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# 59 Ghost Consonants and Lenition in Leggbo

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## Abstract

Leggbo<sup>1</sup> has two classes of consonants – fortis and lenis consonants. The fortis consonants are articulated with more force and they occur in stronger contexts than the lenis consonants which are articulated with relatively less force and are therefore found in weak environments. Following the Phonological Strength Hierarchy (Katamba 1989), *stops* are the strongest sounds and *approximants* the weakest. In Leggbo, the process of change from stop articulation through frication to deletion has left ‘ghost’ consonants in the language. Such consonants which were originally stops are today fricatives, with an option of a complete drop. The traces of their original forms are evident in the progressive aspect which is marked by fortition and suffixation.

## 1.0 Introduction

The Leggbo language is a minority language of the *Upper Cross* sub group (Faraclas 1989, Grimes 2000), spoken in the Cross River State of Nigeria by about 60,000 people living in Abi and Yakurr Local Government Areas of the state. The speakers are called ‘Aggbo’, and they live in about six villages, each of which has a variety of its own. The six varieties are Letatama (spoken in Adadama), Lebamma (spoken in Itigidi), Lekuleku (spoken in Ekureku), Lemmabana (spoken in Immabana), Leyigha (spoken in Assigha) and Lenyima (spoken in Inyima). The variety described in this paper is the Letatama variety.

Since the evidence for the ghost consonants are drawn from the verb in this work, an overview of the Leggbo verb structure is in order here. Leggbo verbs are basically either monosyllabic (as in 1a-f) or bi-syllabic (as in 1g-j). Structurally they are made up of many constituents. The basic verb pattern is an obligatory stem which in turn has an obligatory root. The verbs have the syllable shapes given in 1.

1.	a.	CV <sup>2</sup>	e.g.	du	‘beat’
	b.	CVV	e.g.	baa	‘marry’
	c.	CCV	e.g.	ddu	‘whisper’
	d.	CVC	e.g.	dum	‘bite’
	e.	CVVC	e.g.	kwòol	‘groan’
	f.	CCVC	e.g.	mmèn	‘swallow’
	g.	CV.V	e.g.	bù.a	‘follow’
	h.	CVV <sub>y</sub> V	e.g.	víyá	‘wedge’
	i.	CVCCV	e.g.	dakka	‘dream’



j.	CVCVCV	e.g.	juŋazi	'scare'
			kakaŋa	'be hard'

These verbs may take on the pluractional suffix *-azi*, sometimes with potential assimilation to the vowels (see section 4.2.1 for more details). In the data in 2b, the first vowel of the suffix assimilates with the last vowel of the root. All verbs that have plural subject or object take this suffix. Verbs that require multiple acts also take this suffix.

2.	a.		b.	
	si	'do'	siazi	'do many things/times'
	du	'beat'	duazi	'beat many things/times'
	bo	'be enough'	boozí	'be enough many times'
	ba	'ask'	baazi	'ask many times/people'
	zeè	'see'	zeezi	'see many times/people'
	num	'take'	nùmazi	'take many things/times'

Furthermore, some verbs are intrinsically pluractional and hence the *-azi* suffix forms part of their roots. Such verbs refer to actions that require either one continuous act or a series of acts. Again note the assimilation of the /a/ in 3.

3.	ỳghozi	'bluff'
	kkpeezi	'rush someone'
	mj̀elezi	'be slippery'
	juŋazi	'scare, frighten a child as in play'
	gwàyazi	'walk fast'

Basically, majority of Leggbo verbs as has been mentioned are either monosyllabic or bi-syllabic. However, there are tri-syllabic verbs like the examples in 1j. Such verbs have either the *-azi* suffix, or the root is reduplicated.

The CVV verb has a single long vowel. The CV.V can be analysed as a sequence of vowels. Sometimes there is a consonant between the vowels (as in 1h above), even though the articulation of the consonant is rather soft. In 1g, there is no consonant between the vowels, and I have used a /./ to separate the syllables. The assumption here is that there was a consonant in that position historically and there is still a slight trace or glimmer of it in that position now.

This paper argues that there are ghost consonants in such Leggbo verbs as in 1g, and that the consonants disappeared through two operations: *lenition* and *deletion*. The *lenition* and *fortition* processes (see section 2) provide evidence for what is represented in the /./ position. These arguments are supported with evidence from the behaviour of the voiced velar stop in weak and strong syllabic environments (I return to this point in section 4).



