

A Phonology of the Məkaá Language

by

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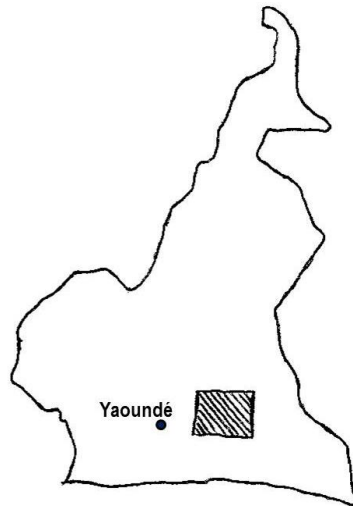
This paper was modernized in 2012 using Unicode fonts and IPA characters.

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0. Introduction

The Məkaá language is a member of the ‘Maka-Njem Group’ identified by Guthrie as ‘Makaa (A 83)’. It is a Bantu language spoken in the Haut Nyong department in the Eastern Province of the United Republic of Cameroon (see map 1). The people number about 70,000.



Map 1: Area in Cameroon where Məkaá is spoken

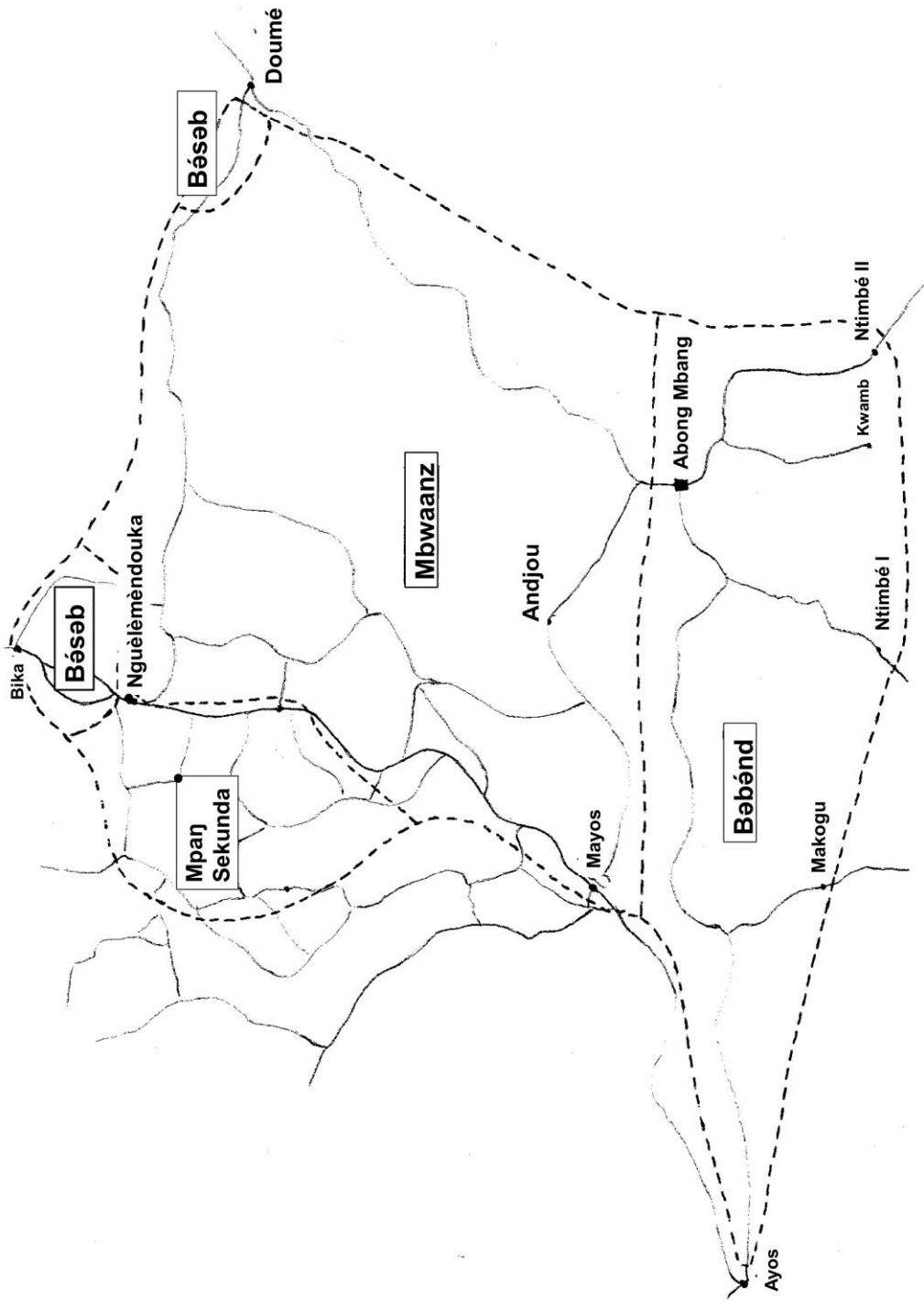
The Məkaá language is comprised of four main dialects, the Bəbənd, the Mbwaanz, the Mpaŋ Sekunda, and the Bəsəp (see Map 2)¹. The present phonology is of the Mbwaanz dialect and more specifically of the area along Ndjonkol (Abong Mbang-Mayos) road. The Mbwaanz dialect was chosen because it is mutually intelligible by all the other dialects, it is the one spoken by the largest number of people (close to half the total population), and it is geographically the most central. For a further discussion of the dialect situation the reader may refer to a paper by the same authors entitled ‘The dialect situation of the Makaa language’.

¹ This map was adapted from a map of the United Republic of Cameroon (scale 1/100.000), drawn and published by the Institut Géographique National, Centre Yaoundé (1ère edition, 1972).

We have carried out our research² primarily in the village of Andjou, 25 kms west of Abong Mbang along the Ndjonkol. As far as we know the only previous linguistic information written about the Məkaá language was done by Marie-Anne Toreton, a Catholic sister, who wrote a brief grammatical sketch and a 52-page lexicon. Some anthropological work has been carried out by Peter Geschiere, an anthropologist at the Free University of Amsterdam. He has published several articles and a doctorate dissertation on the Məkaá people. Keith Beavon, a member of the Société Internationale de Linguistique, has done research in the Koonzime language, a bordering language to the south and also a member of the Maka-Njem group. He has written a phonology (1977) and several papers on various aspects of the grammar, some published and some in manuscript form. Patrick Renaud (1976) has written a phonology and a morphology of the nouns of the Bajele language, a member also of the same family. Bajele is spoken by the pygmies in southwest Cameroon around Kribi and Lolodorf and is classified by Guthrie as A 80.

² Research was done under research authorizations Nos. 237 (1978) and 18 (1981), issued by the General Delegation for Scientific and Technical Research.

To our many Məkaá friends we owe a big thanks, especially to Zé Mpouéné Saturnin, Nguélé Gregoire and Mikouas Henri who gave their time to help us learn the language and gather the necessary data. The help and motivation of the members of the 'Association des Promoteurs des Recherches Linguistiques et de la Conservation du Patrimoine Culturel du Peuple Məkaá' also proved an encouragement and stimulation for us. We are indebted to Dr. Ursula Wieseman for her comments and helpful criticisms on the organization of the paper. Soeur Marie-Anne Toreton also greatly helped and encouraged us with her observations on the language, both written and oral. To all these people we express our sincere thanks.



