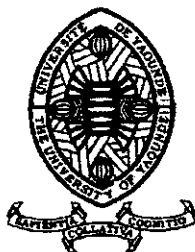


THE UNIVERSITY OF YAOUNDE I
UNIVERSITE DE YAOUNDE I

**Faculty of Arts, Letters and
Social Sciences**

**DEPARTMENT OF AFRICAN
LANGUAGES AND LINGUISTICS**



**Faculté des Arts, Lettres et
Sciences Humaines**

**DEPARTEMENT DE LANGUES
AFRICAINES ET LINGUISTIQUE**

**THE STRUCTURAL PHONOLOGY
OF CIRAMBO**

**A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT
OF THE REQUIREMENTS FOR THE AWARD OF A MASTERS
(MAITRISE) IN LINGUISTICS**

By:

AYAFOR VERA MAPI FOZOH
B.A. Linguistics
University of Yaounde I

Supervised by :

BITJAA KODY ZACHÉE DENIS
Senior Lecturer
University of Yaounde I

Yaounde, May 2002

DEDICATION

To My Parents

Mr and Mrs AYAFOR Paul

To my Junior sisters and brothers

To my Grand Mum.

ACKNOWLEDGEMENTS

I must first of all thank God Almighty for the care, protection, good health, and strength he enkindled in me for the entire period I undertook this study. To him be glory, honour and majesty.

I wish to heartily thank my supervisor, Mr Bitjaa Kody for his patience, kindness and understanding. His availability even within his tight programme was a booster to my efforts. I also thank my lecturers of the Linguistics Department for sharing their world of knowledge and experience with me. I am indebted to the SIL library where I got excellent documentation which were most essential for this study.

I also wish to thank my informants for the data they made available for this study. They are:

Name	Age	Occupation
Ndiateng Cynthia	27	Student Asti Buea
Dr Ghogomu Richard	45	Lecturer, University of Yaounde I
Sylvia Jipuhu	26	Maitrise student University of Yaounde I
Ghogomu Gilbert	28	Graduate, Estic Yaounde

I wish to thank my uncle Ayafor Clement and wife, for providing me with the calm environment to study.

I equally owe appreciation to my friends and classmates, here I am thinking of Mr Bangha Godlove, Ngwa Gerald, Abrey Charles, Kenfac Lucy, Ngu Alfred, Ataindum Gladys, Bessibe Evelyn, Wara Billiart, Ufei Mofor, Kalyster, Tatiana, Kareen and my typist Mbanwi Martha Keng of Concord computers.

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ABBREVIATIONS

ALCAM	Atlas Linguistique du Cameroun
C	Consonants
CC	Consonant Cluster
F1	Future Tense
F	Falling Tone
GACL	General Alphabet of Cameroonian Languages
H	High Tone
IPA	International Phonetic Alphabet
L	Low Tone
M	Mid Tone
Po	Present Tense
P _v	Past tense
R	Rising Tone
SIL	Summer Institute of Linguistics
VD	Voiced
VL	Voiceless
[]	Phonetic transcription
/ /	Phonemic transcription
" "	Grapheme limit

CHAPTER ONE

GENERAL INTRODUCTION

1.1 Plan of work

The title of this work is **The Phonology of Círàmbó**. The work is divided into six chapters, comprising an introductory chapter and five main chapters. Chapter one introduces the work by stating the aim of study, the motivation of choice of topic, the scope of study, the location of Círàmbó, the literature review and the methodology used. Chapter two discusses the tones in Círàmbó, establishing tonemes and examining the tonal processes in Círàmbó. Chapter three, examines the Círàmbó vowel sounds in order to establish the distinctive vowel sounds in the language. Chapter four discusses the Círàmbó consonant sounds in a bid to establish the distinctive consonant sounds. Chapter five treats the syllabic structure of Círàmbó words, as well as problems encountered during the interpretation of the data collected. Chapter six concludes the work. But before concluding the work, it makes an orthography proposal for the Círàmbó language, which includes an alphabet and orthographic rules.

1.2 Aim of study

The aim of this work is to describe the phonology of Círàmbó. The work also sets out to stir up the standardisation process for Círàmbó by making an orthography proposal and establishing the phonemic system, setting up a writing system for an unwritten language.

1.3 Motivation

The primary motivation for this study, is the desire to see African languages developed, that is the desire to transform all African languages from their oral forms to the written forms.

The secondary motivation for this study is obviously academic. This refers to the need to do a research work of this nature in order to fully complete the present post graduate stage.

1.4 Scope of work

As already mentioned in the aim of study, this work describes the phonology of Círàmbó. The sounds of Círàmbó are consonants, vowels and tones. These sounds are analysed within the structural and generative theoretical frameworks of linguistic analysis. In addition to analysing sounds of Círàmbó, the work proposes an alphabet and orthographic rules for writing Círàmbó.

1.5 Location of Círàmbó

In this location, we treat the geographical location of Círàmbó, we give a brief history and linguistic classification of the language.

1.5.1 Geographical location

Círàmbó is a language spoken in Ndop sub-Division in the Ngo-ketunja Division of the North West Province of Cameroon.

Figure 1 below on page 4 locates Ngo-ketunja Division in Cameroon. It is one of the seven divisions in the North West Province of Cameroon. According to SIL sources, quoted in Barbara F. Grimes (ed.) (1992), Círàmbó is spoken by 14,500

people. This figure should be much higher now, given that it dates right back to 1992. Círàmbó actually counts 19 ^{quarters} villages situated to the south East of Ndop. These 19 villages are mainly involved in the farming of maize, groundnuts, and in fishing. Círàmbó is bounded to the North by the Bamunka village, to the West by Bamali, Bali kumbat and Bafanji, to the south by Foubot and to the East by Bangolan and Babessi.

Figure 2 below on page 5 presents Círàmbó here referred to as Bambalang in the midst of its neighbours. Figure 3 on page 6 presents the Bambalang village in its entirety.

1.5.2 Brief history of Círàmbó

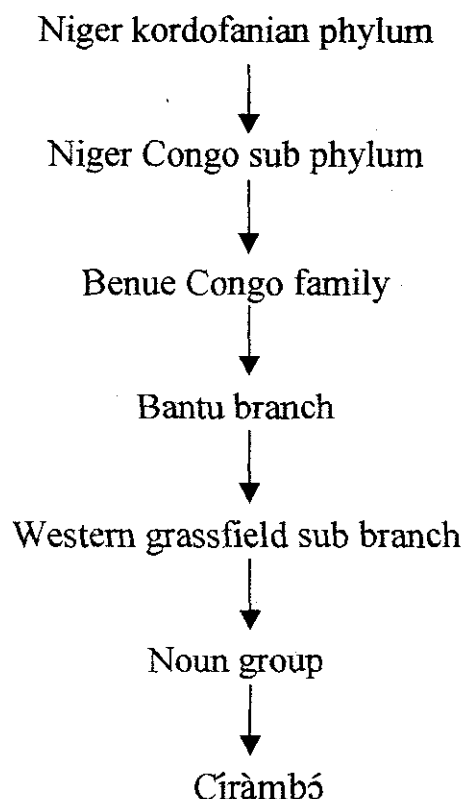
The speakers of Círàmbó are called the mbaw-yakum people. These people are believed to have originated from a place called Ndobó from which the name Ndop comes. From the beginning, there were two quarters in Mbaw-yakum which were called Mbatlh and Mbashlh. Other quarters like Ntaw-pri and Mbashie came during the wars and after migration.

The Mbaw-yakum people migrated to Banson, then to Fouban and then some of them came back to the present location of Mbaw-yakum. Since the origin of the Mbaw-yakum village, many Fons have ruled it. So far, 21 Fons have ruled the Mbaw-yakum people (Tanjoh George, 2000:8). The Mbaw-yakum people have a well-organised traditional system of government. The chief, who is the head of the village, shares his authority with several elders who assist him in governing the village. The government consists of three bodies, the Royals headed by the Fon; the kweifulng a secret society which is composed exclusively of men, the kweifulng exercises its powers even over the Fon; and the Tanteush who are the quarter heads. The village is divided into quarters for easy administration and each of the quarters is placed under a Tanteush. As we have already said above, there are about 19 quarters in Mbaw-yakum.

1.5.3 Linguistic classification

If we classify Círàmbó following Greenberg's genealogical classification of African languages, we can trace Círàmbó from the Niger-kordofanian phylum, to the Benue Congo family, to the Western Grassfield Bantu sub-branch, to the Noun group and finally to Círàmbó itself. Círàmbó has just one dialect known as small Bambalang. The question of intelligibility is always discussed in relation to other

different languages like Baba I, Bamali, Bangolang, Bafanji and Bamunkumbit (Popandze, 1989). These languages are neighbouring languages to Círàmbó and belong to the same group, that is, the Noun group as Círàmbó.



1.6 Literature review

Linguistic works in the Círàmbó language are almost non-existent. We only count three linguistic works in Círàmbó. These are A Rapid appraisal survey of Bambalang by Grant Caroline, (1993), Ethnologue by Babara F. Grimes (1992) and A dialectometrical study of languages in Ndop plain by Popandze N. Julius (1989).

Grant (1993) in A Rapid appraisal survey in Bambalang makes a sociolinguistic survey, which is only limited to some data and the geographical and socio-economic situation of Círàmbó and its speakers.

Grimes (1992) in Ethnologue, simply lists the geographical and linguistic classification of Círàmbó as well as its other appellations. These other appellations are Bambalang and Mbaw-yakum.

Popandze (1989) in A dialectometrical study of languages in Ndop plain brings out some pertinent information on the nature and the relationships amongst various languages in the Ndop plain. It considers the languages to belong to three distinct groups, the Noun group, Ring group and an undetermined group in which the Balikumbat language belongs. It classifies Círàmbó under the Noun group. The important point made in this study about Círàmbó, is that it is a language on its own and not a dialect, of any other language. We therefore find that the three linguistic works above, are mainly concerned with the classification of Círàmbó. None of the works have made a study of the phonology of Círàmbó, not to talk of a detailed study as we are planning to do.

Other books do exist about Círàmbó, some of which are A Brief History of Mbaw-Yakum by Tanjoh George (2000). He tells the history of the Mbaw-Yakum people, from their origin, to the various forms of migration and to their resettlement in the present site. He also discusses the traditional set up of the Mbaw-Yakum society.

We have Rural Market Systems in Ndop Area by Ghogomu F.Banda (1987). In this work, he discusses the factors that account for foodstuff production in Ndop area. He examines in detail, the functional operation of the Bambalang fish market and problems faced by those markets.

The above literature review, indicates that there is a great need to study Círàmbó language and this need is manifested in this present study of the phonology of Círàmbó.

1.7. Methodology

By methodology, we mean two things; the theoretical framework within which the analysis is done, and the practical methodology which consists in the collection of the data, its analysis and its interpretation.

1.7.1. Theoretical framework

This work is written within the theoretical framework of structural and generative analyses. The structural approach to linguistic analysis has a good number of proponents who date right back to the father of modern linguistics Ferdinand de Saussure and also Troubetzkoy. In relation to phonology, part of the structural principles we have used in the phonological analysis can be found in Gaston Canu and Patrick Renaud (1971) and Kenneth Lee Pike (1949). These principles consist in working from a phonetic inventory to a phonic chart, to the establishment of suspicious pairs, to the establishment of minimal and near minimal pairs and to the contextual analysis of sounds. These principles are also recently elaborated in Essono (1998: 90-91). This approach permits us to study the contrastive sounds or phonemes in Círàmbó. The Generative approach has been used to analyse tones and syllabic structure.

1.7.2. Data collection, interpretation and analysis

A data of about 1000 words was collected for the present analysis. This data was collected using the word list established by Grebe (1980). The data was collected on the field from a main informant and secondary informants. The role of the secondary informants, was mainly ^{for} the verification of the data collected. The data so collected was classified into nouns and verbs and into various syllable groups. An inventory of all the sounds in this data was made and then submitted to a thorough structural phonological analysis.

CHAPTER TWO

TONES

This chapter is divided into 5 sections. The first section discusses tone as an African Language phenomenon. The second section is the tone inventory in which an inventory of all Círàmbó tones is made. The third section discusses contrastive tones on Círàmbó nouns and verbs and other contrastive tones. The fourth section treats grammatical and phonological tone processes in Círàmbó and the fifth section discusses tonemes.

2.1 Tone languages

Tone is defined as a prosodic feature that represents the relative but significant height of the voice during the production of a syllable. Donald A Burquest (1998) talking about tone says that

“The phenomenon most commonly having its domain as the syllable is tone”

In this wise, he considers tone languages to be those which make use of differences in pitch to distinguish lexical items. Círàmbó as an African language and especially a Bantu language manifests tone, so it is a tone language. In relation to tone languages, Pike (1945) has this to say:

“a tone language is that which has lexically significant, contrastive but relative pitch on each syllable”.

The idea of pitch being lexically significant refers to its capacity to distinguish between meanings of words. Accordingly, any change in syllable pitch leads to a change in the meaning of this syllable word. In tone languages, tones have the same distinctive value as consonants and vowels.

2.2 Tone Inventory

In Círàmbó, we made an inventory of five tones on syllables. These five tones could be divided into level tones and contour tones.

2.2.1 Level tones

Level tones are produced when the musical height of the voice does not vary during the production of a syllable. There are three level tones : High, Mid and Low in Círàmbó.

