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Syllabic Constraints in Ekegusii Borrowing: An Optimality Perspective

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Abstract

A language's syllabic structure is key in determining linguistic borrowing. Research on loanword phonology indicates that when languages borrow segments, these borrowed segments undergo systematic adaptations which involve phonological structures at various levels and one of these is the syllabic level. Because languages have varied syllabic structures which will range from very simple to complex, a language's syllabic structure will trigger repair strategies that ensure that its language phonotactics are not violated. However, how the syllable in Ekegusii constrains borrowing from English has not been adequately explained. This article that was based on Optimality Theory's constraint approach examined how Ekegusii's syllable structure constrains borrowing from the English language. The data used in this article was extracted from Mose's doctoral study. The findings revealed that the Ekegusii syllable structure imposed various constraints spread across the three patterns which are permissible in the language. The specific constraints included: prohibition of cluster consonants, diphthongs or triphthongs, no coda consonants, and complex onsets, as well as syllables, must have onsets that were lowly ranked in the language. The article concluded that syllabic constraints determined that whatever was mapped to Ekegusii adhered to its syllable structure.

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1 Introduction

The syllable is indeed at the heart of phonological representations, forming a unit upon which phonological systems are organized (Katamba, 2003). Two theories attempt to define the syllable. First, that the definition is based on properties of sounds, such as sonority (acoustic energy) or prominence (some combination of sonority, length, stress, and pitch) (Ladefoged & Johnson, 2011). This theory encounters problems in that some words cannot be accounted for like 'spa'. Second, that a syllable is a unit in the organization and planning of the sounds of an utterance so that you say a syllable is the smallest possible unit of speech. This definition is also echoed by other scholars who note that a syllable commonly consists of a vocalic peak, which may be accompanied by a consonantal onset or coda (Ladefoged & Johnson, 2011; Roach, 2009; Clark et al., 2007; Katamba, 2003). They further observe that in some languages, every syllable peak is indeed a vowel but other sounds can also form the nucleus of a syllable. For instance, in English where a word ends in an unstressed syllable containing a nasal or a lateral, it can form a syllable when the schwa vowel is deleted.

Whereas many phonologists envisage a branching, hierarchical syllable structure, the traditional structural view presents the syllable as having initial consonant(s) called onset, while the vowel part is peak and the closing or the last consonant(s) that make the coda. The figure below illustrates this.

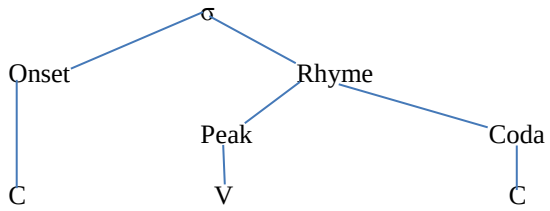


Figure 1. The syllable structure

Rhyme is the only essential element of the syllable. It is obligatorily present in all syllables in languages. However, what varies from language to language are the elements that can be part of the rhyme. Whereas the nucleus slot in the rhyme is typically occupied by a vowel, occasionally a consonant may fill the position (Katamba, 2003). The simplest syllable structure is formed by languages that take a short vowel as the nucleus and optionally allow a maximum of one consonant in the onset (Blevins & Goldsmith, 1995). Ekegusii, a Bantu language spoken in Kenya, classified as E42 by Guthrie (1971), falls in this category of languages with a simple syllable structure. English on the other hand, has a very complex syllabic structure which allows up to three consonants at the onset and four consonants at the coda (Roach, 2009).

In Kenya, Ekegusii is in diglossic relation with English since it is used as a first language by its speakers while English is taught and used as a second language by the educated members of the community. Its roots in Kenya can be traced back to the colonial period when the British introduced it (Kioko & Muthwii, 2001). Back then, English played a pivotal role in education and administration as well as access to white-collar jobs. Up to date, English still plays a crucial role in Kenya as it is used as the official language in the education sector, government, parliament, diplomacy and to conduct business internationally (Mwangi & Ogechi, 2006). Moreover, the entrenchment of English in the Kenyan Constitution (2010) as an official language further strengthens its vitality. Thus, with this relationship, Ekegusii has borrowed extensively from English. Besides, Hoffer (2005), notes that what stands out in intercultural contact between languages is a set of loanwords borrowed into the vocabulary of the languages involved.