Map 2: Dialects of Məkaá

1. Inventory of Phones

The Mākaá language has the consonantal and vocalic phones shown on the following charts:

Chart 1: Inventory of Consonantal Phones

		Labial	Alveolar	Palatal	Velar	Labio- velar
STOPS	<i>voiceless</i>		t	c cw cj	k kw kj	kp
	<i>voiced</i>	b, p̣ bw bj	d, ṭ dw dj	ɟ ɟw ɟj	g, ḳ gw gj	
	<i>prenasalized voiceless</i>	mp mpw mpj	nt	ɲc ɲcw ɲcj	ŋk ŋkw ŋkj	
	<i>prenasalized voiced</i>	mb, mp̣ mbw mbj	nd, nṭ ndj	ɲɟ ɲɟw	ŋg, ŋḳ ŋgw	
NASALS		m mw mj	n	ɲ ɲw	ŋ ŋw	
FRICATIVES	<i>voiceless</i>	f fw fj	s	ʃ ʃw ʃj		
	<i>voiced</i>	v	z	ʒ ʒw		
LATERALS			l lw lj			
SEMI- CONSONANTS		w		j	h	

Chart 2: Inventory of Vocalic Phones

		FRONT				CENTRAL				BACK			
		oral		nasal		oral		nasal		oral		nasal	
HIGH	close	i	i:	ĩ	ĩ:	ə	ə:			u	u:		ũ:
	open	ɪ											
HIGHER -THAN- MID	close	ɛ	ɛ:										
MID	close	e	e:							o	o:		
	open	ɛ	ɛ:	ẽ	ẽ:	a	a:	ã	ã:	ɔ	ɔ:	õ	õ:

Sequences: ia, uo, ao, au, aw, a:w, ɛw, əw, ej, ow

2. Interpretation of Ambiguous Clusters

Some of the consonantal and vocalic phones are ambiguous as to their phonemic interpretation. In the following sections, we will discuss whether consonantal clusters are single phonemes or sequences of phonemes when they involve a stop preceded by a homorganic nasal. Also, we will discuss the interpretation of palatal and labial phones following consonants, following vowels, and intervocalically. Finally, we will discuss whether sequences of similar vocoids are one long or two short vowels.

2.1. Interpretation of Prenasalized Stops

All stops can be preceded by a homorganic nasal, resulting in the following clusters: [nt, njc, ŋk, mb, nd, nj, ŋg]. [mp] also occurs, even though [p] does not occur except in [mp] and [kp]. These may be interpreted as either consonant sequences or as unit phonemes.

One might interpret these as sequences for the following reasons:

- 1) The nasal-oral cluster may have both a voiced segment and a voiceless segment, such as in [mp].
- 2) Both nasals and oral stops occur independently, except [p].
- 3) Handling these as sequences would simplify the phoneme inventory.
- 4) A morpheme division can occur between the nasal and the oral segments of a sequence, as illustrated in the way some nouns form their plurals. Examples:

[ɲ-ɲôŋ]	‘stranger’	[o-ɲôŋ]	‘strangers’
[m-bwô]	‘arm’	[mə-bwô]	‘arms’

(In all examples low tone is unmarked.) One of the prefixes on class 1 and class 3 nouns is a homorganic nasal. Thus, in the above words, the radicals are [ɲôŋ] and [bwô], with a homorganic nasal prefix in the singular, and the plural prefixes *o-* and *mə-* respectively. This puts a morpheme boundary between the nasal and oral segments.

However, the following arguments lead us to interpret the prenasalized stops as unit phonemes.

- 1) Prenasalized stops have the same distribution as their oral counterparts (occurring word initially, medially, and finally). Examples:

[kwan] ³	‘bee’	[ŋkwan]	‘wedding gift’
[bû]	‘break’ (vb)	[mbû]	‘year’
[ɲoŋ]	‘sky’	[ɲɲôŋ]	‘stranger’
[kwé:kʰ]	‘lengthen’ (vb)	[kwé:ŋkʰ]	‘purify’ (vb)
[ŋkótʰ]	‘without pity’	[ŋkóntʰ]	‘kind of mouse’
[kanda]	‘tale’	[nada]	‘stick’ (vb)

³ Reminder: low tones are unmarked in the phonetic transcriptions.

- 2) There are no unambiguous sequences of consonantal phones, such as [st] or [kl]. In fact, when two consonantal phones do occur together across word boundaries or in reduplicated words, a transitional [ə] is inserted, showing that consonants cannot be pronounced in sequence.
- 3) Interpretation of the prenasalized stops as sequences would complicate the syllable structure.
- 4) Due to a gap in the phoneme inventory, as has been mentioned earlier, there is no phoneme /p/ that could be combined with the phoneme /m/ to form the sequence /mp/, which does occur. Therefore must be posited as a phoneme. The phoneme /p/ does occur in one other dialect. Borrowed words containing /p/ are usually pronounced with an /f/ instead.

2.2. *Interpretation of Labial and Palatal Phones*

Many consonantal phones can be labially or palatally released, as illustrated in charts 4 and 5. This labial or palatal release can be interpreted either as a semi-consonant or as a vowel. These releases are phonetically contoid rather than vocoid because they never carry tone contrasting with the following vocoid. Therefore they are interpreted as consonants, or rather, as semi-consonants, /w/ and /j/. This also avoids long vowel sequences. There are ambiguous sequences that could result in a VV or VVV sequence if the releases were interpreted as vowels, such as [b^ha] /bja/ ‘give birth’ (vb) and [k^weⁱ] /kwej/ ‘find’ (vb).

Once the releases have been interpreted as semi-consonants, a second question arises. Are these semi-consonants, /w/ and /j/, and the preceding consonants sequences of phonemes, or unit phonemes? They are interpreted here as sequences of two phonemes for the following reasons:

1) The sequences do not have the same distribution as unit phonemes. They occur syllable-initially, but not syllable-finally, whereas the unit phonemes occur both initially and finally. Also there are gaps in the distribution of the palatal and labial sequences on the phone chart. Not all the unit phonemes have a palatal and a labial counterpart. (As has been mentioned previously, all the stops do have prenasalized counterparts.) /w/ does not occur after alveolars (except /l/, and /d/ in one example [dwo] d-wo ‘cl. 5 prefix – your’); nor does /w/ occur after /v/, which has a limited distribution anyway. Like /w/, /j/ does not occur after /v/ or after alveolars, except /l/ and /d/, such as [ɲkwindʲe] ‘elbow’. In some rare cases, /j/ does occur after palatals, such as /cj/, /jj/, and /ʃj/. Examples:

- | | | |
|---------|------------------------|-----------------------------------|
| [cʲúŋ] | ‘voice, neck’ | |
| [ʃʲuga] | ‘key, cap (of bottle)’ | contrasting with [ʃuga] ‘stopper’ |
| [ʃʲûm] | ‘tongue’ | |
| [ʃʲê] | ‘kind of tree’ | |

2) There are many occurrences of Cw and Cj (more than of prenasalized stops) so that interpreting these as units would greatly increase the phoneme inventory. /w/ and /j/ already exist as separate phonemes.