2.2.1.1 The High Tone

The high tone is marked with an acute accent [´]

Example:	[fú]	moon
	[púru]	dust
	[ndíndzí]	smoke
	[ndúyè]	murmur

2.2.1.2 The low tone

It is marked with a grave accent [`]

Example:	[lè]	hat
	[fùfù]	thread
	[lò?ò]	wine
	[mbà?à]	fog

2.2.1.3. The mid tone

It is marked with a macron [-]

Example:	[fūj]	grave
	[wā?ā]	cross
	[mīn ^w ij]	knife
	[dʒe ^w lej]	to learn

[ŋ-k^wē] harvest
 [tʃ] scar

2.2.2 Contour tones

It is that which the musical height of the voice varies during its emission on a syllable.

2.2.2.1 The Rising tone

It is marked as a Low-high combination [ˇ]

Example:	[fɪ]	yellow yams
	[mbě]	seed
	[fõ]	medicine
	[kĩŋ]	pot

2.2.2.2 The Falling tone

It is marked with a circumflex accent [^]

Example:	[bô]	hand
	[ʃê]	soil
	[p ^h ô]	sky [mô] soil?
	[fĩŋ]	tongue

2.3 Phonic tone table

˘	˙
	ˉ
˘	˙

2.4 Contrastive tones in Círàmbó.

Contrastive tones are those which orchestrate meaning changes in words. About contrastive pitch, Pike (1967) says:

“By contrast we mean that one thing is different from another thing within a functional system. The contrastive lexical units in tonal analysis are tonemes. In tone languages the pitch contrasts or significant pitch

differences entail one pitch being kept different or separate from another pitch in the immediate context?

In Círàmbó, we observed pitch contrasts or contrastive tones at the levels of nouns, verbs and others.

2.4.1 The High tone or /´/ or H

It gets its pertinence through the following contrast:

H/M	[mbí]	mosquito	[mbī]	mole ^{plant}
	[ń-tá?á]	want	[ń-tá?ā]	stick for cleaning
	[mbíŋ]	answer	[mbīŋ]	to affirm
H/L	[píí]	scorpion	[pīí]	millipede
	[mbóná]	hate	[mbèná]	enemy
	[kí]	salt	[kī]	or
	[mbí]	mosquito	[mbī]	outside
	[ń-dzǐ]	to know	[ń-dzī]	hunger
H/R	[ń-tǐ]	debt/rubbish	[ń-tī]	in law
H/F	[mú]	big ^{small}	[mū]	baby }+

2.4.2 The Mid tone or /˘/ or M

It is revealed as a toneme through the following contrasts :

M/H seen in H/M

M/L	[mbà?á]	fog	[mbà?à]	hook
M/F	[fūŋ]	grave	[fūŋ]	mole †

2.4.3 The Low tone or /`/ or L

Its tonemic status is seen through the following contrasts.

L/M seen in M/L

L/H seen in H/L

2.4.4 The Rising tone or /v/ or R

It gets its pertinence through the following contrasts :

R/H seen in H/R

2.4.5 The falling tone or /˨/ or F

It gets its pertinence through the following contrasts :

F/M seen in M/F

F/H seen in H/F

From the contrastive analyses of Círàmbó tones above, we establish the following tone contrasts: low/mid, high/low, high/falling, high/rising and mid/falling. These contrasts help us to establish the following tonemes in Círàmbó :

Though contour tones should be distinguished as a class, they will not be considered as tonemes in the language.

2.5 the effect of contour tones

2.5 Tone processes *Grammatical function*

In the previous section, we have discussed that a change from one tone to another brings about a complete change in meaning. However, we equally observed tonal changes especially on verbs that did not cause a change in meaning. Rather, these changes result in the modification of the tense of the verb, thus playing a grammatical function. We can illustrate this with the two verbs below.

a) ndʒí 'to eat'

b) ndúnù 'to beg'

From above, the verbs are in their infinitive forms. In the infinitive forms, the tone of the verb is high-low which is realised as a contour on monosyllabic verbs and as two level tones. high and low, on disyllabic verbs.

In the present tense, we can conjugate the verb 'to eat' as below

2.5.1 Tone Lowering.

change numbering

a) ñ có ndʒì pínà

"I am eating corn fufu"

- I - Po - eat - fufu
- b) ò có ndzì pínà "you are eating corn fufu"
you- Po - eat- fufu
- c) à có ndzì pínà "He is eating corn fufu"
^{ya}yəu- Po- eat- fufu
- d) pìjá có ndzì pínà "we are eating corn fufu"
we - Po - eat - fufu
- e) pǐ có ndzì pínà "you are eating corn fufu"
you- Po - eat - fufu
- f) púyú có ndzì pínà "They are eating corn fufu"
They - Po - eat - fufu

In the data above, the verb "to eat" changes from the high low contour tone in the infinitive to the low tone in the present tense. Po above refers to the present tense.

Equally, the verb to beg changes as below

2.5.2 Tone Simplification.

- a) ò có ndùṅù pílěj "I am begging groundnuts"
' I- Po - beg - groundnuts'
- b) ò có ndùṅù pílěj "You are begging groundnuts"
you- Po-leg- groundnuts'
- c) à có ndùṅù pílěj "He is begging groundnuts"
he- Po- leg- groundnuts
- d) pìjá có ndùṅù pílěj "we are begging groundnuts"
we - Po- beg - groundnuts
- e) pǐ có ndùṅù pílěj "you are begging groundnuts"
you - Po - beg - groundnut

f) púyú có ndùñù pílej "They are begging groundnut"

They – Po – beg – groundnuts

Above, we find that in the present tense (Po) the verb 'to beg' equally changes from the high-low infinitive tone to a low –low tone. These tonal changes on the verbs can be said to be coming from the Po marker which we posit here to be a low floating tone (L̥) on the first syllable of the verb. This Po low floating tone docks on monosyllabic verbs like eat above following the docking process below.

$$L̥ + H-L \longrightarrow L-\hat{L}$$

Above is the docking process which says that a low floating tone plus a falling tone yields simply a low tone. With disyllabic verbs as above, the docking process is almost similar as shown below

$$L̥ + H + L \longrightarrow L-L$$

The docking process above says that a floating low tone plus a high tone plus a low tone on disyllabic verbs yields a low- low scheme on the verb.

We can also verify this docking process for tones that are just low in the infinitive as below.

a) nyà "to cook"

b) tò?òw "to fetch"

These verbs are conjugated respectively as below

2.5.3 Tone Lowering

a) ñ có nyà pínà

"I am cooking fufu"

I – Po – cook - fufu

you – Po – fetch – water

f) púyú có tò?òw nkí

“they are fetching water”

They – Po – fetch – water

In the data above, we find that the result of the docking process on disyllabic low tone verbs is still a low as shown below :

$L_0 + L + L = LL$

This is, a floating low plus a low and plus a low gives a low- low on disyllabic verbs.

In the past tense, the tone of the verb ‘to eat’ becomes as below :

2.5.4 Tone Raising

a) mǐ nǐ ndzǐ pínà

“I ate corn fufu”

I - P₁ - eat - fufu

b) ò nǐ ndzǐ pínà

“you ate corn fufu”

you P₁ - eat - fufu

c) à nǐ ndzǐ pínà

“he ate corn fufu”

he- P₁- eat - fufu

d) pǐjá nǐ ndzǐ pínà

“we ate corn fufu”

we - P₁ - eat - fufu

e) pǐ nǐ ndzǐ pínà

“you ate corn fufu”

you -P₁ - eat - fufu

f) púyú nǐ ndzǐ pínà

“They ate corn fufu”

They -P₁ - eat - fufu

Above, we observe that in the past tense, the verb ‘to eat’ surfaces with a high tone. The verb “to beg” equally surfaces with a high-high tone as shown below.

- | | |
|-----------------------|--------------------------|
| a) ndúnú pílěj | “I begged groundnuts” |
| I-begged-groundnuts | |
| b) ò lúnú pílěj | “you begged groundnuts” |
| you-begged-groundnuts | |
| c) à lúnú pílěj | “he-begged-groundnuts” |
| he-begged-groundnuts | |
| d) pǐjá lúnú pílěj | “we begged groundnuts” |
| we- beg-groundnuts | |
| e) pǐ lúnú pílěj | “you begged groundnuts” |
| you-beg-groundnuts | |
| f) púyú lúnú pílěj | “They begged groundnuts” |
| They-beg-groundnuts | |

[l] → [nd] / # -

/l/ becomes [nd] when it occurs word initially.

In the case of the past tense, we notice that all monosyllabic and disyllabic verbs surface in this position as high or high-high. This situation parallels the earlier Po situation in that all verbs were realised as low or low-low. We may therefore come out with the following tonal phenomena processes below:

- a) verb becomes low in the present tense
- b) verb becomes high in the past tense

The processes above seem to work well because it is as if tones are always replaced on the verb be it monosyllabic or disyllabic, in each tense.

To verify, whether this tone replacement is common for all tenses, let us examine the future tense below.

- | | |
|------------------|------------------------|
| a) shǐ ndzî pínà | “I will eat corn fufu” |
|------------------|------------------------|

- 1- F₁ – eat - fufu
- b) ò shǐ ndzǐ pínà “you will eat corn fufu”
you- F₁-eat – fufu
- c) à shǐ ndzǐ pínà “he will eat corn fufu”
he- F₁- eat – fufu
- d) pǐjá shǐ ndzǐ pínà “he will eat corn fufu”
we- F₁- eat-fufu
- e) pǐ shǐ ndzǐ pínà “you will eat corn fufu”
you-F₁- eat –fufu
- g) pǐyù shǐ ndzǐ pínà “They will eat corn fufu”
They- F₁- eat –fufu

As the verb “to eat” features with the mid tone above, so too does the verb “to beg” feature with the mid tone below:

- a) shǐ ndūñū pílěj “I will beg groundnuts”
1-F₁-beg – groundnuts
- b) ò shǐ ndūñū pílěj “you will beg groundnuts”
you-F₁-beg-groundnuts
- c) à shǐ ndūñū pílěj “he will beg groundnuts”
you-F₁-beg-groundnuts
- d) pǐ shǐ ndūñū pílěj “you will beg groundnuts”
you-F₁-beg-groundnuts
- e) pǐjá shǐ ndūñū pílěj “we will beg groundnut”
we-F₁-beg-groundnut
- f) púyù shǐ ndūñū pílěj “They will beg groundnuts”
They- F₁- beg- groundnuts

In the data above, F₁ stands for the future tense marker. We equally notice that in the future verbs become mid irrespective of syllabic structure, that is whether they

are monosyllabic or disyllabic. We can thus capture the future tone replacement process as below. Verbs become mid in the future tense

Gloss	Infinitive	Present	Past	Future
To eat	ndzǎ	ndzǎ	ndzǎ	ndzǎ
To beg	ndúnù	ndúnù	ndúnú	ndúnú

Above, column one shows the gloss, two the infinitive forms of the verbs, three the present tense forms, four the past tense forms, five the future tense forms. We notice that verb tones can alternate from high-low to low-high to mid without a change in meaning of the word. Such tone changes that only result in a modification and not change of word meaning, are called grammatical tones.

2.6 Definition and Classification of tonemes

A toneme, is that tone which functions distinctively in a language, distinguishing lexical items from other lexical items. From our contrastive analysis, we had established that Círàmbó had five tonemes.

2.6.1 Definition of tonemes

Defining a toneme, means determining its pertinent features which distinguish it from other tonemes. The five tonemes of Círàmbó are defined as follows:

/´ / is high compared to /˘ / and /- /

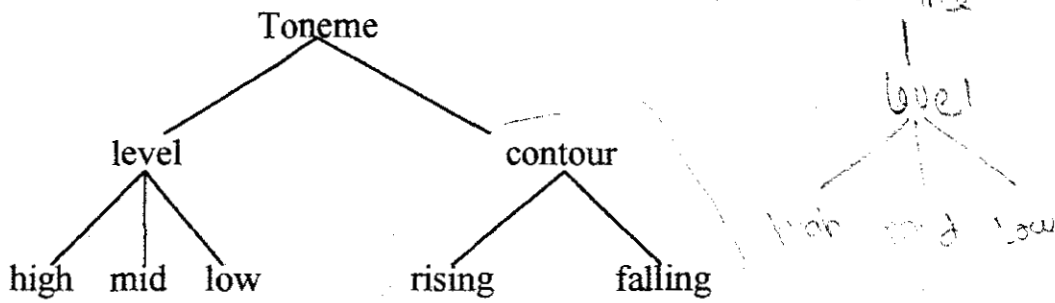
/˘ / is low compared to /´ / and /- /

/- / is mid compared to /´ / and /˘ /

/˘ / is falling compared to /´ /

/´ / is Rising compared to /˘ /

The tone hierarchy can be presented as below:



Each toneme in Círàmbó is defined in each branch of the schema.

2.6.2 Classification of tonemes

Following this definition above, we can classify the different tonemes as in the table below.

Level	H	/ /
	L	/ /
	M	/ /
Contour	R	/ /
	F	/ /

In the above analysis, we have established that Círàmbó has five tonemes; three level tones : High, Mid and Low, and two contour tones : a Falling tone and a Rising tone.