In linguistic borrowing, the syllable not only determines what is permissible but also triggers real-time repairs especially if the languages concerned have different syllabic structures like the case of Ekegusii borrowing from English. Gussenhoven & Jacobs (2017), illustrate this when they give an example of the English language. They argue that elements that re-occur do not do so in all possible orders, instead, there is a higher-ranked constituent than a segment which imposes restrictions on the occurrence of segments and the order in which they occur. A case in point is the English language whereby the sounds: [k], [æ] and [t] can form sequences like a cat, act, and tack but the same cannot be for *[ætk] yet the same combination forms a word like Atkins but in this case, the /t/ is in the coda position while /k/ is the onset of the following syllable. Therefore, the syllable structure determines by large the constraints that will be imposed on an incoming loan (Kenya, 2010; Aichert & Ziegler, 2004).

Studies have been done on how the syllable constrains linguistic borrowing. One such study is Kadenge & Mudzingwa's (2012). study on English loanwords by monolingual and bilingual speakers of ChiShona, a southern Bantu language spoken mainly in Zimbabwe. They explain that while English has a complex syllable structure, ChiShona has a simple one. Further, they point out three major differences: firstly, ChiShona allows open syllables only while English has closed syllables. Secondly, ChiShona does not allow complex onsets while English can have as many as three consonants in the onset position. Thirdly, ChiShona does not permit a complex syllable nucleus while English allows long vowels and diphthongs in its syllable structure. Kadenge and Mudzingwa's findings reveal that the ChiShona syllable ensures that loanwords are completely assimilated to suit the ChiShona phonological structures for monolingual speakers. However, the speech of bilinguals reveals some marked features of the English language such as complex onsets, the lateral approximant, and postnasal voiceless obstruents.

Both monolingual and bilingual speakers disallow closed syllables and diphthongs. Btoosh (2006), also does a constraint-based analysis of Jordanian Arabic syllables using OT. He reveals that Jordanian Karak Arabic has opacity in word-final, adheres to complex codas, non-geminate complex codas, and has an ultra-heavy syllable. He further confirms that the language adheres to faithfulness constraints. Aljumah (2008), examines the syllable structure of Al-Ahsa, a dialect of Arabic spoken in the eastern province of Saudi Arabia. He observes that Al-Ahsa prohibits initial consonant clusters but allows complex codas which are analyzed as dominated moras. Harb (2016), is yet another study on Hawaiian borrowing from English using the Optimality theory approach. Harb establishes that in Hawaiian, onset is optional and if it occurs, maximally one consonant is allowed, initial consonants clusters are prohibited, the nucleus is obligatory (either short or long) and codas are strictly prohibited. On markedness, Harb formulates the *CC: complex onset is disallowed and *NO CODA: codas are prohibited constraints. On the faithfulness constraints he formulates, MAX-IO: no deletion of segments, MAX-V: no deletion of vowels, MAX-C: no deletion of consonants, DEP-IO: no addition of segments, DEP-V: no addition of vowels, and DEP-C: no addition of consonants. Harb establishes that markedness constraints override faithfulness in Hawaiian (Recasens & Rodríguez, 2018; Goldrick & Larson, 2008).

Green (2003), points out that Burmese prohibits both vocalic and consonantal place features from the right edge of a syllable. Further, the Burmese ban diphthongs in open syllables. On prosodic features, Green notes that when adjustments occur to the syllable there is evident syllable reduction manifested in loss of tone, reduction of all vowels, loss of coda consonants, and onset simplification. These studies reveal that the syllable structure through the lenses of OT determines what is mapped in the borrowing languages. In other words, it ensures that a language's phonotactics are not violated by initiating phonological repair strategies. This needed to be ascertained in Ekegusii borrowing; hence, necessitating this article on the syllable constraints in Ekegusii borrowing (Cholin et al., 2006; Greenberg et al., 2003).