Another question that might be raised regarding palatal phones is whether palatal consonants are really palatalized alveolar consonants, that is, whether [c, ɲc, ʃ, ɲʃ, ɲ, ʃ, ʒ] are to be interpreted as /tj, ntj, dj, ndj, nj, sj, zj/. This is not possible for the following reasons:

1) Some dialects have /dj/ in addition to /ʃ/, and the dialect being analyzed has this contrast. Examples:

- | | | | |
|------------|---------|-----------|------------|
| [ɲkwindje] | ‘elbow’ | [ɲʃɲʃamp] | ‘sorcerer’ |
|------------|---------|-----------|------------|

2) [n], [ʃ], and [ʒ] occur word finally, whereas palatally-released consonants do not.

3) Palatals can be labialized, so that would result in *tjw and *djw. There are no other examples where palatalization and labialization occur together.

4) Similarly, [cj, ʃj, ʎj] would be interpreted as /tjj, djj, sjj/, and nowhere else is there double palatalization.

The labial and palatal phones, [w] and [j], can also occur word-finally (syllable-finally) following a vowel. Again the question can be asked, whether these phones are to be interpreted as vowels or as semi-consonants. If they are interpreted as vowels, it would result in a complex syllable nucleus, or a new syllable. However, such words act as one simple syllable, with one simple nucleus. Such syllables have the same inventory of tonemes as other syllables, and the native speakers react to these syllables as just one syllable. Therefore, the [w] and [j] are interpreted as final consonants here. This also avoids dissimilar vowel sequences, V_1V_2 , of which there are no ambiguous examples. Following are some examples of words ending in /w/ or /j/.

[gwâw]	‘up’	[kwêj]	‘find’ (vb)
[taw]	‘goat’	[nej]	‘torn’ (vb)
[bá:w]	‘kind of leaf’	[cej]	‘hurt’ (vb)
[ka:w]	‘divide’ (vb)	[fej]	‘cut’ (vb)
[bɛw]	‘injure’ (vb)	[kow]	‘division’
[idêw]	‘food’	[jow]	‘sharpen’ (vb)

[ai] occurs across morpheme boundaries, when dependent clause marker [i] is added after a word ending in [a], in fast speech especially.

The two phones, [w] and [j], can also occur intervocalically. Here they clearly function as consonants, as the two contiguous vowels can have contrastive tone. These two vowels do

not have to have the same quality, and nowhere else do two such vowels occur without an intervening consonant. It fits the common (C)VCV pattern of Bantu languages⁴. Examples:

[mpawó]	‘meat, animal’	[kúwo]	‘chicken’
[jawú]	‘debt’	[mbíja]	‘a lot’

2.3. Interpretation of Sequences of Similar Vocoids

It is difficult to determine whether sequences of similar vocoids are one segment or two, whether they are long vowels or sequences of short vowels. They could be interpreted as sequences of short vowels for the following reasons:

- 1) This would avoid adding more phonemes to the phoneme inventory, since the short vowels are already in the inventory.
- 2) Vocoid sequences have limited distribution, occurring only in the first syllable of radicals. Thus the sequences do not seem to have the same status as short vowels.

We, however, have chosen to interpret the vocoid sequences as single phonemes, long vowels, for the following reasons:

- 1) This avoids adding a VC syllable pattern to the syllable inventory, since dividing sequences would lead to results such as CV.VC. It would also lead to four-syllable radicals, which are not found otherwise (such as CV.V.CV.CV).
- 2) There are no unambiguous VV sequences, that can be interpreted as two short vowels (but see 5) below).
- 3) Native speakers react to these vocoid sequences as one syllable, not two.
- 4) The same tone patterns found on short vowels (low, high, low-high, and high-low) are also found on long vowels. Though the low-high tone pattern is found primarily

⁴ Welmers, W. E. (1974) *African Language Structures*, Los Angeles: University of California Press, p. 30.

on long vowels it is found on short vowels as seen in the formation of some infinitives (example, /də/ ‘eat’, /dǎlə/ ‘to eat’).

- 5) There is another tone sequence on vocoid sequences, namely, low-high-low, which does not occur on short vowels. However, this always occurs word-finally, so in this case it seems appropriate to interpret these vocoids as a sequence of two short vowels. It does not add another syllable pattern, since there is already a V syllable.

This is recognized as a complex pattern by native speakers. Examples:

[ifɪ]	‘ashes’	[jâ:]	‘grandmother’
[ŋkê:]	‘mud-dauber’	[ja bê:]	‘second time’

3. Consonant Phonemes

The consonant phonemes are shown on chart 3 below and the evidence is shown in charts 5 to 8.

Chart 3: Consonant Phonemes

		Labial	Alveolar	Palatal	Velar	Labio- velar
STOPS	<i>voiceless</i>		t	c	k	kp
	<i>voiced</i>	b	d	ɟ	g	
	<i>prenasalized voiceless</i>	mp	nt	ɲc	ŋk	
	<i>prenasalized voiced</i>	mb	nd	ɲɟ	ŋg	
NASALS		m	n	ɲ	ŋ	
FRICATIVES	<i>voiceless</i>	f	s	ʃ		
	<i>voiced</i>	v	z	ʒ		
LATERALS			l			
SEMI- CONSONANTS		w		j	h	

3.1. Stops

The stops lose their voicing contrast word-finally. They have unreleased, devoiced archiphonemes in this position. Thus one finds [p̚, t̚, k̚, mp̚, nt̚, and ŋk̚] word-finally. These have been written phonemically as /b, d, g, mb, nd, ŋg/, even though they are also archiphonemes with the voiceless set, /t, k, mp, nt, ŋk/. Native speakers prefer to write these archiphonemes orthographically with the voiced set.

3.2. Nasals

The four nasal phonemes have a distribution similar to that of the stops. The bilabial nasal has a full distribution: it occurs initially, medially and finally, and before /w/ and /j/. The alveolar nasal does not precede /w/ or /j/. The palatal nasal does not precede /j/, and neither does the velar. The velar nasal occurs initially only when preceding /w/. This limited distribution of the velar nasal resembles that of the velar stop /g/ rather than /k/. Thus the gaps in the distribution are almost symmetrical with the pattern of the stops. The four nasals are formed at the same four points of articulation as the stops.

The fact that /ɲ/ and /ŋ/ are in complementary distribution in word-final position (/ɲ/ after front vowels and /ŋ/ elsewhere) may push one to interpret these as allophones of one phoneme /ŋ/. However they contrast word-initially before /w/. This could be avoided by interpreting [ɲw] as /nw/ since /n/ does not occur before /w/. Thus [ɲ] would be an allophone of /ŋ/ when initial before vowels and when final after front vowels. [ɲ] would be an allophone of /n/ when initial before /w/. Then there would be three nasals, /m, n, ŋ/.

However, this interpretation is rejected because the resulting three nasals are not symmetrical to the series of four stops, or four prenasalized stops, at the same points of articulation as /m, n, ɲ, ŋ/. These four nasals may be classified as nasalized stops. It has

been stated earlier that alveolar stops are not labialized, so it would be unusual for /n/ to be labialized. Thus there are four nasal phonemes.

It may be of interest to note that /ŋá/ is phonetically realized as [ŋ́], in fast speech.

3.3. *Fricatives*

The voiced labio-dental fricative, /v/, has a very limited distribution. It is found mostly in borrowed words, some of which have become widely used by native speakers of Məkaá.