CHAPTER THREE

VOWEL SOUNDS

3.1 Definition

Vowels have been referred to as pure sounds (Ladefoged, 1975) while consonants are considered just as noise. A vowel actually is a sound, which is produced with no obstruction along the vocal cavity. There is a free flow of air during their production and these sounds could be sung or lengthened or held on the same pitch for a longer period than consonants.

Gaston Canu (1971) has this to say about vowels :

*"La voyelle est le résultat des modifications apportées par les résonateurs
buccal, pharyngal et éventuellement nasal".*

This means that the vowel results from modifications brought forth by the mouth, pharyngeal and nasal cavities.

3.2 Identification of vowel sounds.

At this level, we make a phonetic inventory of vowels through a number of words that illustrate them and we present them in a phonic chart.

3.2.1 Phonetic inventory of vowels

The vowel [i] [mbini] h dance
[ŋ-k^wíiní] disable ✱
[ndiŋ] cousin
[míkáʔə] younger brother

The vowel [e]
[ŋ-kóná] tired
[ŋ-k^wé] crow [e] gain
[ŋ-kéré] hatch
[mé] sig

The vowel [ɛ]

[míŋíʔgè]	weaver bird
[ŋ-kèʔɛj]	shepherd
[mbē]	loss

The vowel [ɯ]

[fá]	wound
[máŋgúúŋgɛ]	hen
[máŋgúù]	fowl

The vowel [a]

[ŋgán]	spider
[pàrá]	honey
[ndúwà]	horn/cup

The vowel [o]

[p ^h óʔów]	ache
[lɔ]	honey
[p ^h òyù]	poverty

The vowel [ii]

[míŋíŋíí]	chameleon
[ŋíí]	millipede
[ʃíígé]	guineacorn

The vowel [ɪ]

[ŋ-ŋíró]	jigger
[tsí]	tree
[kíkíñí]	anthill

The vowel [ə]

[ndzəyí]	to see
[kàrəw]	filarial
[ŋgəʔə]	suffer

The vowel [u]

[jùŋə]	pear
[mínúnú]	bee
[màʔá]	throw

The vowel [ɔ]

[f ^w əʔə]	riches
[ŋgəʔə]	termite
[mbífəʔə]	cockroach

The vowel [ee]

[méej]	to call
[ŋg ^w éé]	to laugh
[ŋgééré]	to help

The vowel [ii]

[yĩĩĩ]	round
[ŋgĩĩ]	to go
[ŋ-kĩĩĩ]	to assemble

The vowel [əə]

[ndəəró]	to hide
[ŋkəəní]	to roll

The vowel [aa]

[ndàá]	relation
[tàá]	father
[mbáá]	to be mad

The vowel [uu]

[mbùùmbùù]	albino
[mítʃùtʃùù]	caterpillar
[máŋgùùŋgé]	hen

The vowel [oo]

[ŋ-kóōŋ]	to touch
[fóórā]	to rot
[mbóóró]	soft

The vowel [ɔɔ]

[ŋg ^w óó]	snail
[ŋ-ʃóó]	to slaughter
[k ^w óóʃmĩ]	pity

3.2.2 Phonic table of vowels.

i	ii	i ĩ	ɛ	u	uu
e	ee			o	oo
ɛ		ə	əə	ɔ	ɔɔ
		a	aa		

3.3 Phonological analysis of vowels

Following a general principle established by the distributionalist phonological school of Leonard Bloomfield and his followers, the phonological status of vowel phonemes is stated below through the contrast of each vowel sound in one or many

minimal pairs with other vowels that are phonetically similar to them. In case we did not find a minimal pair, we used a near minimal pair showing two phonetic differences between the words with a difference in meaning.

The vowel /i/

It is revealed as a phoneme through the following contrasts:

i/e	[mbi]	outside	[mbé]	to sink
i/i	[tʃirā]	language	[tʃirā]	to speak
i/u	[fiŋ]	guinea corn	[fūŋ]	grave
i/ii	[mbiri]	to transplant	[mbiiri]	to pack

The vowel /i/ is high, unrounded and front.

The vowel /e/

It gains its pertinence through the following contrasts:

e/i	seen in i/e			
e/ε	[ŋ-k ^w ē]	harvest	[ŋ-k ^w è]	barren
e/ee	[ŋ-tʃèj]	to urinate	[ŋ-tʃéej]	to wait for

The vowel /e/ is a mid-high, unrounded, front vowel.

The vowel /ε/

It gains its pertinence through the following contrasts:

ε/e	seen in e/ε			
ε/o	[ŋ-tʃ ^w é]	to play	[ŋ-tsó]	to shine

The vowel /ε/ is a mid-low, unrounded, front vowel.

ε/o [ʃé] ood
ε/e seen in: ée

[ʃó] ood

The vowel /i/

It is established as a phoneme through the following contrasts :

i/i seen in i/i

i/u [pí] birth [fú] wound

i/ii [íj-kííí] to assemble [íj-kííí] to hang

/i/ is a high, unrounded, central vowel.

The vowel /u/

It is attested as a phoneme following the contrasts below:

u/u [fú] wound [fú] moon

u/i seen in i/u

u/i [fú] wound [fí] to catch

The vowel /u/ is high, rounded and central.

The vowel /ə/

Its phonemic status is revealed in the following contrasts :

ə/ε seen in ε/ə

ə/a [pínə] breast [pínà] fufu

ə/əə [ndəré] to lick [ndóóré] to hide

The vowel /ə/ is half-high, unrounded and central.

The vowel /a/

It gains its pertinence through the following contrasts:

a/ə seen in ə/a

a/aa [ndâ] house [ndàá] relation

/a/ is low, unrounded and central vowel.

The vowel /u/

It is attested as a phoneme through the following contrasts :

u/i seen in i/u

u/ʌ seen in ʌ/u

u/o [p^hô] sky

[p^hú] ash

u/uu [ŋ-kũŋ] box

[ŋ-kúũŋ] to remove feathers

The vowel /u/ is high, rounded and back.

The vowel /o/

It is proven as a distinctive phoneme through the following contrasts :

o/u seen in u/o

o/ɔ [ŋ-tʃô] to sit

[ŋ-tʃɔ] war

[ndôŋ] husband

[ndóŋ] hot.

/o/ is half-high, rounded and back vowel.

o/e seen in e/o

The vowel /ɔ/

It is attested as a phoneme through the following contrasts in identical context :

ɔ/o seen in o/ɔ

ɔ/ɔ [ŋ-tʃɔ] war

[ŋ-tʃɔɔ] mart

/ɔ/ is a mid-low, rounded and back vowel.

ɔ/e seen in e/ɔ

ɔ/u seen in u/ɔ

The vowel /ii/

Its phonemic status is established as below:

ii/i seen in i/ii

/ii/ is a high, unrounded, front and long vowel.

The vowel /ee/

It reveals its pertinence through the following contrasts:

ee/e seen in e/ee

/ee/ is a mid-high, unrounded, front and long vowel.

The vowel /ii/

It is revealed as a phoneme through the following contrast:

ii/i seen in i/ii

/ii/ is a high, unrounded, central and long vowel.

The vowel /əə/

Its phonemic status is revealed in the contrast :

əə/ə seen in ə/əə

/əə/ is a mid-low, unrounded, central and long vowel.

The vowel /aa/

It is established as a phoneme as below:

aa/a seen in a/aa

/aa/ is a low, unrounded, central and long vowel.

The vowel /uu/

It is distinct as a phoneme through the following contrast :

uu/u seen in u/uu

/uu/ is a high, rounded, back and long vowel.

The vowel /oo/

It gains its pertinence through the following contrast:

oo/o seen in o/oo

/oo/ is a mid-high, rounded, back and long vowel.

The vowel /ɔɔ/

It is attested as a phoneme through the following:

ɔɔ/ɔ seen in ɔ/ɔɔ

/ɔɔ/ is a mid-low, rounded, back and long vowel.

339 the status of long vowel

3.4 Phonemic Inventory

From the above analysis of vowel sounds we have established 18 vowel phonemes in Círàmbó. These are indicated below.

/i, e, ɛ, ɪ, u, ε, o, a, ɔ, ə, ii, ee, ðð, aa, uu, oo, ɔɔ/

3.5 Definition and classification of vowel phonemes

3.5.1 Definition of vowel phonemes

Each vowel phoneme is defined through the main characteristics that makes it different from all the other vowels of the system, and more especially with those vowel phonemes that are closely related to it.

/i/ is front compared to /ɪ/, and high compared to /e/

/e/ is half-high compared to /ε/ and unrounded compared to /o/

/ε/ is half-low compared to /a/ and unrounded compared to /ɔ/

/ɪ/ is high compared to /ə/ and unrounded compared to /ɯ/

/ɯ/ is high compared to /ə/ and rounded compared to /i/

/ə/ is half-low compared to /a/ and central compared to /ɔ/

/a/ is low compared to /ə/ and unrounded compared to /ɯ/

/u/ is high compared to /o/ and rounded compared to /i/

/o/ is half-high compared to /ɔ/ and rounded compared to /e/

/ɔ/ is half-low compared to /a/ and rounded compared to /ε/
 /ii/ is long compared to /i/ and unrounded compared to /uu/
 /ee/ is long compared to /e/ and unrounded compared to /oo/
 /ii/ is long compared to /i/ and high compared to /əə/
 /əə/ is long compared to /ə/ and mid-high compared to /aa/
 /aa/ is long compared to /a/ and low compared to /əə/
 /uu/ is long compared to /u/ and rounded compared to /ii/
 /oo/ is long compared to /o/ and half-high compared to /ɔɔ/
 /ɔɔ/ is long compared to /ɔ/ and back compared to /əə/

3.5.2 Classification of vowel phonemes

The vowels will be classified following :

- The position of the tongue in the mouth (front, central, back)
- The position of the lips (rounded, unrounded)
- The height of the tongue in the mouth (high, mid-high, mid-low and low).

Following the height of the tongue.

Front: /i/, /e/, /ε/, /ii/, /ee/

Central: /ɨ/, /ʌ/, /ɔ/, /a/, /ii/, /əə/, /aa/

Back: /u/, /o/, /ɔ/, /uu/, /oo/, /ɔɔ/

Following the position of the lips

Unrounded: /i/, /e/, /ε/, /ɨ/, /ə/, /a/, /ii/, /ee/, /ii/, /əə/, /aa/.

Rounded: /u/, /o/, /ɔ/, /uu/, /oo/, /ɔɔ/.

Following the height of the tongue.

High /i/, /u/, /ii/, /uu/, /i:/, /u:/.

Mid-high /e/, /o/, /ee/, /əə/, /oo/

Mid-low /ɛ/, /ə, /ɔ/, /ɔɔ/

Low /a/, /aa/.

As a result of the definition and classification of vowel phonemes we can set up a table of the vowel system in Círàmbó.

3.6 Phonemic table of vowels.

Place of Articulation Height of The tongue	Front (unrounded)		Central (unrounded) (round)		Back (round)	
	Short	long	Short	long	short	long
High	/i/	/ii/	/i:/	/i:/	/u:/	/uu/
Mid-high	/e/	/ee/			/o/	/oo/
Mid-low	/ɛ/		/ə/	/əə/	/ɔ/	/ɔɔ/
Low			/a/	/aa/		

The above analysis shows that Círàmbó has 18 phonological vowels, ten of which are short and eight long vowels.

CHAPTER FOUR CONSONANT SOUNDS

A consonant is a sound, which is produced with an obstruction along the vocal tract. The place of obstruction determines the name of the consonant; for instance, labials are produced with the obstruction at the level of the lips, alveolars with obstruction at the level of the alveolar ridge, palatals with obstruction at the level of the hard palate and velars with obstruction at the level of the velum.

The manipulation of the airflow determines the manner of production of each consonant. For example, where the air flow is stopped completely before a sudden release, we have stops, where the air continues to forge its way through the obstruction, we have fricatives or more generally continuants and if part of the air happens to pass through the nostrils, we talk of nasal consonants.

4.1. Inventory of consonant sounds

On observation of the 1000 words we collected in Círàmbó, we came out with a list of 50 consonant sounds. This list is presented below :

[p, p^w, p^h, p^j, b, t, t^w, t^h, k, k^j, k^w, g, g^j, f, f^w, ʃ, ʃ^j, ʃ^w, ʔ, ʔ^w, h, m, n, n^w, n^j, ɲ, ɲ^j, ɲ^w, tʃ, tʃ^w, dʒ, dʒ^w, dʒ^j, mb, mb^j, nd, nd^w, nd^j, ŋg, ŋg^w, ts, ndʒ, ndʒ^j, l, l^j, j, j^w, r, w]

We can see in the list of consonant sounds above, the inventory of Círàmbó consonants composed of simple and complex sounds. Complex sounds include modified sounds like labialized, palatalized, prenasalized sounds and affricates.

4.2 Identification of consonant sounds

This identification consist of a phonetic inventory of consonants sounds and a phonic table of consonants.