The paper is discussed in five sections. In section 1, a description of the Leggbo verb structure as background is presented. Section 2 discusses the lenition and fortition prosodies as they operate in the language. Section 3 presents the ghost context and how they work as 'place holders' for the ghost consonants. In section 4, the support for the ghost consonants is given, and concluding remarks are given in section 5.

## 2.0 Lenition and Fortition Prosodies in Leggbo

Lenition is a phonological process related to consonantal strength, and it manifests as an opening of consonantal stricture. This strength is measured on a scale and it can pass through a series of stages which can lead to ultimate deletion of the segment. It involves three processes: vocalization, i.e. weakening to glide or liquid (as in  $p \rightarrow w$ ); spirantization, i.e. the development of a plosive into a fricative (as in  $t \rightarrow s$ ); debuccalization, i.e. loss of supra laryngeal gesture (as in  $s \rightarrow h$ ). The strongest consonants are those at the extreme end of the stricture, while the weakest have the widest opening and may be the last stage before deletion (Harris 1994:120). Thus, the degree of strength manifesting in the level of opening of the consonantal stricture leads to the articulation of consonants with certain peculiar qualities. Voiceless stops have the strongest obstruction and approximants have the weakest. Other kinds of sounds (using *Manner of Articulation* as parameter) fall in between. Using *Sonority* as a parameter, voiceless sounds are stronger than voiced sounds. Then following a combination of these parameters the Phonological Strength Hierarchy as projected in Katamba (1989:107) is used as a guide in 4.

4. stop > affricate > continuant > nasal > approximant

Although weakening does not always lead to deletion, the ultimate form of weakening is the absence of any obstruction at all, a situation which leads to a deletion of the sound.

Lenition in Leggbo affects all consonants. Perceptually in Leggbo, it involves an opening in the stricture of the consonantal articulation which leads to a reduction of the consonants and a kind of compensatory lengthening of the following vowel which also has a kind of breathy quality.

The lenition process in Leggbo contrasts with the fortition process, where fortition in the strength hierarchy involves strong, tense movements associated with the consonants. Perceptually, it involves extra compression of the articulators in the consonants characterised by obvious consonantal lengthening followed by a shortened vowel. In addition to these features there is also an unusual outburst for Obstruents.

The lenition and fortition prosodies are features of the whole word in Leggbo. While the lenis consonants are shortened with lengthened following vowels, the fortis consonants are lengthened with following shortened vowels. Both processes occur only in initial and coda positions. All consonants in Leggbo



have fortis forms except /vj/. A few consonants however, do not have lenis forms. /ff/, /ppj/, /ddz/, /ggw/ occur only in fortis forms.

There are two classes of consonants in Leggbo. (Details of the acoustic investigations on the fortis/lenis contrast will be published at a later date)<sup>3</sup>. So far however, it has been ascertained that closure durations for the fortis consonants are twice those of their lenis counterparts. The pressure pattern for the fortis consonants have two clear peaks while the lenis consonants have single peaks. The fortis consonants are articulated with greater strength than the lenis ones. One can conclude at this point given these points that the difference between these classes of consonants is closely allied to germination, but there are indications of more going on than mere duration. Although the fortis consonants are so clearly allied to germination, the use of fortis/lenis labels is quite appropriate here given that :

- i. there is widespread occurrence of the contrast in the language
- ii. that the prosody extends beyond the segment, and it is a feature of the whole word, particularly as it affects the vowels following the fortis/lenis consonant
- iii. there is more to the prosody than duration.

The distinction between lenis and fortis consonants has both lexical and grammatical functions. Lexically, its distinctive function is widespread as the following verbs in 5 show :

5.	a.		b.	
	tuù	'dance'	ttù	'stampede'
	duù	'beat'	ddu	'whisper'
	kpaà	'be strict'	kkpa	'pay'

It is observed that in the data in 5, the lenis set on the left column (5a) has long vowels. These vowels also have some breathy quality. The fortis set on the right column (5b) has short vowels.

Grammatically, the progressive aspect is marked through fortition and suffixation as shown in 6.