There are four grooved fricatives, /s, ʃ, z, ʒ/, found in contrast radical-initially. Here again, the alveolars are not usually followed by /w/ or /j/, whereas the palatals are followed by /w/ and only rarely by /j/.

There is a gap in the distribution of the grooved fricatives radical-medially and radical-finally. [s] and [ʃ] occur only after oral vocoids. [z] and [ʒ] occur only after nasal vocoids. There are three possible interpretations.

- 1) [s] and [z], as well as [ʃ] and [ʒ], lose their contrast in the radical-medial and radical-final position, with the voiceless fricatives occurring after oral vocoids and the voiced fricatives after nasal vocoids. Thus /z/ is an archiphoneme with /s/ and /z/, and /ʒ/ is an archiphoneme with /ʃ/ and /ʒ/. But this would introduce a large set of phonemic nasal vowels (such as \tilde{i} , \tilde{o} , \tilde{a} , \tilde{u}) which are found in no other context. (It is true that a nasal consonant causes the preceding vowel to be slightly nasalized, but it is very slight and only phonetic.) Only [ɛ̃, ɛ̃:, ɔ̃, ɔ̃:] are nasalized in other contexts. Thus this solution is rejected.
- 2) /z/ and /ʒ/ cause the preceding vowel to be phonetically nasalized. This solution does not add any nasal vowels to the inventory. /z/ and /ʒ/ are already phonemes. However, this would be an unusual feature for fricatives, to cause nasalization on the preceding vowel. Therefore it is rejected as a solution.

3) /z/ and /ʒ/ are prenasalized non-initially in a radical. So far only stops have been discussed as prenasalized and none of the fricatives, such as /f/ and /v/. Fricatives are prenasalized in other Bantu languages, such as in neighboring Ewondo. In Koonzime, [z] is always prenasalized, thus [z] is an allophone of /s/.⁵ In Məkaá, the prenasalization of the stops is realized as a nasal contoid, whereas before /z/ and /ʒ/ prenasalization is phonetically realized as nasalization of the preceding vowels, i.e. [Ṽz] and [Ṽʒ]. Though both voiced and voiceless stops may be prenasalized. This solution seems most preferable of the three presented here.

The weakening of the nasal contoid to nasalization of the preceding vowel follows the pattern found elsewhere in the language, that is, nasal consonants are often weakened. The final /ɲ/ following /i/ is almost lost, as in the verb radical /bwɪɲ/ [bwĩ] ‘cook’. Careful pronunciation of the radical and the formation of the infinitive [bwɪɲɪlə] shows the existence of the consonant. The nasal consonant is there according to native speakers. Also, the two phonemic nasal vowels have probably developed historically from a vowel followed by a nasal, /õ/ from *oɲ and /ẽ/ from *eɲ. These particular vowel-consonant sequences do not occur in the present language.

Recognizing that /z/ and /ʒ/ are prenasalized only radical-medially and radical-finally, and that /z/ and /ʒ/ occur only radical-initially without prenasalization, the prenasalized fricatives are being interpreted as allophones of /z/ and /ʒ/. This posits a level (nz, nʒ) between the phonetic [Ṽz] and the phonemic /z, ʒ/.

⁵ Beavon, K. (1977) *Phonological Analysis of the Koonzime Language*, Yaoundé: SIL, p. 17.

4. Vowel Phonemes

The vowel phonemes are shown on chart 4 below, and the evidence is given in charts 9 to 26.

Chart 4: Vowel Phonemes

		FRONT				CENTRAL				BACK			
		oral		nasal		oral		nasal		oral		nasal	
HIGH	close	i	i:			ə	ə:			u	u:		
MID	close	e	e:										
	open	ɛ	ɛ:	ẽ	ẽ:	a	a:			o	o:	õ	õ:

Sequences: ija, uwo, awo, awu, aw, a:w, ɛw, əw, ej, ow

The high central vowel /ə/ has a high front open allophone [ɪ] following palatals and palatalized consonants. Elsewhere it occurs as the high central vocoid [ə].

The front mid close vowels [e, e:] have front higher-than-mid close allophones [e̞, e̞:], which occur in open syllables with a simple onset (no labialization or palatalization), if it is the first syllable of a radical.

This higher-than-mid allophone may be drifting towards the high front close vowel /i/, since some speakers alternate [bi] and [bɛ̞] ‘you, plural’. Otherwise, [i] and [e̞] are in contrast. The higher-than-mid allophone [e̞] is never in contrast with the mid close vocoid [e], which occurs in other contexts than the one specified above for the higher-than-mid allophone. See charts 11 and 12 for examples.

In the oral set of mid back vowels, /o, o:/ has allophones [ɔ, ɔ:] and [o, o:]. [ɔ, ɔ:] occurs before /w/; [o, o:] occurs after /w/ or /j/ or before /ŋ/, and thus is quite limited. In other word-medial contexts [ɔ, ɔ:] and [o, o:] generally occur in free variation. In all other contexts, [ɔ, ɔ:] is preferred. The symbol /o/ has been chosen for typing convenience.

Oral vowels except /ə/ are slightly nasalized before a nasal consonant (and strongly before nz and nʒ, as described in 3.3). This occurs whether or not there is a syllable break between the vowel and nasal consonant.

Chart 5: Initial Consonants

	t <i>tá</i> 'cousin'	c <i>ca</i> 'salt'	k <i>ka</i> 'cane'	kp <i>kpada</i> 'corn beer'
b <i>ba</i> '(tree) ⁶	d <i>dâ</i> 'grand-father'	ɟ <i>ɟa</i> 'time'	g <i>gu</i> 'kill' (vb)	
mp <i>mpa</i> '(animal)'	nt <i>nta</i> 'nephew'	ɲc <i>ɲcâ</i> 'behind a plantation'	ŋk <i>ŋkánzǎ</i> 'twig'	
mb <i>mbá</i> '(tree)'	nd <i>nda</i> 'like, as'	ɲɟ <i>ɲɟâ</i> 'intestine'	ŋg <i>ŋgáfi</i> 'stick for hitting'	
m <i>maga</i> 'good luck'	n <i>na</i> 'there'	ɲ <i>ɲa</i> 'tear' (vb)	ŋ <i>ŋwa</i> 'take' (vb)	
f <i>fa</i> 'machete'	s <i>sâ</i> 'thing'	ʃ <i>ʃá</i> '(fruit)'		
v <i>vuj</i> '(leaf)'	z <i>zə</i> 'come' (vb)	ʒ <i>ʒa</i> 'hunger'		
	l <i>lá</i> 'drinking glass'			
w <i>wâ</i> 'put' (vb)		j <i>ɟâ:</i> 'grand-mother'	h <i>hâw</i> 'yes'	

⁶ The parentheses, (), signify 'kind of ...'; in contrast to a generic term, these are specific names of species. As in previous examples, vowels not marked for tone are low tone.