4.2.1 Inventory of consonants

The consonant [p]

[píʔí]	ferment
[pòpóórò]	slowly
[pèrá]	feather

The consonant [p^h]

[p ^h óʔó]	parcel
[p ^h ôyù]	poverty
[p ^h ɔ̃]	bark

The consonant [b]

[bó]	hand
------	------

The consonant [mb]

[mbǒná]	enemy
[mĩmbí]	goat
[mé]	big

The consonant [p^w]

[p ^w ɔ̃ʔó]	mushroom
[p ^w àp ^w â]	beautiful
[p ^w ăt ^w ā]	happiness

The consonant [p^l]

[p ^l ip ^l ê]	red
------------------------------------	-----

The consonant [m]

[màʔá]	wear
[mĩmĩʔí]	dew
[mũŋó]	flame/fire

The consonant [mb^j]

[mĩmb ^j â]	man
[mũmĩmb ^j â]	boy

The consonant [m^wf]

[fó?ó]	to bundle
[fí?ó]	fish
[fí?ò]	air/wing
[fú?ú]	cotton

The consonant [t]

[tí?à]	shoe
[títòrèj]	mud
[tá?á]	saw/mend

The consonant [t^h]

[t ^h ó]	peak of hill
[lírít ^h ó]	shame
[t ^h óp ^h inĩ]	nipple

The consonant [n^w]

[n ^w ó]	skin
[mín ^w í]	knife
[n ^w á]	suck

The consonant [nd]

[féndôŋ]	road
[ndiyà]	time
[t ^h óndâ]	roof

The consonant [nd^l]The consonant [f^w]

[f ^w ó?ó]	riches
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The consonant [t^w]

[n-t ^w ēj]	to main <i>hibing</i>
[mít ^w e?èj]	snake
[pígít ^w ǎ]	anger

The consonant [n]

[línà]	clever
[nū]	drink
[kíkĩnĩ]	anthill

The consonant [n^l]

[n ^l id ^w í]	hippopotamus
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The consonant [nd^w]

[kínd ^w í]	soap
[nd ^w í]	clothes

The consonant [ts]

[fũndʰi] chimpanzee

[mĩndʰà] elder

[tsí] tree

[mĩkĩtsò] intestine

[tsə̀nĩtsõw] stubborn

The consonant [l]

[lĩŋ] tongue

[pĩlèj] groundnut

[lè] hat

The consonant [pʰ]

[pʰémbò] palm

The consonant [r]

[mĩkĩrà] white person

[fĩrò] blow

[jũrò] song

The consonant [ʃ]

[ʃé] soil

[ʃũfũ] thread

[ʃò] hoe

The consonant [ʃʷ]

[ʃʷòʔõ] to uproot

[ʃʷǎ] tooth

[ń-ʃʷĩĩ] descend

The consonant [ʃʰ]

[ʃʰá] to count

[mĩʃʰõ] pepper

[fĩʃʰé] maggot

The consonant [tʃ]

[tʃán] prison

[ń-tʃũ] say

[ń-tʃĩrā] to talk

The consonant [tʃʷ]

[tʃʷéé] play

[tʃʷĩ] to horn

[ń-tʃʷéʔéj] to prick

The consonant [dʒ][dʒí] *fight hand*The consonant [dʒʷ]

[ń-dʒʷĩ] to kill

[dʒúj^hó] to buy

[mídʒĩĩ] sheep

The consonant [dʒ^j]

[n̄-dʒ^jā] xylophone

[n̄-dʒ^jé] many

The consonant [ndʒ^j]

[ndʒ^jē ndāā] room

The consonant [r^j]

[r^já] to cook

[r^jéē] to walk

[ŋgór^jè] ridge

The consonant [j^w]

[j^wigĩ] duck

The consonant [k^w]

[ŋ-k^wá?á] to knock

[k^wéj] seeds

[n̄-dʒ^wé?éj] taste

[n̄-dʒ^wí] bitter

The consonant [ndʒ]

[ndʒĩné] axe

[ndʒù?ò] bold

[míndʒĩndʒĩ] fly

The consonant [ŋ]

[míŋnèè] animal

[míŋĩĩŋĩĩ] chameleon

[míŋkũŋà] pig

The consonant [j]

[ŋèj] nail

[mbijó?ò] plantain

[ŋ-k^wéj] fire wood

The consonant [k]

[ŋ-ká?á] crack

[kàròw] filarial

[míkó?ò] elder sister

The consonant [k^j]

[ŋik^jēmīkīrā] radio

[ŋ-k^jè] to fry

[k^wǎ] arrow

The consonant [g]

[fɪgó] to dilute

[gú] death

[líǵì] eye

The consonant [ŋ]

[lɪŋlɪŋ] sweet

[ŋ-k^wé] cow

[ŋ-káá] raffia

The consonant [ŋg]

[míŋgè^t] giraffe

[ŋgǒŋ] Bed bag

[ʃaŋgà] news

The consonant [ʔ]

[lɪʔí] place

[mbàʔà] fog

[níʔā] meet

The consonant [h]

[pígòhò] fear

[fúhfū] white

The consonant [g^j]

[g^jě] to lie

The consonant [ŋ^w]

[ŋ^wáʔá] have

[ŋ^wáʔlí] book

[ŋ^wàʔàŋ^wáʔà] yellow

The consonant [ŋg^w]

[ŋg^wáfúŋò] queen

[ŋg^wòʔò] grinding stone

[ŋg^wà] people

The consonant [ɣ]

[tʃíyá] tall

[lèyí] chair

[tʃíyā] file

The consonant [w]

[wěj] ice/hail

[ŋgəw] noise / laun / -

[jəgəw] itch

4.2.2 Phonic Table of consonants.

A Phonic chart is a chart with no labels. It contains the sounds of the phonetic inventory. These sounds are disposed in this chart following the configuration of the phonatory apparatus. The phonic chart for Círàmbó consonant sounds listed above is presented as below.

p	p ^h	p ^j	p ^w			t	t ^w	t ^h						k	k ^w	k ^j	ʔ
b														g		g ^j	
m						n	n ^w	n ^h				ɲ	ɲ ^j	ŋ	ŋ ^w		
m ^w		m ^j				n ^j	nd ^w	nd ^h						ŋg	ŋg ^w		
b		b ^j				d											
			f	f ^w					ʃ	ʃ ^w	ʃ ^j						h
									tʃ	tʃ ^w							
									ts								
									dʒ	dʒ ^w	dʒ ^j						
									ndʒ	ndʒ ^w	ndʒ ^j						
						l	l ^j										
						r											
												j	j ^w				

4.3 Phonological Analysis of consonants

4.3.1 Secondary articulations

The phonological analysis of consonants is carried out through the following steps

:

- **Minimal pairs** : whereby two consonants contrasting in the same environment or in nearly similar environments and giving different meanings to the words in which they occur, will be considered as separate phonemes.

- **Complementary distribution** : whereby two closely related consonants occurring in mutually exclusive environments will be considered as allophones of the same phoneme.

4.3.1 Identification of phonemes through their contrast in minimal pairs :

The consonant /p/

It is established as a phoneme following the contrasts below:

p/p ^w	[pḁʔḁ]	lion	[p ^w ḁʔḁ]	mushroom
p/p ^h	[pḁrú]	dust	[p ^h ú]	ash
p/f	[pḁnḁ]	when	[fḁnḁ]	star

The phoneme /p/ is a bilabial, oral, and voiceless stop.

The consonant /p^w/

Its phonemic status is revealed in the following contrasts:

p ^w /p	seen in	p/p ^w		
p ^w /f ^w	[p ^w ḁʔḁ]	mushroom	[f ^w ḁʔḁ]	riches

The phoneme /p^w/ is a bilabial, labialized, oral, voiceless stop.

The consonant /p^h/

It gains its phonemic status through the following contrasts:

p ^h /p	seen in	p/p ^h		
p ^h /p ^w	[p ^h ḁ]	bark	[p ^w ḁʔḁ]	mushroom

The phoneme /p^h/ is a bilabial, aspirated, oral, voiceless stop.

The consonant /m/

Its gains its pertinence in the following contrasts :

m /mb	[mé]	big	[mbé]	sink
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m/n [má-má?ā] to wear [n-ná?ā] write

The phoneme /m/ is a bilabial nasal.

The consonant /mb/

It acquires its pertinence in the following:

mb/m	seen in	m/mb		
mb/nd	[mbàŋ]	cobra	[ndàŋ]	net
	[mbé]	sink	[ndé]	sleep

The phoneme /mb/ is a bilabial pre-nasal.

The consonant /f/

It is attested as a phoneme through the following contrasts :

f/p	seen in	p/f		
f/f ^w	[fɔʔɔ]	foam	[f ^w ɔʔɔ]	riches

The phoneme /f/ is a labial-dental, voiceless fricative.

The consonant /f^w/

It is proven as a distinctive phoneme through the following contrasts:

f ^w /f	seen in	f/f ^w
f ^w /p ^w	seen in	p ^w /f ^w

The phoneme /f^w/ is a labialised, voiceless, labial-dental fricative.

The consonant /t/

It gains its phonemic status through the following:

t/t ^w	[n-téj]	to run	[n-t ^w éj]	to ^{main} maim
t/ts	[n-tíró]	jigger	[n-tsíní]	strong
	[tígó]	sharpen	[tsí]	tree
t/tʃ	[tán]	market	[tʃán]	prison

The phoneme /t/ is a voiceless, oral dental stop.

t/f [n-tíg] kick

[n-túŋ] box

The consonant /tʷ/

It is revealed as a phoneme through the following contrast:

tʷ/t seen in t/tʷ

The phoneme /tʷ/ is a labialised, oral, voiceless alveolar stop.

The consonant /n/

It acquires its pertinence through the following contrasts :

n/m	seen in	m/n		
n/ŋ	[ń-náʔā]	write	[ń-ŋáʔá]	open
n/nʷ	[ná]	fool	[nʷá]	suck
n/nd	[ná]	fool	[ndǎ]	house

The phoneme /n/ is a dental alveolar nasal.

The consonant /nʷ/

It gains its phonemic status through the following contrast.

nʷ/n	seen in	n/nʷ		
nʷ/nd	[nʷá]	suck	[ndǎ]	house

The phoneme /nʷ/ is a labialized alveolar nasal.

The consonant /nd/

It is proven as a phoneme through the following contrasts :

nd/n	seen in	n/nd		
nd/nʷ	seen in	nʷ/nd		
nd/mb	seen in	mb/nd		
nd/ŋg	[ndii]	watch	[ŋgi]	voice

The phoneme /nd/ is an alveolar prenasal.

nd [ndi] sheep

[ŋi] hat

The consonant /ts/

It gains its phonemic status through the following contrasts :

ts/t	seen in	t/ts		
ts/tʃ	[ń-tʃíjē]	tough	[ń-tʃírá]	to talk
	[ń-tʃínē]	to carry	[ń-tʃíí]	to postpone
ts/dʒ	[tʃí]	tree	[dʒí]	right

The phoneme /ts/ is a voiceless alveolar affricate.

The consonant /l/

It gains its phonemic status through the following contrasts :

l/r	[míliʔi]	shadow	[mbíri]	transplant
l/n	[lòw]	music	[nòw]	month

The phoneme /l/ is an alveolar lateral.

The consonant /r/

The phonemic status is revealed in the following contrast :

r/l	seen in	l/r
-----	---------	-----

the phoneme /r/ is an alveolar trill.

The consonant /ʃ/

It acquires its pertinence through the following contrasts :

ʃ/ʃ ^w	[míʃěʃ ʃěʃ]	dragon fly	[míʃ ^w ěʃ ʃ ^w ěʃ]	story
ʃ/tʃ	[ʃí]	ahead	[tʃí]	scar
ʃ/dʒ	[ʃí]	ahead	[dʒí]	fight hand

The phoneme /ʃ/ is a voiceless pre-palatal fricative.

The consonant /ʃ^w/

Its phonemic status is revealed in the following contrast :

$\text{ʃ}^w/\text{ʃ}$ seen in $\text{ʃ}/\text{ʃ}^w$

The phoneme $/\text{ʃ}^w/$ is a labialized pre-palatal fricative.

The consonant $/\text{tʃ}/$

It is attested as a phoneme through the following contrasts:

$\text{tʃ}/\text{t}$ seen in $\text{t}/\text{tʃ}$

$\text{tʃ}/\text{ts}$ seen in $\text{ts}/\text{tʃ}$

$\text{tʃ}/\text{ʃ}$ seen in $\text{ʃ}/\text{tʃ}$

$\text{tʃ}/\text{tʃ}^w$ $[\bar{n}-\text{tʃ}^w]$ in law $[\bar{n}-\text{tʃ}^w]$ to hit

The phoneme $/\text{tʃ}/$ is a pre-palatal voiceless affricate.

tʃ/dʒ seen in *tʃ/dʒ*

The consonant $/\text{tʃ}^w/$

It gains its pertinence in the following contrast:

$\text{tʃ}^w/\text{tʃ}$ seen in $\text{tʃ}/\text{tʃ}^w$

The phoneme $/\text{tʃ}^w/$ is a labialised pre-palatal affricate.

The consonant $/\text{dʒ}/$

It gains its phonemic status through the following contrasts:

$\text{dʒ}/\text{ʃ}$ seen in $\text{ʃ}/\text{dʒ}$

$\text{dʒ}/\text{dʒ}^w$ $[\bar{n}-\text{dʒ}^w]$ to knock $[\bar{n}-\text{dʒ}^w]$ to kill.

The phoneme $/\text{dʒ}/$ is a pre-palatal voiced affricate.

dʒ/ʃ seen in *tʃ/dʒ*

The consonant $/\text{dʒ}^w/$

It is attested as a phoneme through the following contrast :

$\text{dʒ}^w/\text{dʒ}$ seen in $\text{dʒ}/\text{dʒ}^w$

The phoneme $/\text{dʒ}^w/$ is a pre-palatal labialised voiced affricate.

