. This happens when a sound is influenced by the sound that comes after it. It can be argued that the epenthetic vowel **[i]** in the above example is due to assimilation to the succeeding vowel.

4.1.2 English Consonant Cluster /br/

The consonant cluster /br/ is broken up by inserting a vowel [u] in iciBemba as illustrated in the examples below:

(3) English	IciBemba
break	buleeki
brush	bulasho
bread	buleeti
brick	ibuliki
broom	buluumu

The analysis shows that the epenthetic vowel [u] in the above examples has simplified the consonant cluster /br/. It can be argued that the influencing factor in the above examples is the bilabial consonant [b]. Therefore, the vowel that breaks up these consonant clusters in the environment of a labial consonant is [u].

4.1.3 English Consonant Cluster /pl/

The consonant cluster /pl/ is broken up by inserting a high back vowel [u] in iciBemba language as shown in the examples below:

(4) English	IciBemba
plastic	pulashitiki
plot	pulooti
plumber	pulaamba
plank	ipulanga
plan	pulani

The study reveals that the [pl] consonant cluster is not allowed in iciBemba as it is illicit. Therefore, the consonant cluster is simplified by inserting the high back vowel [u]. As has already been observed, this epenthetic vowel is determined by the preceding voiceless bilabial consonant [p].

4.1.4 English Consonant Cluster /dr/

Just like in example (4), in iciBemba, the consonant cluster /dr/ is separated by inserting the vowel [u] as illustrated below:

(5)	English	IciBemba
	driver	tulaifa
	drum	tulamu
	drawer	tulowa

The study shows that one way to deal with this structural mismatch of the cluster during borrowing in iciBemba is to insert a vowel, thus effectively breaking up the illicit [dr] consonant cluster. The consonant cluster /dr/ is separated by inserting the epenthetic vowel [u] which is necessitated by the alveolar consonant [d].

4.1.5 English Consonant Cluster /gr/

To break the consonant cluster /gr/ in iciBemba, the vowel [i] is inserted between the consonant clusters as can be seen in the following examples:

(6)	English	IciBemba
	grease	kilishi
	grade	kiledi

Grace	Kileshi

The above examples reveal that the vowel /i/ or /e/ occurs after non-labial consonants in iciBemba, that is, dentals, alveolars, palatal-alveolars and velars. This finding agrees with Clements & Hume (1995) who opine that the feature geometry model is useful when accounting for this assimilatory process as spreading the place features of the immediately preceding consonant to the inserted vowel. In this case, it is the front-high vowel /i/ that is inserted.

4.1.6 English Consonant Cluster /kl/

The consonant cluster /kl/ is simplified in iciBemba by the epenthetic back-low vowel [a] as illustrated below:

(7) **English**	**IciBemba**
club	akalabu
class	ikalashi
clutch	kalaci
clerk	kalaliki
clamp	kalampa

Based on the above examples, it can be argued that the phoneme [k] is a pharyngeal consonant sound which is made with the back of the tongue against the pharynx. It can be argued that the consonants spreading pharyngeal features result in a pharyngeal vowel [a].

However, the study shows that there are exceptions to the above phenomenon during vowel epenthesis as shown below in example (8):

(8) **English**	**IciBemba**
clinic	kiliniki
clock	inkolooko

In example (8), the vowel /i/ has been inserted because as mentioned above, [i] occurs after non-labial consonants in iciBemba, that is, dentals, alveolars, palatal-alveolars and velars. In this case it is the vowel [i] that is inserted in its preceding consonant is a velar consonant.

4.1.7 English Consonant Cluster /bl/

The consonant cluster /bl/ is broken up by inserting the high-back vowel [u] in IciBemba borrowed words as can be seen in the following examples:

(9) **English**	**IciBemba**
block	ibulooko
blouse	ibulaushi
blanket	ubulangeti

It has been observed that in cases where the initial consonant cluster is a labial, that is, bilabial and labio-dental, the epenthetic vowel is the back close (high) vowel [u]. The reasons are the same as discussed above in examples (1), (3-5).

4.1.8 English Consonant Cluster /fl/

In iciBemba, this cluster is broken up by the high back vowel [u] as demonstrated in the examples below:

(10) **English**	**IciBemba**
flour	fulaulo/fulawa
flat	fulati
flag	fulaki
flask	fulashiki

Like in /bl/ above where the initial consonant cluster is a labial, that is, bilabial and labio-dental), the epenthetic vowel is the back close (high) vowel /u/. The reasons are the same as illustrated in examples (1), (3-5) where the vowel /u/ is epenthesised to break consonant clusters.

4.1.9 English Consonant Cluster /fr/

English consonant cluster /fr/ is simplified by inserting the vowel [u] in iciBemba as illustrated in the example below:

(11) **English**	**IciBemba**
fridge	fulici
Frank	Fulanki
frame	fulemu
fresh	fuleshi
Friday	Fulaite

The study shows that the /fr/ consonant cluster is not allowed in iciBemba as it is illicit. Therefore, the consonant cluster is simplified by inserting the high back vowel [u]. As has already been mentioned, this epenthetic vowel is determined by the preceding fricative consonant [f].