Chart 6: Labialized Consonants

	t	c <i>cwámbâ</i> 'elder'	k <i>kwô</i> 'snail shell'	kp
b <i>bwân</i> 'children'	d <i>dwô</i> 'your' (cl.5)	ɟ <i>ɟwónz</i> 'palm of hand'	g <i>gwa</i> 'far'	
mp <i>mpwo</i> 'old pot'	nt	ɲc <i>ɲcwámá</i> 'young man'	ŋk <i>ŋkwâl</i> 'snail'	
mb <i>mbwolú</i> 'stem of stalk of bananas'	nd	ɲɟ <i>ɲɟwóŋ</i> 'road'	ŋg <i>ŋgwála</i> 'town'	
m <i>mwô</i> 'stomach'	n	ɲ <i>ɲwá</i> 'up, north'	ŋ <i>ŋwa</i> 'take' (vb)	
f <i>fwalé</i> '(tree)'	s	ʃ <i>ʃhwalé</i> 'lizard'		
v	z	ʒ <i>ʒwa</i> 'anus of a turtle'		
	l <i>lwámá</i> 'commission errand'			
w		j <i>jwô</i> 'suck' (vb)	h	

Chart 7: Palatalized Consonants

	t	c <i>cjúŋ</i> 'neck'	k <i>kjej</i> 'leave' (vb)	kp
b <i>bjá</i> 'give birth' (vb)	d	ɟ <i>ɟju</i> 'open' (vb)	g <i>fugjê</i> '(ant)'	
mp <i>mpjĩ</i> 'dog'	nt	ɲc <i>ɲcjuŋ</i> '(fly)'	ŋk <i>ŋkjêl</i> 'thunder'	
mb <i>mbjól</i> 'moon'	nd	ɲɟ	ŋg <i>fɛŋgjá</i> 'meeting'	
m <i>mjɛ</i> 'meat stick'	n	ɲ	ŋ	
f <i>ffâ</i> 'avocado'	s	ʃ <i>ʃjê</i> '(tree)'		
v	z	ʒ		
	l <i>lják'</i> 'push in horizontally' (vb)			
w		j	h	

Chart 8: Final Consonants

	t	c	k	kp
b	d <i>bát</i> 'go up' (vb)	ɟ	g <i>bak</i> 'shoulder'	
mp	nt	ɲc	ŋk	
mb <i>bamp</i> 'irritation of neck'	nd <i>bant</i> 'back of house'	ɲɟ <i>kənc</i> 'send' (vb)	ŋg <i>báŋk</i> 'call loudly' (vb)	
m <i>bam</i> 'scar'	n <i>ban</i> 'refuse' (vb)	ɲ <i>ndɛɲ</i> 'set a trap' (vb)	ŋ <i>mbáŋ</i> 'cheek'	
f <i>báf</i> 'pick up quickly'	s <i>já:s</i> 'gift'	ʃ <i>mbɛʃ</i> 'hut, shelter'		
v	z <i>zānz</i> 'sheet-iron'	ʒ <i>bɛɲʒ</i> 'twig'		
	l <i>mpal</i> 'eagle'			
w <i>baw</i> 'bad' <i>sow</i> 'attack' <i>səw</i> 'season'		j <i>lɛj</i> 'take' (vb)	h	

Chart 9: High Front Close Short Vowel /i/

	t <i>tî</i> 'ripen' (vb)	c <i>ci</i> 'forbid, say' (vb)	k <i>kîl</i> 'place half' (vb)	kp
b <i>bigə</i> 'fish hole'	d <i>dijə</i> 'disgusting'	ɟ <i>ji</i> 'stay' (vb)	g	
mp <i>mpî</i> 'palm nut'	nt <i>nti</i> 'send' (vb)	ɲc <i>ɲci</i> 'gorilla'	ŋk <i>ŋkila</i> 'panther'	
mb <i>mbi</i> 'manner'	nd <i>ndimjá</i> 'packed'	ɲɟ <i>ɲji</i> 'only'	ŋg	
m <i>miɸ</i> 'eyes'	n <i>níní</i> 'big'	ɲ <i>ɲi</i> 'enter' (vb)	ŋ	
f <i>fi</i> 'being'	s <i>sija</i> 'gift'	ʃ <i>ʃi</i> 'earth'		
v <i>vígə</i> 'good wine'	z <i>zímɓi</i> 'wooden box'	ʒ <i>zimba</i> 'push hard' (vb)		
	l <i>lî</i> 'clear forest' (vb)			
w <i>wĩŋz</i> 'detach' (vb)		j <i>ji</i> 'bark'	h	

Chart 10: High Front Close Long Vowel /i:/

	t	c <i>cí</i> 'in-laws' (of a man)	k	kp
b <i>bíga</i> 'ferocious animal'	d	ɟ <i>jí</i> 'cry' (vb)	g	
mp	nt	ɲc	ŋk	
mb <i>mbú</i> '(fruit)'	nd	ɲɟ <i>ɲjí</i> 'limit'	ŋg	
m	n	ɲ	ŋ	
f	s	ʃ		
v	z	ʒ <i>ʒí</i> 'path'		
	l			
w		j <i>jí</i> 'trap for big animals'	h	

Chart 11: Mid Front Close Short Vowel /e/

	t	c <i>cey</i> 'hurt' (vb)	k <i>ké</i> 'egg'	kp <i>kpédí</i> 'lighter'
b <i>bé</i> 'hole'	d <i>fide</i> 'walking stick'	ɟ <i>ɟej</i> 'take off oil' (vb)	g	
mp <i>məmpé</i> 'holes'	nt	ɲc	ŋk	
mb	nd	ɲɟ	ŋg	
m <i>mɛŋga</i> 'basket'	n	ɲ <i>ɲej</i> 'be torn' (vb)	ŋ	
f <i>fɛj</i> 'cut' (vb)	s <i>sɛljá</i> 'thing operated on'	ʃ <i>ʃɛj</i> 'work'		
v	z <i>zɛní</i> '(mouse)'	ʒ <i>ʒɛjĩ</i> 'God'		
	l <i>lé</i> 'tree'			
w <i>wej</i> 'friend'		j <i>jɛ</i> '(snail)'	h	

Chart 12: Mid Front Close Long Vowel /e:/

	t	c	k	kp
b <i>bé:ga</i> 'separate from one another' (vb)	d	ɟ	g	
mp <i>mpé:</i> 'pot'	nt	ɲc	ŋk	
mb	nd	ɲɟ <i>ɲé:mbí</i> 'way of cooking'	ŋg	
m	n	ɲ <i>ɲé:la</i> 'murmur' (vb)	ŋ	
f	s	ʃ		
v	z	ʒ		
	l			
w		j	h	

Chart 13: Mid Front Open Short Vowel /ɛ/

	t <i>tɛt</i> 'begin' (vb)	c <i>cɛl</i> 'want' (vb)	k <i>kɛk</i> 'take off stem' (vb)	kp <i>kpɛnt</i> 'split' (vb)
b <i>bɛw</i> 'injure oneself' (vb)	d <i>dɛnt</i> 'in one swallow'	ɟ <i>ɟɛl</i> 'fly' (vb)	g	
mp <i>mpɛnz</i> 'twigs'	nt <i>ntɛmp</i> 'pull' (vb)	ɲc <i>ɲcɛdɛ</i> '(pepper)'	ŋk <i>ŋkɛn</i> 'rejoice' (vb)	
mb <i>mbɛ</i> 'entrance'	nd <i>ndɛn</i> 'set traps' (vb)	ɲɟ	ŋg	
m <i>ment</i> 'be tight' (vb)	n <i>nɛla</i> 'slow'	ɲ <i>ɲɛ</i> 'dissolve' (vb)	ŋ	
f <i>fɛl</i> 'explain' (vb)	s <i>sɛŋgja</i> 'thing cut'	ʃ <i>ʃɛmp</i> 'abort' (vb)		
v	z	ʒ <i>ʒɛm</i> 'hoot' (vb)		
	l <i>lɛmp</i> 'pull' (vb)			
w <i>wɛl</i> 'raise' (vb)		j <i>jɛf</i> 'desire'	h	