2 Materials and Methods

This article is an extraction of Edinah's (2020), doctoral thesis. The main study employed descriptive linguistic fieldwork which is an investigation of the structure of a language by collecting primary data gathered by interacting with the adult proficient speakers or written native speaker resources (Chelliah & Willem, 2010). Moreover, data used in this article was derived from Mose's doctoral study whereby the researcher had selected through judgmental sampling three respondents who were neither too young nor too old. Bowern (2015), observes that the latter speakers have less or no control over their articulators. Further, two hundred words from the Ekegusii dictionary were sampled, then supplemented with introspection. The three respondents were then interviewed to overtly realize the sound patterns in the loanwords. Thereafter, the interview sessions were recorded, transcribed then analyzed using Prince & Smolensky's (1993, 2004), constraint-based model (Optimality Theory) with its key notions of faithfulness and markedness constraints. Optimality Theory proposes that the grammar of all languages has a set of universal constraints which are part of Universal Grammar or the innate language knowledge that humans have. Since the constraints are universal, languages differ in the way they rank their constraints as a result of their different phonologies. At the heart of every language's phonology which will determine a language's grammar is the syllable. Thus, the syllable in the article imposed various syllabic constraints on incoming loans ensuring that they conformed to Ekegusii's language grammar.

3 Results and Discussions

Ekegusii phonemic inventory and syllable structure

The orthography of Ekegusii language has five vowels, namely: a, *e, i, o, u.* Nevertheless, it has seven vowel phonemes as follows: /a/, /ɛ/, /e/, /i/, /ɔ/, /o/ and /u/ (Nyakundi, 2010). On consonantal sounds, Ekegusii has twenty consonants presented in Table 1.

Table 1
Ekegusii consonant phonemes

PLACE MANNER	Labial	Dental	Alveolar	Alveopalatal	Palatal	Velar	Glottal
Plosives			t	c		k	
Prenasalized stops	^{m}b		^{n}t, ^{n}d	^{n}c		^{ŋ}k ^{ŋ}g	
Fricatives	β		s, ^{n}s			ɣ	
Nasals	m		n		ɲ	ŋ	
Approximants	w				J		
Liquids			r				

(Source: Mwangi et al., 2013)

Evidence from the data on loanwords indicates that Ekegusii has simple open syllables. The universally unmarked syllable structure of Ekegusii is a V or CV; that is, a syllable may constitute simply a vowel or a consonant and a vowel. Nevertheless, in some special restricted environments, the CGV which in this case is a consonant, glide, and a vowel may occur. Ekegusii syllable structure displays three patterns:

V- Vowel only/ onset less syllable type
CV- Consonant + a vowel
CGV- Consonant + Glide + a vowel

The three types are discussed herein, each with illustrations from the data on manifestations as well as how each type constrains borrowing.

Ekegusii syllabic constraints on borrowing V syllable structure

The basic component of the Ekegusii syllable is that it must have a vowel and an optional preceding consonant.

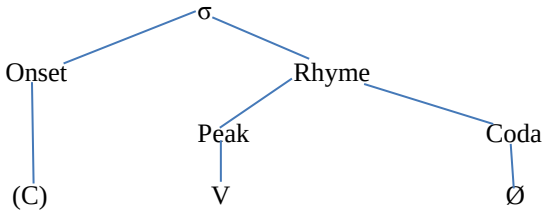


Figure 2. V syllable structure

The figure shows that the syllable has an optional onset meaning it can be null, an obligatory peak that has a vowel, and a null coda. The V syllable type is observed in the following borrowed segments. The period indicates a syllable boundary.

English Input	Ekegusii Output	English Gloss
/'eɪkə/	[ɛ.ɛ.ka]	'acre'
/ə'kaʊnt/	[e.a.ka.o.nti]	'account'
/'eərɪə/	[e.e.ri.o]	'aerial'

/fju:z/	[e.βi.u.si]	'fuse'
/geɪt/	[e.ɣe.ɪ.ta]	'gate'
/gaʊn/	[e.ɣa.o.ni]	'gown'
/gɪə/	[e.ɣi.a]	'gear'
/peil/	[e.βe.i.ri]	'pail'
/waɪn/	[e.wa.i.ni]	'wine'

From the data, it can be noted that Ekegusii onset less syllable occurs word-initially, medially, and word-final. The English loans that have diphthongs that are not attested in the language, undergo reduction so as not to violate the Ekegusii syllable. From the data also, most loans undergo syllabification, a phonological process that results in a difference in the number of syllables in the input versus the output form in most instances here, the output adds syllables.