The consonant /j/

Its phonemic status is revealed in the following contrast:

j/w	[jèj]	forehead	[wěj]	ice/hail
-----	-------	----------	-------	----------

The phoneme /j/ is a palatal approximant.

The consonant /k/

It is established as a distinctive phoneme through the following contrast :

k/k ^w	[ŋ-ká?á]	crack	[ŋ-k ^w á?á]	knock
k/g	[kóó]	what	[gòó]	when
k/ŋg	[kĩ]	or	[ŋgĩ]	voice

The phoneme /k/ is a velar voiceless stop.

The consonant /g/

It acquires its pertinence in the following contrast :

g/k	seen in	k/g		
g/y	[tʃígí]	cheap	[tʃiyó]	tall
g/ŋg	[gú]	death	[ŋgúrā]	to strive

The phoneme /g/ is a voiced, oral, velar stop.

The consonant /ŋ/

It is attested as a phoneme through the following contrasts :

ŋ/n	seen in	n/ŋ
-----	---------	-----

The phoneme /ŋ/ is a velar nasal.

The consonant /ŋg/

It is proven as a distinctive phoneme through the following contrasts :

ŋg/nd	seen in	nd/ŋg
-------	---------	-------

ŋg/k	seen in	k/ŋg
------	---------	------

ŋg/g seen in g/ŋg

ŋg/ŋg^w [ŋgĩĩ] beard [ŋg^wii] bargain

The phoneme /ŋg/ is a prenasal, voiced velar.

The consonant /ŋg^w/

It is revealed as a phoneme through the following contrasts :

ŋg^w/ŋg seen in ŋg/ŋg^w

ŋg^w/k^w seen in k^w/ŋg^w

The phoneme /ŋg^w/ is a labialised, voiced, prenasal velar.

The consonant /y/

It is distinguished as a phoneme through the contrast below :

y/g seen in g/y

The phoneme /y/ is a voiced velar fricative.

The consonant /ʔ/

It is determined as a phoneme through the following minimal pairs :

ʔ/h [p^hoʔow] bundle [piɡòhò] fear
ʔw *[p^hoʔow]* *ʔw* *[piɡòhò]* *ʔw*

The phoneme /ʔ/ is a glottal stop, oral, voiceless

The consonant /w/

It acquires its pertinence through the following contrast :

w/j seen in j/w

The phoneme /w/ is a labial-velar glide.

w *seen in* *w*

4.3.2. Analysis-allophones

Allophones constitute a pair or a trio or even more, of sounds that are variants. The pertinence of allophones in relation to phonemes is that they occur in mutually exclusive environments, while phonemes occur in similar or identical environments.

In the discussion below, we analyse pairs of sounds that entertain allophonic relationships.

Let us consider the lateral non-fricative and its palatalized counterpart in the following words :

	(l, ʎ)	
a)	líǵì	'names'
b)	líǵà	'clever'
c)	ndàʎàmbílán	'dawn'
d)	lúǵó	'to beg'
e)	ʎémbò	'palm'

We discover that these sounds occur in mutually exclusive environments and are thus allophones of one phoneme /l/ as shown below.

/l/ $\left\{ \begin{array}{l} [ʎ]/ \text{ before the mid-high front unrounded vowel} \\ [l]/ \text{ elsewhere} \end{array} \right.$

The above rule says that the lateral non-fricative sound becomes palatalized before the mid-high unrounded front vowel and remains a simple lateral fricative elsewhere.

Let us also consider the prenasalized voiced bilabial stop and its palatalized counterpart in the data below.

(mb, mb^j)

- a) mĩmb^jâ 'man'
- b) mũmĩmb^jâ 'boy'
- c) mbírâ 'hill'
- d) mbĩjè 'walking stick'
- e) mbóná 'hate'

The above data shows that these two sounds do not occur in the same environments. Thus they are allophones of the same phoneme /mb/.

$$/mb/ \begin{cases} [mb^j] / \text{before low unrounded vowels} \\ [mb] / \text{else where} \end{cases}$$

The rule says that the prenasalized voiced bilabial stop becomes palatalized before low unrounded vowels and remains the same elsewhere.

Let us consider the dental alveolar nasal and its palatalised counterpart below :

(n, n^j)

- a) n̄-tʃ^wĩ 'create'
- b) finó 'star'
- c) mínòw 'sun'
- d) nà?à 'cow'
- e) nj̄ind^wí 'hippopotamus'

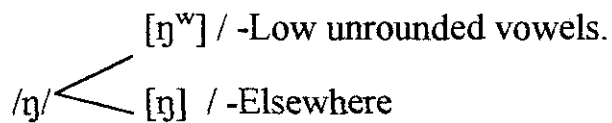
From the above data, the palatal prenasalized sound occurs only before the high front unrounded vowel and the palatal nasal occurs elsewhere as indicated below.

$$/n/ \begin{cases} [n^j] / \text{before high front unrounded vowel} \\ [n] / \text{elsewhere} \end{cases}$$

Let us now consider the velar nasal and the labialized velar nasal below.

	(ŋ,ŋ ^w)	
a)	ŋŋŋ	'sweet'
b)	ŋ k ^w é	'cow'
c)	ŋèj	'nail'
d)	ŋ ^w áʔá	'hive'
e)	ŋ ^w áʔŋ	'book'
f)	ŋ ^w àʔàŋ ^w áʔà	'yellow'

From the occurrences of [ŋ] and those of [ŋ^w] above, we conclude that [ŋ] and [ŋ^w] are allophones of /ŋ/ written as below.

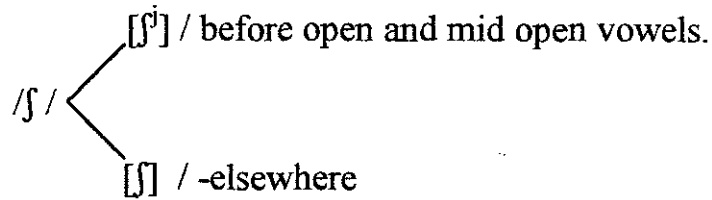


That is, [ŋ] becomes [ŋ^w] before [a] and remains [ŋ] elsewhere.

The data below, shows the distribution of the prepalatal fricative and the palatalized prepalatal fricative.

	(ʃ,ʃ ^j)	
a)	ʃú	'fish'
b)	ʃòn	'ceiling'
c)	ʃɪʃē	'sand'
d)	míʃ ^j ə	'pepper'
e)	ŋíʃ ^j è	'maggot'
f)	ʃ ^j á	'count'

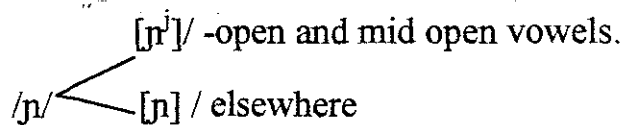
The data above show [ʃʲ] occurring only before open and mid open vowels, while [ʃ] occurs elsewhere as illustrated below. They are thus allophones of /ʃ/



The distribution of the palatal nasal and the palatalized palatal nasal is shown in the data below.

- (ɲ, ɲʲ)
- a) míɲnèè 'animal'
 - b) ɲĩĩ 'farm'
 - c) ɲʲá 'cook'
 - d) ɲʲéé 'to walk'
 - e) ɲgóɲʲè 'ridge'

As indicated above, [ɲʲ] occurs only before open and mid open vowels, while [ɲ] occurs elsewhere. We capture this conclusion in the rule below, they are allophones of the same phonemes /ɲ/



The rule above, shows that [ɲʲ] becomes palatalized either before [a] or [ɛ] while it remains [ɲ] in all other situations.

The data below shows the distribution of the alveolar prenasalized stop and its labialized counterpart.

(nd, nd^w)

- a) féndôŋ 'road'
- b) ndàŋ 'net'
- c) ndùŋò 'trouble'
- d) kínd^wí 'soap'
- e) nd^wí 'clothes'

The data above, show that the environments of [nd^w] are limited, it occurs only before the high unrounded vowel. We thus conclude that this sound must be an allophone of /nd/ as indicated below.

[nd^w]/ before front high unrounded vowels
 /nd/ < [nd]/ elsewhere

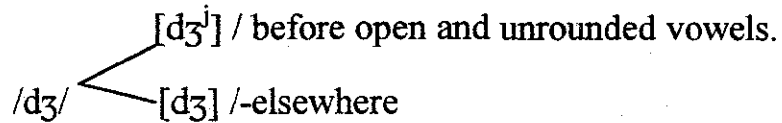
The rule says [nd] is realised as [nd^w] before the front high unrounded vowel and as [nd] elsewhere.

Let us now consider the distribution of the prepalatal affricate and its palatalized counterpart below :

(dʒ, dʒ^j)

- a) mídʒì 'sheep'
- b) dʒèntěj 'scabies'
- c) ñ-dʒì 'hunger'
- d) ñ-dʒù?ò 'heat'
- e) ñ-dʒ^jǎ 'xylophone'
- f) ñ-dʒ^jé 'many'

From this data, we notice that the distribution of [dʒ^j] is limited, it occurs only before open vowels. We thus conclude that these two sounds are the allophones of /dʒ/ as formalised below :

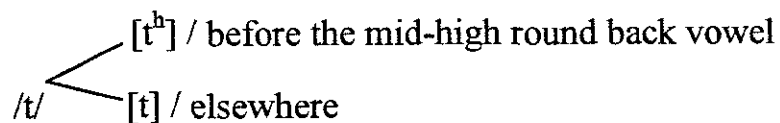


This formalisation implies that [dʒ] is realised as [dʒ^j] either before [a] or before [ɛ] and remains the same elsewhere .

We are now going to observe the distribution of the alveolar stop and its aspirated counterpart as below.

	(t, t ^h)	
a)	títōrèj	'mud'
b)	tùrú	'grass'
c)	kúfí	'shoes'
d)	t ^h ó	'peat of hill'
e)	t ^h óndô	'roof'
f)	t ^h ój	'top'

An observation of the miniature data above shows that the aspirated sound occurs only before the half high rounded back vowel [o]. While the unaspirated sound occurs in other contexts. We conclude that these sounds are allophones of the same phoneme written as below.



The rule says the dental alveolar voiceless stop is realised as aspirated before [o] and remains unaspirated elsewhere.

Below, shows the distribution of prepalatal prenasalized affricate and its palatalized counterpart in círàmbó.

(ndʒ, ndʒʲ)

- a) míndʒĩndʒĩ 'fly'
 b) ndʒùʔə 'bold'
 c) nĩndʒĩŋ 'quality'
 d) ndʒóō 'to choose'
 e) ndʒʲē ndáā 'room'

We notice that the palatalized counterpart occurs only before the mid-high front unrounded vowel as in (e). These sounds are thus allophones as below.

$$/ndʒ/ \begin{cases} [ndʒʲ] / \text{before the mid-high front vowel.} \\ [ndʒ] / \text{elsewhere} \end{cases}$$

It means /ndʒ/ becomes palatalized before the mid-high front unrounded vowel, and remains the same elsewhere.

The data below exhibits the distribution of the alveolar prenasalized stop and its palatalized counterpart.

(nd, ndʲ)

- a) ndʲóó 'to hide'
 b) ndùnù 'price'
 c) ndôŋ 'husband'
 d) fũndʲĩ 'chimpanzee'
 e) míndʲà 'elder'

From the above data, we conclude that these sounds are allophones as they occur in mutually exclusive environments as shown below.

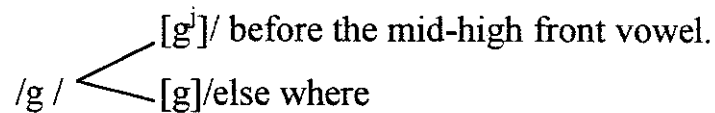
$$/nd/ \begin{cases} [ndʲ] / \text{v-v} \\ [nd] / \text{elsewhere} \end{cases}$$

The rule says /nd/ becomes [ndʲ] between vowels, while it remains same elsewhere.

The data below shows the distribution of the velar voiced stop and its palatalized counterpart.

- (g, g^j)
- a) gòó 'who'
 - b) j^wigĩ 'duck'
 - c) jĩgĩ 'broom'
 - d) tígá 'sharpen'
 - e) g^jě 'to lie'

We observe in the above data that the occurrence of [g^j] is limited, only before the mid-high unrounded front vowel implying that [g^j] is an allophone of /g/.

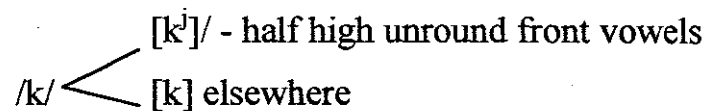


Above says that /g/ becomes [g^j] before [e] and remains the same elsewhere.

The above situation, for the voiced velar stop, is similar to that of the voiceless velar stop as shown below.

- (k, k^j)
- a) kèròw 'filaria'
 - b) kínd^wĩ 'soap'
 - c) míkó'ò 'elder sister'
 - d) ń-ká?òw 'mature'
 - e) lík^jémíkírā 'radio'
 - g) ń-k^jě 'squeeze'

We notice that [k] and [k^j] are allophones of /k/ as indicated below.