Chart 14: Mid Front Open Long Vowel /ɛ:/

	t	c <i>cɛ:lja</i> 'love'	k	kp
b	d <i>nə dɛ:</i> 'for a long time'	ɟ <i>nə ɟɛ:</i> 'for a long time'	g	
mp <i>mpɛ:ɡɪ</i> 'differences'	nt	ŋc	ŋk	
mb	nd	ŋɟ	ŋg	
m <i>mɛ:l</i> 'finish' (vb)	n	ɲ	ŋ	
f	s	ʃ		
v	z	ʒ		
	l			
w		j	h	

Chart 15: Mid Front Open Short Nasal Vowel /ɛ̃/

	t	c <i>cɛ̃</i> 'antelope'	k <i>kɛ̃</i> 'wisdom'	kp
b <i>bɛ̃</i> 'follow, plant' (vb)	d <i>dɛ̃</i> 'tadpole'	ɟ <i>ɟɛ̃</i> 'grill' (vb)	g	
mp <i>mpɛ̃</i> 'yaws'	nt	ɲc	ŋk <i>ŋkɛ̃lɔ́</i> 'bell'	
mb <i>mbɛ̃ɲi</i> 'planter'	nd	ɲɟ	ŋg	
m <i>mɛ̃jɔ́</i> 'thing sculpted'	n	ɲ	ŋ	
f	s	ʃ <i>ʃɛ̃</i> 'sand'		
v	z	ʒ		
	l			
w		j	h	

Chart 16: Mid Front Open Long Nasal Vowel /ɛ̃:/

	t <i>nó tɛ̃:</i> 'very bitter'	c	k	kp
b <i>bɛ̃:</i> 'canoe'	d	ɟ	g	
mp	nt	ɲc	ŋk	
mb	nd	ɲɟ <i>nyɛ̃:</i> 'bamboo'	ŋg	
m	n	ɲ	ŋ	
f	s	ʃ		
v	z	ʒ <i>ʒɛ̃:lá</i> 'sixth finger'		
	l			
w		j	h	

Chart 17: High Central Short Vowel /ə/

	t <i>tátám</i> 'middle'	c <i>cɪ</i> 'stumble' (vb)	k <i>kə</i> 'go' (vb)	kp
b <i>bə</i> 'be' (vb)	d <i>də</i> 'eat' (vb)	ɟ <i>ɟɪ</i> 'tooth'	g	
mp <i>mpə</i> 'smell' (vb)	nt <i>ntənt'</i> 'saliva'	ɲc	ŋk <i>ŋkət'</i> 'wicked'	
mb <i>mbəl</i> 'sick person'	nd	ɲɟ	ŋg <i>ŋgə</i> 'progressive marker'	
m <i>mə</i> 'I'	n <i>nə</i> 'and, with'	ɲ <i>ɲɪ</i> 'he, she'	ŋ	
f <i>fəfə</i> 'wind'	s <i>sə</i> 'we' (exclusive)	ʃ <i>ʃɪ</i> 'termite'		
v <i>vədá</i> 'wind'	z <i>zə</i> 'come' (vb)	ʒ		
	l <i>lású</i> 'language'			
w		j <i>ji</i> 'give, die' (vb)	h	

Chart 18: High Central Long Vowel /ɔ:/

There was only one example found in words in isolation. *mpó:* ‘odor’

Chart 19: Mid Central Short Vowel /a/

	t <i>tak</i> ⁷ ‘be tired’ (vb)	c <i>cat</i> ⁷ ‘(bird)’	k <i>kás</i> ‘fool’	kp <i>kpásaga</i> ‘rinse mouth’
b <i>bâw</i> ‘massage’ (vb)	d <i>daŋ</i> ‘(lice)’	ɟ <i>ɟâm</i> ‘weakness’	g	
mp <i>mpál</i> ‘half’	nt <i>ntant</i> ⁷ ‘spider web’	ɲc <i>ɲcaga</i> ‘firewood’	ŋk <i>ŋkaw</i> ‘goitre’	
mb <i>mbak</i> ⁷ ‘baggage’	nd <i>nda</i> ‘like, as’	ɲɟ <i>ɲɟâm</i> ‘bat’	ŋg <i>ŋgádan</i> ‘plant nursery’	
m <i>mán</i> ‘tomorrow’	n <i>nat</i> ⁷ ‘bowstring’	ɲ <i>ɲâ</i> ‘fingernail’	ŋ	
f <i>fál</i> ‘(fruit)’	s <i>sás</i> ‘girl’	ʃ <i>ʃá</i> ‘(fruit)’		
v <i>val</i> ‘manner’	z <i>zâŋ</i> ‘feast dance’	ʒ <i>ʒak</i> ⁷ ‘pineapple’		
	l <i>lamp</i> ⁷ ‘barrel’			
w <i>was</i> ‘twin’		j <i>jasá</i> ‘bone’	h <i>hâ</i> ‘strong wine’	

Chart 20: Mid Central long Vowel /a:/

	t <i>ta:t</i> ⁷ 'slice' (vb)	c <i>ca:nt</i> ⁷ 'measles'	k <i>ka:nə</i> 'story'	kp
b <i>bá:l</i> '(basket)'	d <i>dá:gə</i> 'crab'	ɟ <i>ɟa:s</i> 'be hard' (vb)	g	
mp <i>mpá:l</i> 'trace'	nt <i>ntá:n</i> 'call'	ŋc	ŋk <i>ŋka:w</i> 'bracelet'	
mb <i>mbá:w</i> 'leaves for massage'	nd	ɲɟ <i>ɲá:mp</i> ⁷ 'prepared food'	ŋg	
m <i>ma:n</i> 'intersection'	n	ɲ <i>ɲa:m</i> 'press' (vb)	ŋ	
f <i>fa:s</i> 'resuscitate'	s <i>sá:k</i> ⁷ 'dance' (vb)	ʃ <i>ʃá:</i> 'feather'		
v	z	ʒ		
	l <i>lá:mp</i> ⁷ 'trap'			
w <i>wa:s</i> 'comb'		j <i>ja:sə</i> 'dish'	h	

Chart 21: High Back Short Vowel /u/

	t tûm 'hat'	c cû 'inside'	k ku 'fail'(vb)	kp
b bum 'pregnancy'	d	ɟ ɟumə 'pound'(vb)	g gu 'kill'(vb)	
mp mpú 'rain'	nt ntûŋ 'get confused'(vb)	ɲc ɲcu 'scar'	ŋk ŋku '(bat)'	
mb mû 'year'	nd ndundu 'needle'	ɲɟ ɲɟu 'scissors'	ŋg ŋkul 'drink'(vb)	
m mús 'today'	n nûŋ 'over there'	ɲ ɲuŋk' 'wall'	ŋ	
f fû '(mouse)'	s	ʃ ʃu 'fish'		
v	z	ʒ ʒu 'come from'(vb)		
	l lû 'head'			
w wû 'leave'(vb)		j jûl 'viper'	h	