To explain how the Ekegusii syllable structure constrains borrowing OT's universal constraints are invoked. First, all languages have open syllables which are unmarked and preferred cross-linguistically, meaning syllables must not have codas; secondly, vowels form the peak, not consonants, thirdly, syllables must have onsets (Kager, 1999). Following these constraints, the following universal constraints are proposed as Ekegusii's constraints: No coda; *CODA, no peak consonants; *PEAK-C and a syllable must have onset; ONSET. Further, it can be noted that *CODA is undominated because it is never violated in Ekegusii since no syllable ends with a coda. In other words, as evidenced from the loanwords, no Ekegusii word ends with a consonant. Equally, the nucleus is necessarily a vowel. Also, Ekegusii allows onset and onset fewer syllables; hence, *PEAK-C is ranked above ONSET as shown:

*CODA, *PEAK-C >> ONSET.

All these (*CODA, *PEAK-C >> ONSET) are markedness constraints. In OT, markedness is counterbalanced by faithfulness conditions which demand similarity between the inputs and outputs. The faithfulness constraints are MAX-IO$_{SEG}$, which requires that each segment in the input ('I') has a corresponding segment in the output form ('O'). In other words, deletion is forbidden. Secondly, DEP-IO requires that each segment in the output form has a corresponding segment in the input form, meaning insertion is prohibited. Thirdly, IDENT(F) requires that every feature (F) in the input segment is 'identical' to every feature in the output segment; thus, feature change is prohibited (McCarthy & Prince, 1995: McCarthy, 2002, 2008).

Kager (1999), further proposes ALIGN STEM RIGHT- which implies that for every syllable, there must be some stem such that the right edge of the syllable matches the right edge of the stem. Considering that Ekegusii has open syllables, any segment after the vowel is prohibited. Nonetheless, this constraint is similar to *CODA. Kager further adds ALIGN-L which evaluates inputs to ensure they have onsets or not. Therefore, if an input has no onset, inserting a consonant is prohibited and if there is onset, deleting the consonant is prohibited as well. This constraint is similar to ONSET. So, using these constraints, the input 'gate' /geɪt/ adapted as [e.ɣe.i.ta] is illustrated. The relevant markedness constraints which evaluate the input and output mapping include *CODA and *PEAK-C. However, there is also the mapping of the voiced velar plosive /g/ to the voiced velar fricative /ɣ/ in Ekegusii. Therefore, the markedness constraint *[g] can be posited. Also, relevant is *DIPH which is an undominated markedness constraint. Further, there is the ONSET, a constraint that requires inputs to have onsets. However, the V syllable type does not have an onset. Therefore, it means this constraint will be dominated by faithfulness constraints that demand similarity between input and output. They include MAX-IO$_{SEG}$ which forbids deletion, DEP-IO(V) which forbids vowel insertion, and IDENT-IO$_{CONT}$ which forbids feature change. ONSET will be dominated as follows.

*CODA, *PEAK-C, *DIPH, *[g] >> MAX-IO$_{SEG}$ >> DEP-IO(V), IDENT-IO$_{CONT/DIPH}$ >> ONSET

Table 2

/geɪt/ ⟶ [e.ɣe.ɪ.ta] 'gate'

/geɪt/	*CODA	*PEAK-C	*DIPH	*[g]	MAX-IO$_{SEG}$	DEP-IO(V)	IDENT-IO$_{CONT/DIPH}$	ONSET
a. [geɪt]	*!		*	*				

b. [e.ɣe.ɪ.t]	*!			*	**	**
c. ☞[e.ɣe.ɪ.ta]				**	**	**
d. [e.e.ɪ.ta]			*!	**	*	***

Candidate (c) is the most harmonic, out of the eight constraints; it only minimally violates the low ranked ONSET, IDENT-OICONT/DIPH, and DEP-IO(V) which prohibit syllable onset, feature change, and vowel insertion. Hence, it wins optimally. On the other hand, candidate (a) is the most disharmonic. It violates three of the high-ranked markedness constraints; *CODA, *DIPH, and *[g], which render it unfit. As for candidate (b), it violates the high ranked markedness, PEAK-C besides the faithfulness constraints, hence, it is eliminated. Candidate (d), does not fare well either. It violates the faithfulness constraint MAX-IOSEG which forbids deletion. This constraint is ranked higher than other faithfulness constraints, therefore, rendering the candidate unfit. Besides, the undominated *CODA, DIPH, *[g] and *PEAK-C, the faithfulness constraints of MAX-IOSEG and DEP-IO(V) dominate the markedness constraint of ONSET and this enables OT to account for the V syllable type in Ekegusii.