6.	a.		b.	
	e níi	'he gave'	e nníi	'he is giving'
	e káámi	'he helped'	e kkámmii	'he is helping'
	e yááli	'he paddled'	e yyállíi	'he is paddling'

It is also observed again that the lenis set on the left column in 6a, has long following vowels, while the fortis set in the right column (6b) also has long following vowels. This is because although there is a constraint against \*CCVV sequences in lexical entries (compare with 5b), long vowels after fortis consonants like those in 6b, can only be derived by concatenation after a geminate in the



progressive where CV verbs take *-i* suffix. This explains the lengthened vowels in this set of words after the fortis consonants.

The grammatical function of fortition also produces other interesting changes. For instance, it can devoice fricative stops in initial positions as shown in 7b. In medial positions, it strengthens laterals, fricatives and glides to fortis stops as shown in 8.

7.	a.		b.	
	veè	'pick up'	ffeï	'picking up'
	zo.ò	'look for'	ssokki	'looking for'
	vàa	'butcher'	ffài	'butchering'
8.	a.		b.	
	bila	'climb'	biddi	'climbing'
	ppjà.a	'arrest'	ppjàkki	'arresting'
	kkuwa	'kneel'	kkukki	'kneeling'

### 3.0 The ghost syllabic environment and the 'place holders'

The ghost environment is defined as a weak context, which has only a trace of a consonant, by way of some kind of syllable break. The vowel in such contexts appear unusually long. This class of CV.V forms as in verbs contrasts with CVV verb forms as the examples in 9 show. The V.V context constitutes the 'ghost' syllabic environment. Such contexts have a constant variation with the velar fricative  $\gamma$  (which is an allophone of the voiced velar stop /g/ in the language). The presence of a consonant in this position can be confirmed easily through a fortis articulation in which the consonants are strengthened back to Stops in the progressive aspect. The minimal pairs in 9 show a distinction between verbs with the ghost consonants and verbs with long vowels. Note that while the long vowels merely have fortition and suffixation, the ghost consonants actually surface as stop consonants in the progressive. Note also that the verbs with the ghost consonants alternate between  $\emptyset$  and  $\gamma$ .

9.	a.		b.	
	dòò	'be heavy'	ddoï	'being heavy'
	dò.ò~dòyo	'sleep'	dòŋji	'sleeping'
	dzaà	'urinate'	dzaï	'urinating'
	dza.a~dzaya	'suck breast'	dzakki~dzabbi	'sucking'
	bba	'block'	bbaï	'blocking'
	bba.à~bbayà	'slap'	bbakki~bbabbi	'slapping'

The weak contexts in which the velar fricative is produced has an option of a complete drop. It serves synchronically as a kind of 'place holder'<sup>4</sup> for the voiced stops which surface fully only in progressive forms marked by a stronger context of fortition.



#### 4.0 Support for the Ghost Consonants

The evidence and support for the ghost consonants are here provided using the behaviour of the voiced velar stop /g/ in both weak and strong environments. Lenition in the noun prefix and fortition in the progressive aspect of verbs are used to illustrate the points being made here.

#### 4.1 Lenition

The articulation of some consonants in weak contexts helps to reduce the strength of such consonants, such that stops are gradually reduced to fricatives and finally deleted completely. This development is illustrated using the instability of the voiced velar stop in Leggbo, caused by a wide range of variation.

##### 4.1.1 g-lenition and truncation

The voiced velar stop has a fortis form which occurs initially and medially /gg/. In these positions, it is stable and does not allow the kind of variation that its lenis counterpart allows. It occurs in such words as those given in 10.

10.	ggama	'perch'
	ggula	'uproot'
	eggò	'cloth'
	aggà	'needle, nail'

The lenis voiced velar stop /g/ has three allophones [g], [ɣ], [h] none of which occurs in word final position. [g] occurs in both initial and medial positions. In these positions, it is also stable, and does not alternate with any of its allophones. Some examples are given in 11.