Chart 22: High Back Long Vowel /u:/

	t	c	k <i>kú:</i> 'foot'	kp
b <i>bundú</i> 'shell, skin'	d	ɟ <i>ɟu:</i> 'thigh'	g <i>gu:</i> '(tree)'	
mp <i>mpú:</i> 'raphia leaf'	nt	ɲc <i>ɲcú:</i> 'dry wood'	ŋk <i>ŋku:</i> 'pig'	
mb	nd	ɲɟ	ŋg	
m <i>mut'</i> 'person'	n	ɲ <i>ɲumbulu</i> 'way of walking'	ŋ <i>ŋkú:nzú</i> 'head of hair'	
f	s	ʃ <i>ʃú:</i> 'jigger'		
v	z	ʒ		
	l <i>lúk'</i> 'button'			
w		j <i>jú:</i> 'salamander'	h	

Chart 23: Mid Back Short Vowel /o/

	t <i>tó</i> 'even' <i>togútogú</i> 'gently'	c <i>cɔgó</i> '(calabash)'	k <i>kósú</i> 'hand of bananas'	kp
b <i>bómbú</i> 'board'	d <i>dɔmpʻ</i> 'war'	ɟ <i>ɟónz</i> 'sympathy'	g	
mp	nt <i>ntó</i> 'thus'	ɲc	ɲk <i>ɲkɔndú</i> 'crocodile'	
mb <i>mbô</i> 'no'	nd <i>ndɔlú</i> 'difficulty'	ɲɟ <i>ɲɟôɲ</i> 'stranger'	ɲg	
m <i>mól</i> 'canoes'	n <i>nôm</i> 'fish-hook'	ɲ <i>ɲɔs</i> 'duck' (vb)	ɲ	
f <i>fɔɔkʻ</i> 'hoof'	s <i>sɔŋgú</i> 'father'	ʃ <i>ʃôw</i> 'overflow' (vb)		
v	z <i>zɔnzúlu</i> '(fruit)'	ʒ		
	l <i>lɔntʻ</i> '(tree)'			
w <i>wôm</i> 'leave' (vb)		j <i>jôɲ</i> 'cold'	h	

Chart 24: Mid Back Long Vowel /o:/'

	t <i>tó:t'</i> 'drier'	c	k <i>kó:s</i> 'rise' (vb) (of the sun)	kp
b <i>bó:k'</i> 'hoe'	d	ɟ <i>ɟó:k'</i> 'cover'	g	
mp	nt	ɲc <i>ɲcó:k'</i> 'carving instrument'	ŋk	
mb <i>mbó:k'</i> 'boarder of a field'	nd	ɲɟ <i>ɲɟó:nt'</i> 'trip'	ŋg	
m	n <i>nó:lə</i> 'insist' (vb)	ɲ <i>ɲó:lú</i> 'brother- or sister-in-law'	ŋ	
f	s	ʃ		
v	z <i>zómú</i> 'flowering season'	ʒ <i>ʒólú</i> 'scaly ant-eater'		
	l			
w <i>wó:</i> 'domestic animal'		j	h	

Chart 25: Mid Back Short Nasal Vowel /õ/

	t <i>tõ</i> 'drier'	c <i>cõ</i> 'rat'	k <i>kõ</i> 'grow' (vb)	kp
b <i>bõ</i> '(banana)'	d <i>dõ</i> 'herd'	ʃ <i>ʃõʃõ</i> 'kind'	g	
mp	nt <i>ntõ</i> 'pass' (vb)	ɲc <i>ɲcõ</i> 'digging stick'	ŋk <i>ŋkõ</i> 'healer'	
mb	nd	ɲʃ	ŋg	
m	n	ɲ	ŋ	
f	s <i>sõ</i> 'look for' (vb)	ʃ		
v	z	ʒ		
	l <i>lõ</i> 'read, count' (vb)			
w <i>wõ</i> '(bird)'		j	h	

Chart 26: Mid Back Long Nasal Vowel /õ:/

	t	c <i>cõ:lə</i> 'attach' (vb)	k <i>kõ:lá</i> 'root'	kp
b <i>bõ:lá</i> 'something thrown'	d	ɟ <i>ɟõ:</i> 'kind'	g	
mp <i>mpõ:</i> '(macabo)'	nt	ɲc	ŋk	
mb <i>mbõ:lú</i> 'child who follows'	nd	ɲɟ	ŋg	
m	n	ɲ	ŋ	
f	s	ʃ		
v	z	ʒ		
	l			
w <i>wõ:lə</i> 'go fast' (vb)		j	h	

5. Tone

There are two tone levels, /High/ and /Low/, which may occur singly or in sequences.

These may combine to form the following tone patterns on radicals in isolation:

Chart 27: Tone Patterns on Noun Radicals

one-syllable	two-syllable	three-syllable
L	L L	L L L L L H L L HL
	L H	L H L
	L HL	
H	H L	H L L H L H
	H H	H H L H H H
		H H HL
	H HL	
HL	HL L	
	HL H	
LH		

Examples:

/kwon/	‘back’	/ŋga/	‘wick’	/lunɣəla/	‘fence’
				/fafəgə/	‘wing’
				/mijonê/	‘sibling’
		/ŋɣjá/	‘meeting’	/fulúsag/	‘(leaf)’
		/jifim/	‘silhouette’		
/kwón/	‘frog’	/ŋga/	‘cat’	/cimbəla/	‘groan’
/ʃú:/	‘water spring’			/kájané/	‘pineapple leaf’
		/ʃwəfá/	‘mud’	/ʃú:gələ/	‘scratch’
				/béwúlə/	‘wound’
				/tédégá/	‘thought’
				/ʒúgələ/	‘edge’
		/jáfwól/	‘chin’		

/kwô/	‘basket’	/gú:ga/	‘killing’
/ʃû/	‘fish’		
		/fâŋé/	‘other side’
/kwó:/	‘spear’		
/ʃú:/	‘jigger’		

Chart 28: Tone Patterns on Verb Radicals

one-syllable	two-syllable	three-syllable
L	L L	L L L
H	H L	H L L
HL	HL L	

Examples:

/bɛmb/	‘worry’	/bēla/	‘look alike’	/bagəla/	‘keep’
/ʃi/	‘sit’	/ʃilə/	‘be heavy’		
/bénd/	‘be split’	/báda/	‘greet’	/búgəla/	‘believe’
/ʃí/	‘be’	/ʃílə/	‘be satisfied’		
/bêw/	‘hurt oneself’	/ɲé:lə/	‘watch’		
/ʃî/	‘grind’				

Note that the LH sequence occurs only on long vowels. It also occurs on short vowels in specific morphophonemic patterns. Rising tone (LH) does not occur on these, and falling tone (HL) occurs only on the final syllable.

Underlying tones differ from these surface tones, described above, and underlying tones play a great role, as seen when words are put into context. The description of morphotonemics will be left for subsequent studies.

6. Units above the Phoneme

6.1. Syllable

There are three types of syllables, as follows:

V

C^(w or j) V

C^(w or j) VC

The onset may or may not be labialized or palatalized. The nucleus may be filled by any vowel, whether long or short. Any of the four tone patterns may occur. Chart 29 shows the distribution of consonants in the onset and the coda. For examples see charts 4-7.