4.1.10 Medial Word Epenthesis

Just like in onset clusters, word medial consonant clusters are broken up by an epenthetic vowel. This is also triggered by assimilation:

(12) **English**	**IciBemba**
programme	polokalamu
Progress	Polekeleshi
boyfriend	boyifulendi
Patrick	Patiliki
tractor	talakita
picture	pikica

Based on the above examples, it can be argued that word-medially epenthetic vowels in iciBemba are generally realized as copies of nearby vowels. This finding is in line with what Harvey (nd) who opines that when an epenthetic vowel is inserted word-medially, it is realized as a copy of a nearby vowel. Therefore, the epenthetic vowel [i] is variable in its occurrence while the epenthetic [e] is less so.

5.3 Final Vowel Epenthesis

As already mentioned above, when an English word ends in a consonant, in iciBemba a vowel is always suffixed because no word ends in a consonant in iciBemba. The study shows that there are five ways or rules that govern final vowel epenthesis in iciBemba during borrowing as illustrated below.

(i) i – Epenthesis (after *n*): This rule states that after *n* in word final position, normally *i* is inserted as
shown in the examples below:

(13) **English**	**IciBemba**
button	ibataan<u>i</u>
garden	kalateen<u>i</u>
pan	paan<u>i</u>
pin	napiin<u>i</u>

paraffin	palafini
action	aakishoni
queen	kwiini

(ii) u – Epenthesis (after *m*): This rule states that after *m* in word final position normally /*u*/ is inserted:

(14)

English	**IciBemba**
room	luumu
boom	buumu
condom	kondoomu
cream	kiliimu
dam	taamu
farm	fwaamu
drum	talaamu

(iii) u – Epenthesis (after */f/ and /v/*): This rule states that after /*f*/ or /*v*/ in word final position normally /*u*/ is inserted.

Examples:

(15)

English		**IciBemba**
/ɒf/	'off'	oofu
/twelve/	'twelve'	twelufu
/vælv/	'valve'	faalufu

(iv) i – Epenthesis (after */t/, /d/, /nd/* or an *affricate*): This rule states that after /*t*/, /*nd*/, or /*d*/ or an affricate in word final position, normally i/ is inserted.

(16)

English	**IciBemba**
pound	paundi
slate	iseleeti
pint	ipainti
coat	ikooti
church	icalici
clutch	kalaaci
salad	salaati
switch	swiici

The above results demonstrate that in iciBemba, words which end in a consonant acquire vowels whose type is determined by the nature of the final consonant; after labials [u] or [o] is added, and after coronals and dorsal [i] or [e] is added. This finding is supported by Mwita (2009:55) who observes that it is possible to predict what kind of vowel will be added in word-final position during epenthesis.

It can be concluded that the vowels that break up these consonant clusters in English are in many cases [u] in the environment of a labial consonant and [i] when the environment is non-labial. Batibo (1996) formulates a rule accounting for this process as follows:

Vowel insertion Rule (Batibo (1996)

$$C1 \quad \begin{Bmatrix} C2 \\ \# \end{Bmatrix} \qquad C1\ V \begin{Bmatrix} C2 \\ \# \end{Bmatrix}$$

In the phonological rule presented above, a two consonant cluster is broken up by inserting a vowel between the two consonants. This rule further states that such a vowel may occur after a syllable-final consonant as indicated by the syllable boundary symbol # below C2.

(v) Insertion **after l**

After l in word final position, the situation is rather chaotic in terms of vowel epenthesis as demonstrated in the examples below:

(17)	**English**	**IciBemba**
	handball	andibo
	ball	boola
	bloody fool	bulalifuulu
	table	iteebulo
	wheel	wiilo
	wool	wuulu

It can be further concluded that word-final epenthetic vowels must appropriate features from adjacent consonants. Consonants spreading coronal features will result in a coronal epenthetic vowel [i] while consonants spreading labial features will result in a labial epenthetic vowel [u]

Therefore, vowel insertion (VI) rules induce resyllabification in iciBemba, that is, the syllable structure of the source word is changed. Resyllabification occurs when a vowel is inserted so that the loanwords conform, at least partially to the structure of the host language.

5.0 CONCLUSION

The study concludes that in iciBemba, the choice of the epenthetic vowel is determined by the process of assimilation. The epenthetic vowel assimilates to the preceding consonant. In cases where the initial consonant in a cluster is a labial, that is, bilabial and labio-dental, the epenthetic vowel is the back close vowel /u/. In most cases [u] follows labial consonants but in some cases it is [i] and other vowels. The study also shows that the phenomenon of assimilation of the quality of the vowel inserted by the preceding consonant does not apply to word-initial and word medial positions only, but also in word final position in this language. In this case a round vowel [u or o] is attached after a word-final labial consonant in syllable-final position. The vowel [i] or [e] occurs after non-labial consonants, that is, dentals, alveolars, palatal-alveolars and velars.

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