11.	ègidi	'beans'
	ngòm	'foolishness'
	gàdda	'step over'
	gábbí	'perch on'
	geèm	'be big'
	gòmzì	'be foolish'

Like the fortis form, in initial position of root forms, it is stable and does not alternate with any variant. However, as a noun prefix, and in some medial positions, it is quite unstable. It occurs mostly as a noun prefix with the front vowels /e ε i/ in initial position as ge ge gi. Although Leggbo has some prefixless nouns, majority of the nouns have the shape CV-(li- le- lε gi- gε), V-(i- ε- e- a- ), η-(n- η- m- ɲ-). The /l/ of the CV prefix is more stable, but the /g/ is not so



stable as it has a number of options as shown in the data in 12. In this initial prefix position, it can be weakened to a velar fricative with an option of a complete drop.

The coda is traditionally identified as the classic site for consonantal weakening, in terms of syllable structure in most languages (Harris 1992:394). The Leggbo case as the examples in 12 show, presents the case of lenition in onset position.

- |     |              |                   |
|-----|--------------|-------------------|
| 12. | yíttù ~ ítù  | 'life'            |
|     | yèdī ~ èdī   | 'speech, trouble' |
|     | yètòò ~ ètòò | 'work'            |

In medial position, it alternates with [h], with a further option of a complete drop as shown in 13.

- |     |                       |                              |
|-----|-----------------------|------------------------------|
| 13. | dzáyá ~ dzáhá ~ dzá.á | 'suck'                       |
|     | bbáyá ~ bbáhá ~ bbá.á | 'slap, tie wrapper, hide'    |
|     | bàya ~ bàha ~ bà.a    | 'boil something on the fire' |

The velar stop in these two positions is reduced to a fricative as the examples in 12 and 13 show. In initial position as a prefix and in medial position, the voiced velar stop is therefore highly unstable. Its alternation between a Stop, a Fricative and a complete drop makes it so unstable. The synchronic relevance of this instability of the sound caused by such alternations in both initial and medial positions are indications of its movement on the Strength Hierarchy (see 14) involving spirantization.

14. Stop > Fricative > ø

## 4.2 Fortition

The strength of articulation involved in the fortition process appears to have preserved the consonants in the positions where there is doubt as to the nature of the segments in the ghost environments. The grammatical function of this process provides the evidence for this problem. The progressive aspect discussed in the next section illustrates the point.

### 4.2.1 Progressive aspect

The progressive aspect is formed in two ways, one of which is the addition of -azi suffix which is also a pluractional suffix (see also section 1). The data in 2b and 15b show the pluractional suffix on verbs. There is some kind of semantic overlap between the two grammatical functions in the verbs whose progressives are formed with the addition of the pluractional suffix. The -azi suffix does not condition any fortition of the consonants.

- |     |       |         |         |            |
|-----|-------|---------|---------|------------|
| 15. | a.    |         | b.      |            |
|     | ttáli | 'untie' | ttálázi | 'untying'  |
|     | bíní  | 'carry' | bínázi  | 'carrying' |



vili 'cut'	vīlazí 'cutting'
------------	------------------

However, a majority of the verbs form the progressive by fortition of the consonant and suffixation of -i. The wide range of verb patterns presented in 1a-i mark their progressive by fortition and -i suffixation, but in slightly different manners as shown in 16-22, where the behaviour of the different verb patterns are presented.

16. C(C)V verbs become CCV-i

a.	b.
du 'beat'	ddui 'beating'
ba 'tie'	bbai 'tying'
bba 'seal'	bbai 'sealing'
tto 'cry'	ttoi 'crying'

17. CVV verbs become CCV.

a.	b.
baà 'marry'	bbai 'marrying'
weè 'swim'	wwèi 'swimming'
dòdò 'be heavy'	ddoi 'being heavy'
bòbò 'heal'	bboi 'healing'
làa 'rub off'	llai 'rubbing off'

In line with the constraint of long vowels after fortis consonants, the long vowels in these verbs (17b), become shortened.

18. C(C)VCCV verbs become C(C)VCCV.

a.	b.
síní 'leak'	síní 'leaking'
ddòmò 'wet'	ddòmmi 'wetting'
dzàṅṅa 'quarrel'	dzàṅṅi 'quarrelling'
kkana 'imitate'	kkanni 'imitating'

These verbs form their progressive by the fortition of the second C.