Moreover, the V syllable type constrains borrowing in Ekegusii in that it determines the repair processes that ensure illicit structures do not occur in Ekegusii borrowing. For instance, if a loanword has cluster consonants, diphthongs, or triphthongs; the V syllable structure does not allow it. Consequently, it introduces vowel epenthesis to make loans conform to Ekegusii phonotactics. For instance, in the adaptation of /'eɪ.kə/ as [ɛ.ɛ.ka]; the V syllable is responsible for the reduction of the diphthong and the replacement of the schwa. So that the undominated markedness constraints *DIPH, *[REDUCED-V] and *CODA are relevant to account for the adaptation as well as ONSET although it is lowly ranked. Equally, on the faithfulness constraint IDENT-IODIPH, MAX-IOSEG, and DEP-IO(V) which forbid feature change, deletion and insertion respectively are appropriate constraints and they will be ranked as shown in table 3.

*CODA, *DIPH, *[REDUCED-V] >> MAX-IOSEG >> IDENT-IODIPH, DEP-IO(V) >> ONSET

Table 3

/'eɪ.kə/ ⟶ [ɛ.ɛ.ka] 'acre'

/'eɪkə/	*CODA	*DIPH	*[REDUCED-V]	MAX-IO_{SEG}	IDENT-IO_{DIPH}	DEP-IO(V)	ONSET
a. [eɪ.kə]		*!	*				
b. [ɛ.ɛk]	*!				*		*
c. ☞[ɛ.ɛ.ka]					*	*	**
d.[ɛ.ka.a]				*!	*	*	**

Table 3 has an English input /'eɪ.kə/ whose first syllable is a diphthong; it does not have an onset. Consequently, there is a repair whereby a syllable boundary in Ekegusii is introduced since diphthongs are not allowed in the language. As a result, candidate (c) is the most harmonic though it violates the low ranked IDENT-IO_{DIPH}, ONSET, and DEP-IO(V) constraints. Conversely, candidate (a) is the most disharmonic. It violates the high-ranked constraints of *DIPH, and *[REDUCED-V] which ban diphthongs and the schwa respectively. As for candidate (b), it violates the high ranked *CODA which forbids coda consonants. Lastly, candidate (d) does not fare well either. Though it does not violate any of the undominated markedness constraints, it violates the faithfulness constraints MAX-IO_{SEG} which Ekegusii ranks highly, hence, it does not survive (Moreton, 2012; Azhari, 2018; Widayati, 2016).

CV syllable structure

The CV structure has an onset consonant, a vowel peak, and a null coda. The CV structure is very dominant in Ekegusii. However, this is not unique because it is considered the most unmarked of all the syllable structures; therefore, cross-linguistically preferred (Blevins & Goldsmith, 1995). Traditionally, the CV syllable structure can be represented as follows:

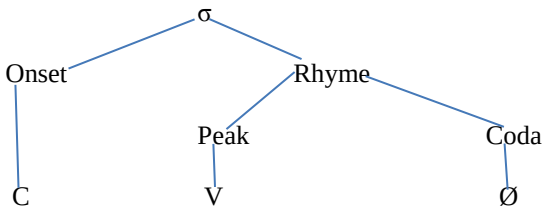


Figure 3. CV syllable structure

The figure indicates that onset has a consonant, the peak which has a vowel, and a null coda. The CV syllable structure is observed in the following borrowed segments.