/k/ becomes [k^j] before [e] and remains [k] elsewhere

Let us consider the distribution of the voiceless bilabial stop and its palatalized correspondent below :

(p, pʲ)

- a) púrí 'dust'
- b) p̂ɲ 'weevil'
- c) p̂p̂óórò 'slowly'
- d) p̂îp̂ʲê 'red'

We notice that the distribution of [pʲ] is limited to only before the mid-high unrounded front vowel. These are allophones of one phoneme as indicated below.

$$/p/ \begin{cases} [pʲ] / - \text{half high unrounded} \\ [p] / \text{elsewhere} \end{cases}$$

The rule says that /p/ becomes [pʲ] before [-e] and [p] elsewhere.

Let us now examine the palatal glide and the palatal labialized glide below.

(j, jʷ)

- a) ɲ-kʷêj 'firewood'
- b) ɲèj 'nail'
- c) mbiĵʔ̂ 'plantain'
- d) ñ-f̂ʷēj 'to mourn'
- e) ĵʷigĩ 'duck'

On observation of the data above, the labialized sound occurs only before the front high unrounded vowel. We conclude that these two sounds are allophones of /j/.

$$/j/ \begin{cases} [jʷ] / \text{before the front high unrounded vowel.} \\ [j] / \text{elsewhere} \end{cases}$$

The rule says that /j/ becomes [jʷ] either before [e] or [i] and remains [j] elsewhere.

The distribution of the voiceless bilabial stop and the voiced bilabial stop is shown below.

	(p, b)	
a)	pĩip ^j ê	'red'
b)	pàrá	'wing'
c)	páŋ	'hunting'
d)	mbó	'hand'

As exemplified above, [p] and [b] are allophones of one phoneme /p/ as they occur in mutually exclusive environments where [b] occurs only before the mid-low rounded back vowel, while [p] occurs elsewhere. The rule below captures this.

$$/p/ \begin{cases} [b]/ \text{ before mid-low rounded back vowels} \\ [p]/ \text{ elsewhere} \end{cases}$$

The rule says /p/ becomes [b] before mid-low rounded back vowels and remains the same elsewhere.

At the end of this variation analysis, we established the following phonemes :

/p, g, k, nd, ndʒ, dʒ, t, mb, p, ʃ, ŋ, n, l, j/

These other sounds are just allophones

[p^j, k^j, g^j, nd^j, dʒ^j, ndʒ^j, t^j, n^j, mb^j, ʃ^j, g^w, nd^w, ŋ^w, mb^w, j^w, t^h, b]

4.4 Phonemic inventory

From the analyses, the following sounds have been established as distinctive in Círàmbó.

/ʃ, ʃ^w, p, p^h, p^w, t, t^w, dʒ, dʒ^w, ŋg, ŋg^w, tʃ, tʃ^w, ndʒ, nd, g, k, k^w, n, n^w, l, r, h, ʔ, ŋ, ɲ, m, mb, f, f^w, ts, w, j, ɣ /

all complex sounds

4.5 Definition and classification of phonemes

Each phoneme is defined with respect to another. The classification is done in relation to place and manner of articulation.

4.5.1 Definition of phonemes

Defining a phoneme (consonant), is showing precisely what distinguishes it from the other phonemes of the language. In order to define the Círàmbó phonemes, we are going to take into consideration the place of articulation, the manner of articulation and the voicing.

The consonants will be defined as below :

- /p/ is a bilabial stop compared to the labialised /p^w/ and the aspirated /p^h/
- /p^w/ is labialized stop compared to /p/ and unaspirated compared to /p^h/ +
- /p^h/ is aspirated compared to /p/ and unlabialized compared to /p^w/ -
- /t/ is plosive compared to /ts/ and unlabialized compared to /t^w/ -
- /t^w/ is labialized compared to /t/ and a voiceless stop compared to /nd^w/ +
- /k/ is voiceless compared to /g/ and unlabialized compared to /k^w/
- /k^w/ is labialized compared to /k/ and a stop compared to /ŋg^w/ +
- /g/ is voiced compared to /k/ and a stop compared to /y/ +
- /ʔ/ is glottal compared to /k/ and a stop compared to /h/ +
- /f/ is unlabialized compared to /f^w/ and labio dental compared to /p/ +
- /f^w/ is labialized compared to /f/ and labio dental compared to /p^w/ +
- /s/ is unlabialized compared to /s^w/ and a fricative compared to /tʃ/
- /s^w/ is labialized compared to /s/ and a fricative compared to /tʃ^w/ +

- /y/ is voiced compared to /k/ and a fricative compared to /g/
- /h/ is pharyngeal compared to /ʔ/ and a fricative compared to /w/
- /m/ is bilabial compared to /n/ and a nasal compared to /mb/
- /n/ is dental alveolar compared to /m/ and unlabialized compared to /n^w/
- /n^w/ is labialized compared to /n/ and dental alveolar compared to /ŋ^w/
- /ŋ/ is velar compared to /n/ and nasal compared to /ŋg/
- /ɲ/ is palatal compared to /ŋ/ and nasal compared to /j/
- /tʃ/ is unlabialized compared to /tʃ^w/ and voiceless compared to /dʒ/
- /tʃ^w/ is labialized compared to /tʃ/ and voiceless compared to /dʒ^w/
- /dʒ/ is unlabialized compared to /dʒ^w/ and voiced compared to /tʃ/
- /dʒ^w/ is labialized compared to /dʒ/ and voiced compared to /tʃ^w/
- /mb/ is bilabial compared to /nd/ and a prenasal compared to /m/
- /nd/ is alveolar compared to /mb/ and a prenasal compared to /n/
- /ŋg/ is unlabialized compared to /ŋg^w/ and a prenasal compared to /g/
- /ŋg^w/ is labialized compared to /ŋg/ and a prenasal compared to /k^w/
- /ts/ is voiced compared to /t/ and dental alveolar compared to /tʃ/
- /ndʒ/ is voiced compared to /dʒ/ and a prenasalized affricate compared to /tʃ/
- /l/ is lateral compared to /r/ and non nasal compared to /n/
- /r/ is a trill compared to /l/ and alveolar compared to /j/
- /w/ is labio velar compared to /j/ and a glide compared to /h/
- /j/ is palatal compared to /w/ and a glide compared to /ɲ/

4.5.2 Classification of phonemes

This will be done following the manner and place of articulation :

Manner of articulation

• Stops

Stops: p, t, k, ʔ

Pre-nasals: mb, nd, ŋg,

Nasals: m, n, ɲ, ŋ

Labialized: p^w, t^w, k^w

Aspirated: p^h

• Fricatives

Fricatives: f, ʃ, ɣ, h

Labialized: f^w, ʃ^w

• Sonorants:

Laterals: l

Trills: r

Glides: j, w

Place of articulation

Labials: p, p^w, m, mb, f, f^w

Alveolars: t, t^w, n, n^w, nd, nd^w, ts, l,

Palatals: ʃ, ʃ^w, tʃ, tʃ^w, dʒ, dʒ^w, ndʒ, ɲ, j

Velars: k, k^w, g, ŋ, ŋg, ŋg^w, ɣ, w

Glottal: ʔ, h

4.6 Phonemic table of consonants

Place of articulation Manner of Articulation	Labials			Alveolars		Palatals		Velars		Glottals
Plosives VL VD	/p/	/p ^w /	/p ^h /	/t/	/t ^w /			/k/	/k ^w /	/ʔ/
Nasals	/m/			/n/	/n ^w /	/ɲ/		/ŋ/		
Pre-nasals VD	/mb/			/nd/	/nd ^w /			/ŋg/	/ŋg ^w /	
Fricatives VL VD	/f/	/f ^w /				/ʃ/	/ʃ ^w /			/h/
Affricates VL VD				/ts/		/tʃ/	/tʃ ^w /			
Pre-nasalized affricate VL						/dʒ/	/dʒ ^w /			
Laterals				/l/						
Trills				/r/						
Glides						/j/			/w/	

The analysis of consonants began with an inventory of 50 consonant sounds which we represented in the phonic chart above. At the end of the analyses, we came out with 35 phonemic consonants.

4.7 Phonemic transcription

In this section, we are going to illustrate the phonemes of Cìràmbó, through the following phonemic transcription :

4.7.1 Phonemic transcription of tones

[ˊ]	→	/ˊ/	[lúj]	→	/lúj/	'nose'
[ˋ]	→	/ˋ/	[dʒàŋ]	→	/dʒàŋ/	'dream'
[ˊˊ]	→	/ˊˊ/	[fūŋ]	→	/fūŋ/	'grate'
[ˊˋ]	→	/ˊˋ/	[lîŋ]	→	/lîŋ/	'tongue'
[ˋˋ]	→	/ˋˋ/	[tʃí]	→	/tʃí/	'blood'

4.7.2 Phonemic transcription of vowels

The above phonemes are illustrated in the transcription below

[i]	→	/i/	[tsí]	→	/tsí/	'tree'
[ə]	→	/ə/	[kâ?ə]	→	/kâ?ə/	'twin'
[i]	→	/i/	[mbîŋ]	→	/mbîŋ/	'to affirm'
[ə]	→	/ə/	[nəw]	→	/nəw/	'month'
[a]	→	/a/	[ʃa?à]	→	/ʃa?à/	'comb'
[u]	→	/u/	[mû]	→	/mû/	'baby'
[e]	→	/e/	[mîjé]	→	/mîjé/	'to release'
[o]	→	/o/	[ndôŋ]	→	/ndôŋ/	'husband'
[ɛ]	→	/ɛ/	[mbě]	→	/mbě/	'seed'
[ʌ]	→	/ʌ/	[mūŋə]	→	/mūŋə/	'fire'
[ii]	→	/ii/	[ŋ-kííí]	→	/ŋ-kííí/	'to hang'
[aa]	→	/aa/	[ndàá]	→	/ndàá/	'relation'
[uu]	→	/uu/	[ŋ-kúūŋ]	→	/ŋ-kúūŋ/	'to remove feathers'
[oo]	→	/oo/	[ndóōŋ]	→	/ndóōŋ/	'hot'
[ii]	→	/ii/	[mbííí]	→	/mbííí/	'to pack'

[əə] → /əə/	[ndóárē] → /ndóárē/	'to hide'
[ɔɔ] → /ɔɔ/	[ñ-tʃɔ̀ɔ̀] → /ñ-tʃɔ̀ɔ̀/	'mouth'
[ee] → /ee/	[ñ-tʃéē] → /ñ-tʃéē/	'wait for'

4.7.3 Phonemic transcription of consonants

[mb] → /mb/	[mbijɔ̀ʔɔ̀] → /mbijɔ̀ʔɔ̀/	'plantain'
[mbʲ] → /mb/	[mimbʲá] → /mimbʲá/	'man'
[f] → /f/	[fifərà] → /fifərà/	'air'
[t] → /t/	[tùrú] → /tùrú/	'grass'
[tʰ] → /t/	[tʰó] → /tó/	'peak of hill'
[tʷ] → /tʷ/	[mítʷèʔèj] → /mítʷèʔèj/	'snake'
[pʲ] → /p/	[pïipʲé] → /pïipʲé/	'red'
[pʷ] → /pʷ/	[pʷɔ̀ʔɔ̀] → /pʷɔ̀ʔɔ̀/	'mushroom'
[pʰ] → /pʰ/	[pʰú] → /pʰú/	'lash'
[ts] → /ts/	[tsí] → /tsí/	'tree'
[l] → /l/	[lɪʔí] → /lɪʔí/	'place'
[lʲ] → /l/	[lʲémbò] → /lémbò/	'palm'
[nd] → /nd/	[ndúwà] → /ndúwà/	'horn'
[ndʷ] → /ndʷ/	[kíndʷí] → /kíndʷí/	'soap'
[ndʲ] → /nd/	[fùndʲí] → /fùndʲí/	'chimpanzee'
[tʃ] → /tʃ/	[ñ-tʃírí] → /ñ-tʃírí/	'to close'
[tʃʷ] → /tʃʷ/	[ñ-tʃʷí] → /ñ-tʃʷí/	'create'
[ʃ] → /ʃ/	[ʃéj] → /ʃéj/	'gain'
[ʃʷ] → /ʃʷ/	[ʃʷɔ̀ʔɔ̀] → /ʃʷɔ̀ʔɔ̀/	'to up root'
[ʃʲ] → /ʃ/	[ʃʲá] → /ʃá/	'count'

[ŋg]	→ /ŋg/	[ŋgi]	/ŋgi/	'voice'
[ŋg ^w]	→ /ŋg ^w /	[ŋg ^w óó]	/ŋg ^w óó/	'snail'
[ndʒ ^j]	→ /ndʒ/	[ndʒ ^j ēndāā]	/ndʒēndá/	'room'
[g]	→ /g/	[ʒigì]	/ʒigì/	'broom'
[nd]	→ /nd/	[ndiɾə̀]	/ndiɾə̀/	'time'
[g ^j]	→ /g/	[g ^j ě]	/gě/	'to lie'
[f]	→ /f/	[fóʔó]	/fóʔó/	'foam'
[f ^w]	→ /f ^w /	[f ^w óʔò]	/f ^w óʔò/	'riches'
[k]	→ /k/	[kíkémūŋō]	/kíkémūŋō/	'charcoal'
[k ^w]	→ /k ^w /	[k ^w ò]	/k ^w ò/	'leg'
[k ^j]	→ /k/	[ŋ-k ^j ě]	/ŋ-ké/	'to fry'
[n]	→ /n/	[finó]	/finó/	'star'
[n ^w]	→ /n ^w /	[n ^w ò]	/n ^w ò/	'skin'
[n ^j]	→ /n/	[n ^j id ^w i]	/n ^j id ^w i/	'hippopotamus'
[ŋ]	→ /ŋ/	[tán]	/tán/	'week'
[ŋ ^w]	→ /ŋ/	[ŋ ^w áá]	/ŋáʔá/	'hive'
[ŋ]	→ /ŋ/	[mínèè]	/mínèè/	'animal'
[ŋ ^j]	→ /ŋ/	[ŋ ^j é]	/ŋé/	'to walk'
[dʒ]	→ /dʒ/	[ñ-dʒi]	/ñ-dʒi/	'hunger'
[dʒ ^w]	→ /dʒ ^w /	[ñ-dʒ ^w i]	/ñ-dʒ ^w i/	'to kill'
[dʒ ^j]	→ /dʒ/	[ñ-dʒ ^j é]	/ñ-dʒé/	'many'
[ʔ]	→ /ʔ/	[lóʔó]	/lóʔó/	'bottom'
[j ^w]	→ /j/	[j ^w igì]	/jigì/	'duck'
[w]	→ /w/	[táwírí]	/táwírí/	'towel'
[h]	→ /h/	[pígòhù]	/pígòhù/	'to fear'
[b]	→ /p/	[bó]	/pó/	'hand'

$\beta \rightarrow /p/$
 $\beta \rightarrow /p/$
 $m \rightarrow /m/$

$ndʒ \rightarrow ndʒ$ $j \rightarrow j$

The analysis of consonants began with an inventory of ⁴⁹~~54~~ consonant sounds which we represented in the phonic chart above. At the end of the analysis, we came out with 35 phonemic consonants.