Chart 29: Consonant Distribution in the Syllable

Consonants in the onset:

simple onset					labialized				palatalized			
	t	c	k	kp			c	k			c	k
b	d	ɟ	g		b		ɟ	g	b		ɟ	g
mp	nt	ɲc	ŋk		mp		ɲc	ŋk	mp		ɲc	ŋk
mb	nd	ɲɟ	ŋg		mb	nd	ɲɟ	ŋg	mb			ŋg
m	n	ɲ	ŋ		m		ɲ	ŋ	m			
f	s	ʃ			f		ʃ		f		ʃ	
v	z	ʒ					ʒ					
	l					l				l		
w		j	h				j					

Consonants in the coda:

	d		g
mb	nd		ŋg
m	n	ɲ	ŋ
f	s	ʃ	
	z	ʒ	
	l		
w		j	

6.2. Radical

A radical is defined here as the morpheme (or minimal grammatical unit) that is the central unit of meaning in a word. To this radical, affixes may be added to form a phonological word. The radical has been relevant to this study, even though it is more grammatical than phonological, because it is useful in describing the distribution of consonants and vowels, as well as tonemes.

There are twelve types of radicals, as follows:

CV.	CVC.	-V.	-VC.
CV.CV.	CV.CVC.	-V.CV.	-V.CVC.
CV.CV.CV.	CV.CV.CVC.	-V.CV.CV.	
CV.V.			

The consonant-initial radicals may or may not have affixes. The two-vowel radicals always take a prefix, in the form of C-. The C- prefix has been separated as a prefix for grammatical rather than phonological reasons. These vowel-initial radicals are few in number. When

describing the distribution of consonants, vowels, or tonemes, the C- prefix of the vowel initial stems acts the same as the initial consonant of the consonant-initial stems. Further, the first consonant of vowel-initial stems acts the same as the second consonant of consonant-initial stems. For example, labialization occurs only on the first consonant of consonant-initial radicals or on the C- prefix of vowel-initial radicals. Palatalization occurs in the same position, as well as on the second consonant of consonant-initial radicals and on the first consonant of vowel-initial radicals, provided that these radicals consist of only two syllables. This is shown on the chart below.

$C^{(w \text{ or } j)}V.$	$C^{(w \text{ or } j)}VC.$	$-V.$	$-VC.$
$C^{(w \text{ or } j)}V.C^{(j)}V.$	$C^{(w \text{ or } j)}V.C^{(j)}C.$	$-V.C^{(j)}V.$	$-V.C^{(j)}VC.$
$C^{(w \text{ or } j)}V.CV.CV.$	$C^{(w \text{ or } j)}V.CV.CVC.$	$-V.CV.CV.$	

Prefix: $C^{(w \text{ or } j)}_-$

Because of this pattern and because of the small number of vowel-initial radicals, the phrase ‘first consonant of radical’ (C_1) will be used to refer to the obligatory C- prefix of a vowel-initial radical as well as the first consonant of a consonant-initial radical. Similarly, the phrase ‘second consonant of a radical’ (C_2) will be used to refer to the first consonant of a vowel-initial radical as well as the second consonant of a consonant-initial radical.

The radical type CV.V. is rare and has not been found with labialization or palatalization on the consonant. Some examples are /i-fi:/ ‘ashes’, /yâ:/ ‘grand-mother’, and /zô:/ ‘millipede’.

The vowel pattern has been discussed in section 2.3.

The above are noun radical types. All of the seven consonant-initial radical types can also be found in the verbs.

The following chart shows which consonants can occur in which positions of the radical:

Chart 30: Consonant Distribution in the Radical

C ₁ simple					labialized				palatalized			
	t	c	k	kp			c	k			c	k
b	d	ɟ	g		b	d	ɟ	g	b		ɟ	
mp	nt	ɲc	ŋk		mp		ɲc	ŋk	mp		ɲc	ŋk
mb	nd	ɲɟ	ŋg		mb		ɲɟ	ŋg	mb			
m	n	ɲ			m		ɲ	ŋ	m			
f	s	ʃ			f		ʃ		f		ʃ	
v	z	ʒ					ʒ					
	l					l				l		
w		j	h				j					

C ₂ simple					labialized				palatalized			
b	d	ɟ	g						b	d		g
mb	nd	ɲɟ	ŋg						mb	nd		ŋg
m	n	ɲ	ŋ						m			
f	s	ʃ									ʃ	
	z	ʒ										
	l									l		
w		j										

C_{final} only simple

	d		g
mb	nd	ɲʃ	ŋg
m	n	ɲ	ŋ
f	s	ʃ	
	z	ʒ	
	l		
w		j	

6.3. Phonological Word

Generally, a phonological word consists of a radical plus one or more affixes. An affix may be a prefix, suffix or infix.

Prefixes are in the form V-, C-, or CV-.

Examples:

/lá/	‘glass’ (cl. 7)	/i-lá/	‘glasses’ (cl. 8)
/fa/	‘machete’ (cl. 9)	/mə-fa/	‘machetes’ (cl. 6)
/ɲ-jôŋ/	‘stranger’ (cl. 1)	/o-jôŋ/	‘strangers’ (cl. 2)
/ɲ-ínə/	‘name’ (cl. 5)	/m-ínə/	‘names’ (cl. 6)

Suffixes take the form -CV or -C after open syllables, and -V, -VC or -VCV after closed syllables. When the suffix takes the form -VCV, the first V is an /ə/, like the epenthetical [ə] inserted between consonants that are contiguous across word boundaries.

Examples:

/lû/	‘head’	/lû-d/	‘on the road’
/kwɔŋ/	‘back’	/kwɔŋ-əd/	‘on the back’
/wâ/	‘put’ (vb)	/wâ-g/	‘put!’ (imperative)
/wâ/	‘put’ (vb)	/wâ-lə/	‘to put’ (infinitive)
/wol/	‘get out of bed’ (vb)	/wol-ég/	‘get out of bed!’ (imp.)
/wol/	‘get out of bed’ (vb)	/wol-əg-â/	‘get out of bed!’ (imp. pl.)
/ʃín/	‘be finished’ (vb)	/ʃín-ələ/	‘to be finished’ (inf.)

Infixes are replacive, usually one vowel for another.

Examples:

/bwád/	‘get dressed’ (vb)	/bwéd/	‘dress someone else’ (vb)
/ja:nd/	‘go’ (vb)	/ɲ-ɔ:nd/	‘trip’

Some words may be complex, due to reduplication or the presence of more than one radical.

Examples:

/kúkúm/	‘rich man’
/kíl kíl/	‘silent’
/ŋgúŋgú/	‘bad odor’
/mbêlámjêñ/	‘fool’
/asám bálósám bálô/	‘salamander’ (it cuts, it cuts)
/ŋgwágələwú/	‘deaf person’ (whose hearing left)
/tóweshóg/	‘superior’ (stand before)

Complex words may break the phonological rules established for simple words. Complex words are typically longer; up to seven syllables have been found in one word. Closed syllables are found non-finally, so that consonants cluster together in a way not found in

simple words (such as /gs, nb, md, lk, lf/). There may or may not be an epithetical [ə] separating these. Palatalization and labialization occur also on syllables other than the first or second. These words can begin with a vowel, without an obligatory C- prefix.

Borrowed words sometimes can break the phonological rules, and then they resemble complex words more than simple words.

Example:

/básko/ 'bicycle'

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