English Input	Ekegusii Output	English Gloss
/'ba:θum/	[e.βa.tu.ru.mu]	'bathroom'
/'blæŋkɪt/	[o.βo.ra.ᵑge.ti]	'blanket'
/'beɪsn]/	[e.βe.se.ni]	'basin'
/'ʧɪmnɪ/	[e.ci.mu.ni]	'chimney'
/'kʌpəd/	[e.ka.βa.tɪ]	'captain'
/'kʌmpənɪ/	[e.ka.ᵐba.nɪ]	'company'
/kən'dʌktə/	[e.ko.ⁿda.ɣi.ta]	'conductor'
/'trænsfɜ:/	[e.tu.ra.ⁿsi.βa]	'transfer'
/'waɪə/	[e.wa.ja]	'wire'

From the data, it can be noted that virtually all the consonants can occupy the onset position. They include: plosives like: /t/, /c/ and /k/, prenasalized stops like /ᵐb/, /ⁿd/ and /ᵑg/, fricatives like /β/, /s/, /ⁿs/, /ɣ/nasals: /m/ and /n/ as well the trill liquid /r/ and the approximant /w/. Besides, it can be confirmed that the other consonants not manifested in the data occupy the onset position. However, plosives and fricatives are very prevalent. Again, this can be attributed to the fact that plosives and fricatives have low sonority relative to other categories hence, they make better onsets (Romani & Calabrese, 1998; Norris et al., 1997).

As already mentioned, OT tries to account for the CV syllable structure as follows. First, the universal markedness constraints will apply to determine the most harmonic outputs. The *CODA requires that syllables must not have codas; in the CV structure, this constraint is relevant. Secondly, the ONSET constraint which requires that syllables must have onsets. Unlike the V syllable structure which has an onset of fewer syllables, the CV syllable structure has an onset. Therefore, this constraint is relevant and applicable; but it must not be a complex onset. Thus, depending on the input *CO_{ONS} (consonant +obstruent), *CL_{ONS} (consonant + liquid) and *CN_{ONS} (consonant + nasal) are all appropriate constraints to militate against complex onsets. Thirdly, is *PEAK-C which dictates that the peak must be filled with a vowel. It forbids consonants from occupying the peak position. In the CV syllable, the peak is a vowel. Also, from the input, like 'balcony' ['bælkənɪ] adapted as [βarikoni], it can be noted that it has sounds not attested in the Ekegusii language. To account for their adaptation, the undominated markedness constraints *[LAT], *[b], and *[REDUCED-V] are proposed. Further, from the output, it can be noted that it allows feature change, insertion, and deletion which violate the faithfulness constraints. Thus, DEP-IO(V) and IDENT-$IO_{CONT/LAT}$ are relevant constraints that can evaluate the input. The constraints are ranked as follows:

*CODA, *PEAK-C, *[b], *[LAT], *[REDUCED-V] >> DEP-IO(V), IDENT-$IO_{CONT/LAT}$

Table 4

/'bælkənɪ/ ⟶ [βa.ri.ko.ni] 'balcony'

/'bælkənɪ/	*CODA	*PEAK-C	*[b]	*[LAT]	*[REDUCED-V]	DEP-IO(V)	IDENT-$IO_{CONT/LAT}$
a. ☞[βa.ri.ko.ni]						*	**
b. [ba.l.ko.nɪ]		*!	*	*			
c. [βa.ri.kon]	*!						**
d. [bæl.kə.nɪ]	*!		*	*	*		

Candidate (a) is the optimal form since it does not violate any of the markedness constraints ranked highly in the language. However, it violates all the other low-ranked faithfulness candidates thus survives minimally. On the other hand, (d) is the most disharmonic. It violates all the high-ranked markedness constraints like *CODA, *[b], *[LAT], and *[REDUCED-V] except *PEAK-C. Equally, candidate (b) does not do well either. It violates the *PEAK-C, *[b], and *[REDUCED-V] constraints hence, it is eliminated. Candidate (c) is less harmonic than the winning candidate. It violates the high ranked *CODA constraint; consequently, it is eliminated. From the evaluation, it can be noted that the *CODA, *PEAK-C, *[b], *[LAT], and *[REDUCED-V] constraints dominate all the faithfulness constraints which are not crucially ranked.