19. C(C)VyV verbs become C(C)VCCV.

a.	b.
víiyá~víihá 'wedge'	víkkí 'wedging'
kpááyá~kpááhá 'lock'	kpákkí 'locking'
kpééyé~kpééhé 'announce'	kpékkí 'announcing'
dóóyó~dóóhó 'sleep'	ddóṅṅí 'sleeping'
bbáyá~bbáhá 'slap'	bbákkí 'slapping'
kkóyó~kkóhó 'cuddle'	kkókkí 'cuddle'



kkòyò~kkòhò 'eye someone'      kkòkki 'eying one'

It can also be observed that all the verbs in 19a with /ɣ/ have a variation with /h/. They can also be a further variation without the consonant at all like the set of verbs in 13.

20. C(C)VIV become C(C)VCCV.

a.		b.	
ddòlò	'draw'	ddòddi	'drawing'
bàli	'step on'	bàddi	'stepping on'
bbòli	'peal'	bbòddi	'pealing'
fèle	'germinate'	fèddi	'germinating'
bbàla	'remember'	bbàddi	'remembering'
bbòli	'peal'	bbòddi	'pealing'

21. C(C)VwV become C(C)VCCV.

a.		b.	
kùwa	'open'	kùkki	'opening'
duwa	'hide'	dubbi	'hiding'
kkuwa	'kneel'	kkukki	'kneeling'

Note that -i suffix can replace the final vowel of the verb root if the verb ends in a vowel other than /i/. Laterals can be strengthened to stops as seen earlier in 8 and in the examples in 20. Like the laterals, semi vowels can also be strengthened by fortition to fortis stops. An important point to note here is that both the C(C)VɣV, C(C)VIV and C(C)VwV behave like the C(C)VCV verbs (see the data in 18, 19, 20 and 21).

22. C(C)V.V become CVCCV.

a.		b.	
zo.o	'find'	sokki	'finding'
zu.u	'live'	sukki	'living'
zε.ε	'walk'	zεŋŋi	'walking'
ze.e	'see'	zemmi	'seeing'
bù.a	'follow'	bùkki	'following'
du.a	'hide'	dubbi~dukki	'hiding'
mmi.a	'squeeze'	mmikki	'squeezing'
dda.i	'lick'	ddakki	'licking'
nnu.i	'push'	nnukki	'pushing'
kkwò.i	'pack'	kkwòŋŋi	'packing'

The CV.V verbs in 22 do not behave like the C(C)V and CVV verbs by mere fortition of the initial consonant and addition of -i suffix as seen in the examples in



16, 17. Rather, fortis stops surface in these contexts with the strength of the fortition. The C(C)V.V verbs behave rather like C(C)VCV verbs pointing to the fact that they originally had the same shape (compare 18 and 22).

In summary the, C(C)VCV, C(C)VIV, C(C)VwV, C(C)VyV, C(C)V.V verbs become C(C)VCCV in the progressive. That the C(C)V.V verbs behave like all others with a C in that context is a strong indication that an intervocalic consonant which surfaces in this process of fortition associated with the progressive aspect is part of the underlying form of the verb root.

### 5.0 Conclusion

The behaviour of the voiced velar stop in weak environments, where it is reduced to a continuant and in strong environment, where it surfaces as a stop provides us with evidence that there are consonants in the ghost environments. The wide variety of stops in the fortis environment can be explained as some kind of assimilation, but the relationship between the geminate consonant stops, their reduction and/or disappearance in weakened environments is obvious.

The consonants /y h/ are 'place holders' which synchronically provide some kind of trace for consonants that once occurred in these positions in the language. That the consonants found in ghost environments (V.V) surface as geminate stops in progressive formation in the same way as other consonants in CCVCV verbs is evidence that there is a connection between the lost consonants, these 'place holders' and other consonants in the system synchronically.

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<sup>1</sup> Until now, it was written as 'Legbo', but following work in progress by Larry Hyman and others on the language and the realization that *fortition* is a distinctive process with a high lexical and grammatical functional load, we represent it as *Leggbo*.

<sup>2</sup> Leggbo has three contrastive tones – H(igh) M(id) L(ow). In the data here, I have marked only the H and L tones.

<sup>3</sup> I am grateful to Ian Maddieson and Julie Larson of UC Berkeley for this preliminary information on the acoustic investigations on the fortis/lenis contrasts.

<sup>4</sup> I owe this idea to Larry Hyman.