CHAPTER FIVE

WORD STRUCTURE AND INTERPRETATION PROBLEMS

In this chapter, we set out to examine the Círàmbó word structure in terms of syllable structure and morpheme structure of words. We equally expose those interpretation problems that we have encountered in our analysis of the data.

5.1 Word structure

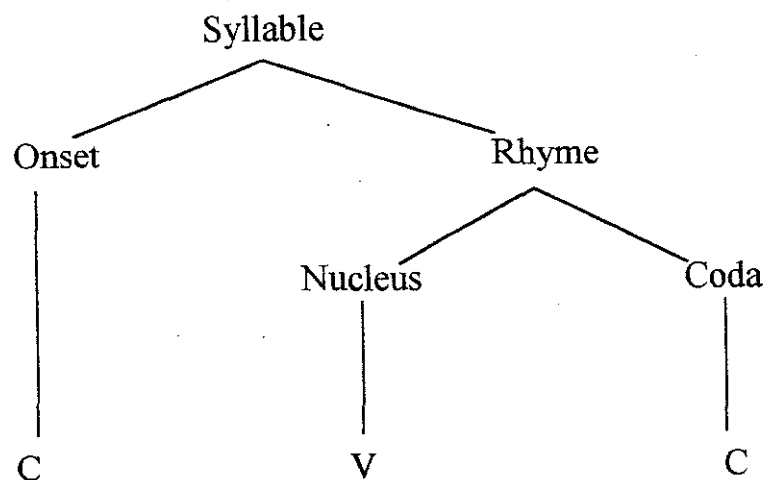
Here the word structure is examined in terms of syllable and morpheme structures.

5.1.1 Syllable structure

Katamba (1989) says that:

“one of the functions of a syllable is defining the syllabicity for segments. Any element dominated by a c- element of the CV- tier is non-syllabic while any segment dominated by a v- element is syllabic. The element of the CV- tier is the constituent of the syllable that contains the sonority peak”.

The constituent elements that make up a syllable are an onset, a nucleus, and a coda. (Ndzenyuy, 1997). These elements can be visualised in a hierarchical tree as the one below :



As shown above, a syllable is broken down into onset and rhyme. Rhyme is further broken down into nucleus and coda. The terminal nodes CVC indicate the general tendency as attested in human languages. That is, onsets tend to be consonants, nuclei vowels and coda consonants. It should be noted that the onset as well as the nucleus and coda could dominate more than one sound. All the syllable elements are attested in Círàmbó as shown below.

There are five types of syllables in Círàmbó. These include: V-syllables, CVV-syllables, CVC-syllables, C-syllables and CV-syllables.

V-syllables

Example:	# V.CV#	/i.ʃ ^w ē/	to point
	# V.CVC#	/i.nēʃ/	how
	#V.CV.CV#	/i.jū.wā/	tomorrow

C-syllables

Example:	# C.CV.CV#	/mí.má ³ ā/	to wear
	#C.CVC#	/n.tséʃ/	how
	#C.CV#	/n.tsí/	in law
	#C.CVV#	/n.tsóó/	fetch

CV-syllables

Example:	#CV#	/lè/	hat
	#CV.CV#	/ndú.wà/	cup
	#CV.CV.CV#	/mí.nú.nú/	bee
	#CV.CVV#	/mú.kūū/	basket
	#CV.CVC.CV#	/mó.gũh.tsò/	fainting feat

CVV-syllables

Example:	#CVV#	/wóó/	calabash
	#CVV.CV#	/fóó.rě/	to rut
	#CVV.CVC#	/fáa.nòw/	evening

CVC-syllables

Example:	#CVC#	/šéš/	gam
	#C.CV.CVC#	/ŋ.k ^w i.géj/	cough
	#CVC.CV#	/fúh.fū/	white
	#CV.CV.CVC#	/tí.tě.rěj/	mud

The syllabic structure of words in Círàmbó monosyllabic words.The CV Structure

/fǒ/	medicine	/kì/	or
/šòŋ/	ceiling	/ŋâ/	why
/šǒ/	hoe	/mé/	big

The CVC Structure

/fūŋ/	grave	/mbíŋ/	money
/šòŋ/	ceiling	/šéš/	gain
/tšán/	prison	/šín/	right

∪³

The CVV Structure

/tʃɔ̀ɔ̀/ rust

/gòó/ who

/kóó/ what

/ndéé/ drain

/mbù/ rain

/tàá/ father

Disyllabic words

The CVV.CV Structure

/fóó.rā/ rust

/mbóó.ró/ soft

/ngéé.ré/ to help

/ngòò.jí/ all

/pī.p'ê/ red

/yī.nī/ round

The CVC.CV Structure

/fúh.fū/ white

/ʃih.ʃi/ black

The CVV.CVC Structure

/fáá.nòw/ evening

The V.CV Structure

/i.ʃwē/ to point

The V.CVC Structure

/i.nəj/	how	/i.tʃáj/	arrive
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The CV.CV Structure

/k ^w ó.ʔó/	swell	/mbó.ná/	boil
/p ^h i.gĩ/	to be back	/p ^h i.ní/	dance
/ndù.ḡɔ/	ill luck	/ndú.wà/	cup

The CV.CVC Structure

/p ^h ó.ʔów/	ache	/mí.nòw/	sun
/jò.gòw/	itch	/fí.gój/	dilute

The C.CV Structure

/ḡ.tʃi/	in law	/ḡ.kū/	to die
/ḡ ^ɸ ē/	to slice	/ḡ.k ^w è/	barren

The C.CVV Structure

/ḡ.tàá/	hut	/mí.mòò/	inside
/ḡ.tʃóó/	fetch		

The C.CVC Structure

/ḡ.tʃéj/	urinate
----------	---------

J:

Kromawa CVV
CV:

The CV.CVV Structure

/mú.kūū/ booklet *bashtat*

/mí.fǝǝ/ rat

/mí.fíí/ bird

/mí.jèè/ animal

Trisyllabic words

The C.CV.CV Structure

/mí.má?ā/ to wear

/ń.tʃí.rí/ to close

/ń.kí.rí/ shave

/ń.tó.ró/ dirty

The C.CV.CVC Structure

/ń.k^wi.géj/ cough

/ń.ká.?ǝw/ mature / to grow

V:

The CV.CV.CVV Structure

/lǝ.yí.múù/ placenta

The CV.CVC.CV Structure

/mó.gǝh.tsǝ/ fainting feat

The CV.CV.CV Structure

/mí.kó.?ǝ/ younger brother

/tú.tú.?ù/ morning

/mú.t̥sɪ.ʔá/ a brick

/lé.ʔi.gjě/ to lie

/tʰó.pʰi.nĩ/ nipple

/nú.ʃi.nĩ/ truth

The V.CV.CV Structure

/i.jũ.wā/ tomorrow

/i.jě.γō/ beside

The CV.CV.CVC Structure

/í.tō.rěj/ mud

We have structures that are more than three syllables in Círàmbó, but most of them are reduplicated words.

5.1.2 Morpheme structure

Morphemes are constitutive elements that make up a word. In Círàmbó we distinguish prefixes, suffixes and stems. Let us consider the data below.

Singular form of nouns

- a) mbírâ 'hill'
- b) finó 'star'
- c) fú 'moon'
- d) mí.líʔi 'shadow'
- e) lâʔà 'country'

Plural form of nouns

- a) pʰambírâ 'hills'

- b) p^hàfínó 'stars'
- c) p^hàfú 'moons'
- d) p^hàmíí?i 'shadows'
- e) p^hàlá?à 'countries'

The data above shows the plural forms of the previous data. The movement from singular to plural, makes us discover the prefix 'p^ha-' which marks the plural, and the stem which equally serves as a free morpheme.

Also cases like the ones below make us discover the nature of morphemes in the language.

Compounding

- a) mǎŋó 'fire'
- b) kíkémǎŋō 'charcoal'
- c) íŋ mǎŋō 'flame'
- d) íŋ 'tongue'

We can deduce from above that independent words or free morphemes come together to form words. 'Flame' above is clearly a combination of 'tongue' and 'fire'.

5.2 Interpretation problems.

In our analysis of data, we encountered a number of problems at the level of consonants as well as vowels interpretation.

5.2.1 Consonants

The interpretation problems here had to do with complex consonants.

5.2.1.1 Pre-nasalized sounds

The problem we faced with Prenasalized Sounds is whether to consider them as a CC cluster or simply a C, where C generally stands for consonant. Let us consider the data below.

- a) mbǒŋ 'egg'
- b) ndôŋ 'husband'

When we observe the data above, the possibility of considering [mb and nd] as consonant clusters stems from the fact that [m and n] occur in Círàm bó as phonemes. However, we considered the cases above to be single consonants, as they always are a syllable onset. Below, we find the prenasalised sounds behaving as a unit even when they occur in word medial position.

- a) mǎ.ŋgúù^ˈ 'fœal' fœal
- b) mí.ndzǐ.ndzǐ 'fly'

The dots above indicate the syllable boundary. Above shows that the prenasalized sound is always a syllable onset even inside a word. We would have been tempted to consider prenasalized sounds as a consonant cluster if the syllable distribution was as shown below.

- a) mǎ.ŋgúù* 'fowl'
- b) mín. dzǐ * 'fly'

The star indicates that the syllable distribution makes the words faulty in Círàmbó. However, cases like below have been considered a CC sequence.

- a) ñ.t̩.ró 'jigger'
- b) ñ.kwé 'crow'
- c) mín.kè.ʔé 'cock'

The forms above have been considered CC sequences because the prenasal constitutes an independent syllable and consequently bear tones.

The more confusion is that the forms are homorganic. That is whether a prenasal is syllabic or not, it agrees with the following consonant in place of articulation. Drawing inspiration from modern autosegmental analysis Snider (2000) while referring to the autosegmental treatment of homorganic nasals says that

“regardless of the specification for place there is only one process involved viz: spreading from the place node”.

We consider the ‘homogeneity normal as the place features could spread to a nasal be it or not in a common syllable.

5.2.1.2 Affricates

Affricates are consonant sounds produced with the combination of stops and fricatives. They are included in the data below.

- a) ní.tʃó 'to stay'
- b) ní.tsíʃé 'to carry'
- c) ní.dzǎā 'cut'
- d) dzéʔéʃ 'to learn'

- e) tʃrā 'speech'
- f) tsimbíná 'rib'
- g) mógũhtsò 'fainting feat'

The sounds [tʃ, ts, dʒ] contained in the data above could still be considered as a stop and fricative sequence, but just as with the prenasalized sounds, we found that these sounds were always occupying a common syllabic position (onset). As such, we concluded that affricates were a single unit and not a consonant cluster.

5.2.1.3 Aspirated Sounds

These are sounds produced with a puff of air, which is always represented or reflected in the pharyngeal fricative [h]. Let us examine the data below.

- a) t^hó 'head'
- b) p^hóʃów 'ache'
- c) p^hí 'birth'

The sounds [t^h, p^h] are aspirated. How then do we assure that this is not a consonant cluster as we have [p, t] and [h] independently as above and below.

- a) táʔá 'mend'
- b) p̃ĩ p̃ê 'red'
- c) fūhfū 'threat'
- d) hêj 'here'

Although [t, p] and [h] occur independently, respectively above, we took aspirated sounds to be single consonants because as affricates and prenasalized sounds, they occupy just the onset of syllable.