CGV syllable structure

The CGV structure has an onset consonant, followed by a glide than a vowel, and finally a null coda. The CGV structure is not very dominant in Ekegusii. Its structure can be represented as:

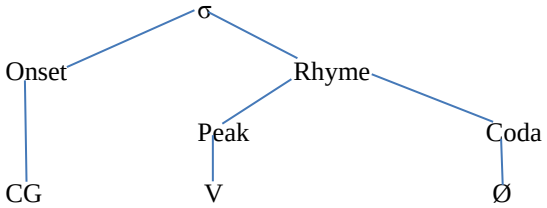


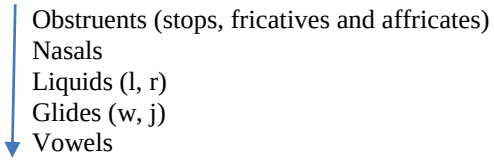
Figure 4. CGV syllable structure

The figure indicates that onset has two consonants, the peak which has a vowel and a null coda. The CGV syllable structure is observed in only three loanwords:

English Input	Ekegusii Output	English Gloss
/swɪʧ/	[e.swi.ci]	'switch'
/'swetə/	[e.swe.^{n}ta]	'sweater'
/kəm'pju:tə/	[e.ko.^{m}bju.ta]	'computer'

Ekegusii forbids consonant clusters. Where we have pre-nasalized stops typical of Bantu languages, these are considered single articulations and not clusters. It can be noted that the CGV syllable structure which occurs in Ekegusii is very restrictive. This means that not all consonants will combine to form the CGV in Ekegusii. Predictably, it is a consonant, followed by a glide than a vowel. Scholars have argued that in cases where languages allow clusters, there are restrictions on the type of sound to occur and the sequence with which they follow each other (Blevins & Goldsmith, 1995; Morelli, 2003). Besides, languages that allow the formation of onsets and codas show striking similarities (Ladefoged & Johnson, 2011). For instance, consonants in languages will prefer to form longer legitimate complex onsets than codas. The principle responsible for maximizing the onset is the Maximum Onset Principle (MOP) (Kahn, 2015).

The restriction that Ekegusii places on the CGV syllable structure are not unique. In fact, in most languages, it can be predicted that the second consonant in the onset is glide-like [w, j] while the first consonants could most likely be plosives or fricatives (Ladefoged & Johnson, 2011). What regulates this combination is the Sonority Sequencing Principle which states that a syllable's sonority increases from the beginning of the syllable onwards and decreases from the beginning of the peak onwards. So, phonemes can be profiled according to how sonorous they are about others. Sonority increases downwards as shown.



Any onset that reverses the direction of increasing sonority like [*mk] and [*rb] or decreasing sonority from peak [*lj] and [*km] are disallowed. Ekegusii adheres to this sonority sequencing principle, although very few loanwords manifested the glides [w, j]. The CGV syllable structure in Ekegusii can be accounted for using OT's constraints. It appears the overriding constraint is the fact that onset is formed by a consonant followed by a glide. Therefore, the constraint *CG which is a consonant and a glide can be proposed and incorporated in the universal markedness constraints, together with the *CODA which is undominated. Also relevant is the Sonority Sequencing Principle which Ekegusii adheres to hence, the markedness constraint *SSP can be proposed to evaluate the outputs further. Thus, from a loanword like 'switch' /swɪʧ/ which is adapted as [e.swi.ci], other faithfulness constraints which are proposed to evaluate the candidates further include, DEP-IO(V) which forbids insertion, and MAX-IO$_{SEG}$ which militates against deletion. Therefore, these constraints interact to determine the most acceptable form and they are ranked as:

*CODA, *SSP >> MAX-IO$_{SEG}$ >> DEP-IO(V), *CG

Table 5
/swɪʧ/ ⟶ [e.swi.ci] 'switch'

/swɪʧ/	*CODA	*SSP	MAX-IO$_{SEG}$	DEP-IO(V)	*CG
a. ☞[e.swi.ci]				*	
b . [swɪʧ]	*!				
c. [e.wsi. ci		*!		*	*
d. [e.si. ci]			*!	*	

Candidate (a) is the most harmonic. It only violates the faithfulness constraints DEP-IO(V) which forbids insertion, surviving optimally because markedness constraints are ranked higher than the faithfulness constraints in this case. As for (b), it violates the high ranked undominated *CODA constraint, as a result, it does not survive. Candidate (c) reverses the sonority sequence which Ekegusii ranks high besides violating the faithfulness constraints; DEP-IO(V), thus it is eliminated. Candidate (d) does not do well either. Although it does not violate any of the high-ranked markedness constraints like *CODA and *SSP, it violates MAX-IO$_{SEG}$ which Ekegusii ranks above other faithfulness constraints. Thus, it is also eliminated.

Another example is the loanword /kəm'pju:tə/ 'computer' which is mapped as [e.ko.^{m}bju.ta] in Ekegusii. With the presence of the glide /j/, there is direct mapping. However, other markedness constraints apply to evaluate the input. They include: *CODA which forbids consonants at the coda and in the absence of a schwa the undominated *[REDUCED-V] is also relevant to prohibit its occurrence. Further, Ekegusii prohibits post-nasal devoicing; therefore, *NÇ is another relevant markedness constraint. The output violates several faithfulness constraints which include: IDENT-IO$_{NAS/VOI/LONG}$ and DEP-IO(V). The constraints dominate each other as follows:

*[REDUCED-V], *CODA >> IDENT-IO$_{NAS/VOI/LONG}$, DEP-IO(V)

Table 6
/ kəm'pju:tə / ⟶ [e.ko.^{m}bju.ta] 'computer'

/kəm'pju:tə/	*[REDUCED-V]	*CODA	*NÇ	IDENT-IO$_{NAS/VOI/LONG}$	DEP-IO(V)
a. ☞[e.ko.^{m}bju.ta]				***	
b. [kəm.pju:.tə]	*!*	*	*		
c. [e.ko.^{m}bɪ.u.tə]	*!			***	*
d. [e.ko.pju.ta]			*!		

In table 6, it is indicated clearly that Ekegusii language pays more attention to the structural well-formedness of the loanwords than the faithfulness of the output to input. Thus, candidate (a) is the most harmonic; it does not violate the high-ranked markedness constraints like allowing the occurrence of the schwa, coda consonants, and postnasal devoicing. On the other hand, (b) is the most disharmonic. It violates all the high-ranked undominated constraints which are *[REDUCED-V] and the *CODA which ban codas and the schwa as well as *NÇ which prohibit post-

nasal devoicing in the Ekegusii. Consequently, it is eliminated. Candidate (c) and (d) are eliminated because each of them violates *[REDUCED-V] and *NÇ respectively which are ranked highly in the Ekegusii language. Besides, they also violate the low-ranked faithfulness constraints limiting their chances of surviving (Adriaans & Kager, 2010; Goldrick, 2004).

The CGV syllable structure restricts the way borrowing occurs in Ekegusii in that it governs the cluster consonants that are allowed in the language. Unlike English which is elaborate in the cluster consonants by allowing various combinations, the CGV Ekegusii syllable structure dictates that whatever is adapted must be a consonant followed by a glide specifically /w/ or /j/ then a vowel. Any other illegal structure is repaired accordingly to be in line with the language's phonotactics.

4 Conclusion

This article examined how the syllable structure constrains Ekegusii borrowing. Based on the results that have been discussed, the following conclusion is drawn. Ekegusii language displays three syllable types; V syllable type, the CV syllable type, and the CGV syllable type. Specifically, the V syllable type constrains borrowing in Ekegusii in that it triggers repair processes like syllabification that ensure illicit structures like diphthongs do not occur in Ekegusii borrowing. Some of the constraints posited include the undominated *CODA, DIPH, *[g], *PEAK-C, and ONSET. As for the faithfulness constraints, MAX-IOSEG and DEP-IO(V) are suggested. The CV syllable type is another pattern realized in the Ekegusii syllable structure. Similarly, the *CODA which requires that syllables must not have codas is posited. In addition, the ONSET constraint which requires that syllables must have is suggested since the CV has onset. Other relevant constraints include *COONS, *CLONS, and *CNONS, all of which prohibit complex onsets since Ekegusii syllable forbids cluster consonants as well *PEAK-C. Other undominated markedness constraints which are derived from the mapping of the input-output include *[LAT], *[b], and *[REDUCED-V]. As for the faithfulness constraints DEP-IO(V) and IDENT-IOCONT/LAT are invoked. Thirdly, CGV syllable structure restricts the way borrowing in Ekegusii occurs in that it governs the cluster consonants that are allowed in the language. Unlike English, the donor language which allows cluster consonants, the CGV syllable type in Ekegusii dictates that whatever is adapted must be a consonant followed by a glide specifically /w/ or /j/ then a vowel. Any other illegal structures are repaired accordingly to be in harmony with the language's phonotactics.

Conflict of interest statement
The author declared that he has no competing interests.

Statement of authorship
The author has a responsibility for the conception and design of the study. The author has approved the final article.

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