5.2.1.4 Labialized Sounds.

The data below contain labialized sounds

- a) $\int^w \acute{e}j$ 'tell'
- b) $\acute{n}j-k^w \acute{r}f$ 'to throw'
- c) $\eta g^w \acute{e}j d z \grave{u} ? \grave{u}$ 'embrace'

The labialized sounds above are $[\int^w, k^w, \eta g^w]$. The problem with these labialized sounds is whether the labializing agent is coming from a vowel or not. Having not found any clear internal evidence in the language that the labial $[\text{w}]$ was coming from a modified vowel, we concluded this was simply a modified consonant and as such one unit. Moreover, labialized sounds act as syllable onset just as prenasalized sounds, aspirated sounds and affricates.

5.2.1.5 Palatalised sounds

The data contain palatalised sounds

- a) $\acute{n}-\acute{f}^j \acute{e}$ 'to slice'
- b) $p\ddot{i}p^j \acute{e}$ 'red'

The palatalised sounds above are $[p^j, \acute{f}^j]$. The problem here was similar to that of labialized sounds. That is whether the palatalisation was coming from a high vowel or not. However, the palatalisation in consonants can be generalised. It is observed that all palatalised sounds are followed by the mid-high unrounded front vowel [e].

5.2.2 Vowels

At the level of vowels, the interpretation problems were with the seemingly existence of nasalised vowels and the status to be given to long vowels.

5.2.2.1 Nasalised Vowels.

Círàmbó exhibits nasalised vowels as below.

- | | | |
|----|---------|------------|
| a) | t̃lù?ù | 'buttocks' |
| b) | m̃t̃ijé | 'tadpole' |
| c) | t̃ijè | 'pit' |
| d) | p̃ô | 'weevil' |
| e) | h̃ĩ | 'where' |

The data above contains nasalised vowels [ĩ, ɛ̃, ẽ, ɔ̃, ɪ̃]. The problem with these vowels is whether they are a sequence of vowel and nasal or just nasalised vowels. Nasalised vowels could be heard in the speech of some native speakers. This however was established to be a sequence V + N. We however observed that nasalised vowels were a fast speech phenomenon.

5.2.2.2 Long vowels.

Long vowels are attested in Círàmbó as shown below.

- | | | |
|----|-----------|------------|
| a) | nd̃iikóō | 'when' |
| b) | pòpóórò | 'slowly' |
| c) | kwóóf̃inĩ | 'pity' |
| d) | γ̃inĩ | 'rain' |
| e) | f̃aánd̃w | 'evening' |
| f) | ńt̃f̃éēf̃ | 'wait for' |

The data above, shows samples of long vowels found in the language. These are [ii, oo, ĩĩ, ɔɔ,] that is from (a-e). The problem with these vowels was to be considered as single vowels or geminates as they are written. These vowels however, always constitute a single syllable nucleus when they occur in a word. We took them to be geminates and not a cluster of vowels.

CHAPTER SIX

ORTHOGRAPHY AND GENERAL CONCLUSION

6.1 Orthography

An orthography is an established system of principles for reading and writing a language. It comprises all the conventional rules for reading and writing a language correctly. In this section, we discuss the orthography we propose for Círàmbó. The Círàmbó orthography proposed here is in conformity with the General Alphabet of Cameroonian Languages (Tadadjeu and Sadembouo, 1984), which was adopted in 1979 by the National committee for the unification and harmonisation of the alphabet of Cameroon languages. What we call orthography here, is simply an orthography proposal because it has not been tested on the field. The orthography proposal here comprises five sections: consonant graphemes, vowel graphemes, tone diacritics, orthographic rules and an illustrative text.

6.1.1 The alphabet-consonant graphemes

There are 35 consonant graphemes in the Círàmbó alphabet. A grapheme can be one, two, three or more letters, which represent a single sound as part of the alphabet of a language. The 35 consonant graphemes in Círàmbó are grouped under monographs, digraphs, and trigraphs.

The monographs are one-letter graphemes. They are listed below.

“p, t, k, g, f, m, n, ŋ, c, j, l, r, y, w, h”

As can be seen above, Círàmbó has 17 consonant graphemes which are monographs in the alphabet. The monographs can be represented as below.

Place of articulation / Manner of articulation								
	Bilabial	Labial -dental	Alveolar	Pre- palatal	Palatal	Velar	Glottal	Labial velar
Stops								
Voiceless	p		t			k	ʔ	
Voiced						g		
Nasals	m		n			ŋ		
Fricatives								
Voiceless		f					h	
Affricates								
Voiceless					c			
Voiced					j			
Laterals			l					
Trills			r					
Semi-vowels					y			w

The series of consonant monographs in Círàmbó represented above, are directly representing the respective IPA sounds below.

Place of articulation Manner of articulation	Bilabials	Labial-dentals	Alveolars	Pre-palatals	Palatals	Velars	Glottals	Labial velars
Stops								
Voiceless	/p/		/t/			/k/	/ʔ/	
Voiced						/g/		
Nasals	/m/		/n/			/ŋ/		
Fricatives		/f/					/h/	
Voiceless								
Affricates								
Voiceless				/tʃ/				
Voiced				/dʒ/				
Laterals			/l/					
Trill			/r/					
Semi-vowel					/j/			/w/

If we compare the phonemes and the monographs above, we make two observations. The first one is that the same symbols are used to represent some phonemes and their monograph graphemes this is the case with /p/, /t/, /k/, /g/, /f/, /h/, /m/, /n/, /ŋ/, /l/, /r/, /w/ which are respectively represented by the letters “p, b, t, k, g, f, h, m, n, ŋ, l, r, and w”

The second observation is that some monographs and the phonemes they represent are different symbols. The glottal stop /ʔ/ is represented by the letter “’” (the apostrophe). The voiceless and voiced affricates /tʃ/ and /dʒ/ are represented by the letters “c” and “j” respectively. The palatal semi-vowel /j/ is represented by “y” in accordance with the General Alphabet of Cameroonian Languages.

The Círàmbó consonant digraphs are shown below :

“ ph, pw, tw, kw , fw, nw,mb, nd, ng, ny, sh,gh,ηw, ts, nj, ch”.

As shown above, Círàmbó has 16 digraph consonant graphemes in the alphabet. Digraphs are two letter graphemes. These digraphs can be represented as below.

Place of articulation / Manner of articulation	Bilabials	Labial dentals	Alveolars	Pre-patataals	Palatals	Velars
Stops						
Aspirated VL	ph					
Labialized VL	pw		tw			kw
Nasals						
Labialized			nw			ηw
Palatized				ny		
Pre-nasalized	mb		nd			ng
Fricatives VL				sh		
VD						gh
Labialized VL		fw				
Affricates VL			ts			
Pre-nasalized				nj		
Aspirated				ch		

The digraphs above represent the IPA sounds shown in the chart below.

Manner of articulation	Place of Articulation					
	Bilabial	Labial dental	Alveolars	Pre- palatal	Palatal	Velars
Stops						
Aspirated VL	/p ^h /					
Labialized VL	/p ^w /		/t ^w /			/k ^w /
Nasals						
Labialized			/n ^w /			/ŋ ^w /
Palatalised					/ɲ/	
Pre-nasalised	/mb/		/nd/			/ŋg/
Fricative						
VL				/ʃ/		
VD						/ʒ/
Labialized VL		/f ^w /				
Affricate VL			/ts/			
Pre-nasalised				/ndʒ/		
Aspirated				/tʃ ^h /		

If we compare the digraphs above and the phonemes above, we observe that some digraphs have phonological motivation, that is, they exist as a result of the phonological process. Labialized sounds constitute digraphs because they are written with a following glide, for example the digraphs “pw, tw, kw, nw, ŋw, and fw” represent the labialized phonemes /p^w, t^w, k^w, n^w, ŋ^w f^w/ respectively. The digraphs written with “h” as a second letter in the sequence, like “ph” represent aspirated phonemes, /p^h/. Digraphs with a prenasal like “mb, nd, ŋg, nj” constitute digraphs representing prenasalised phonemes /mb, nd, ŋg, nj/.

Some digraphs are identical with their affricate phonemes for example “ts” represents /ts/. Some digraphs represent single phonemes like the case “sh, gh and ny” which represent /ʃ, ɣ, ɲ / respectively.

Círàmbo has two trigraphs in the alphabet. Trigraphs are three letter graphemes.

These trigraphs are listed below.

“ngw, shw”

These trigraphs above can be represented in a chart as below.

Manner of articulation	Place of articulation		
		Pre- palatal	velar
Stops	ngw		
Fricative	shw		

The trigraphs above have corresponding phonemes below.

Manner Of articulation	Place of articulation		
		Pre-palatal	velar
Stop	/ŋg ^w /		
Fricative	/ʃ ^w /		

When we compare the trigraphs and the phonemes we can say that trigraphs are † provoked solely by the process of labialization, as they all end with the labialization symbol “w”.

We conclude this section on consonant graphemes by presenting the ²⁵35 consonant graphemes with a sample word below.

	letter	word	gloss
1)	"p"	pá	'the'
2)	"t"	té'vǐ	'alone'
3)	"k"	ŋ-kùnú	'back'
4)	"g"	gǒ	'who'
5)	"f"	fá'ó	'had'
6)	"s"	pàngó'ó	'stones'
7)	"h"	há'án	'of'
8)	"m"	mów	'things'
9)	"n"	ânó'ò	'put'
10)	"ŋ"	ŋá	'that'
11)	"c"	cú	'told'
12)	"j"	jǐ	'ate'
13)	"y"	yū	'his'
14)	"l"	likíyǐ	'name'
15)	"r"	kírí	'feast'
16)	"w"	mínòw	'sunrise'
17)	"mb"	mbóó	'there'
18)	"nd"	ndán	'net'
19)	"ng"	ngǎ'ó	'year'
20)	"ts"	míkítsò	'intestine'
21)	"ny"	mínkǔnyà	'pig'
22)	"nj"	njê	'start'

23)	“sh”	shǐ	‘will’
24)	“ch”	chín	‘green snake’ ^{batle}
25)	“gh”	púghú	‘they’ (inset 25)
26)	“p ^h ”	p ^h i	‘colanut’
27)	“p ^w ”	p ^w áp ^w â	‘beautiful’
28)	“t ^w ”	t ^w á	‘neck’
29)	“k ^w ”	k ^w ímāngà	‘tortoise’
30)	“n ^w ”	mín ^w iy	‘knife’
31)	“f ^w ”	f ^w ò’ò	‘riches’
32)	“ŋ ^w ”	ŋ ^w à?lǐ	‘book’
33)	“ŋg ^w ”	ŋg ^w ǒ	‘all’
34)	“sh ^w ”	n-sh ^w éy	‘to tell’

6.1.2. The alphabet – vowel graphemes

There are 18 vowel letters in the Círàmbó alphabet. These letters are listed below.

“i, e, ε, í, ii, u, ə, a, o, ɔ, ì, ï, ee, uu, əə, aa, oo, ɔɔ”

As seen in the list above, Vowel letters in Círàmbó are monographs or geminates..

These monographs and geminates, can be represented as below

Place of Articulation Manner articulation	Front		Central		Back
	Unrounded		Unrounded	rounded	rounded
High	i	ii	í	ì	u uu
Half-high	e	ee			o oo
Half-low	ε		ə	əə	ɔ ɔɔ
Low			a	aa	

The monographs and geminates above correspond to the phonemes below.

Place of Articulation Manner Of articulation	Front		<u>Central</u>		Back	
	Unrounded		Unrounded	round	round	
High	/i/	/ii/	/i/	/ii/	/ɯ/	/uu/
Half-High	/e/	/ee/			/o/	/oo/
Half-low	/ɛ/		/ə/	/əə/	/ɔ/	/ɔɔ/
Low			/a/	/aa/		

When we compare the monographs and phonemes above, we find that the vowel graphemes correspond identically to the vowel phonemes. The vowel letters in fact are purely phonemic. We conclude this section on vowel graphemes by presenting the 18 vowel graphemes with a sample word below.

	letter	word	gloss
1)	“i”	yí	‘he’
2)	“e”	trùshi’éŋ	‘yard’
3)	“ɛ”	shê	‘earth’
4)	“i”	shíná	‘broke’
5)	“u”	múŋgúù	‘fowl’
6)	“ə”	lékə	‘beg’
7)	“a”	pàngó’ò	‘stones’
8)	“o”	fá’ó	‘had’
9)	“ɔ”	mbòpà	‘from’
10)	“u”	ŋgù	‘fell’
11)	“ii”	ŋkírĩĩ	‘to hang’
12)	“aa”	ndàá	‘relation’

- | | | |
|----------|-----------|----------------------|
| 13) “uu” | ṛkúūṅ | ‘to remove feathers’ |
| 14) “oo” | ndóōṅ | ‘hot’ |
| 15) “ii” | mbííṛí | ‘to pack’ |
| 16) “əə” | ndááṛé | ‘to hide’ |
| 17) “ɔɔ” | ṅtʃɔ̀ɔ̀ | ‘mouth’ |
| 18) “ee” | ń- tʃ ééj | ‘wait for’ |

6.1.3 Tone markings

There are five tones marked in the Círàmbó alphabet.

These five tones include three level tones and two contour tones as shown below.

Level	H	ˈ
	L	ˉ
	M	ˉˉ
Contour	R	ˋ
	F	ˆ

The tone marks above correspond respectively to the tone phonemes below.

Level	H	/ˈ/
	L	/ˉ/
	M	/ˉˉ/
Contour	R	/ˋ/
	F	/ˆ/

We conclude this section on tone markings by illustrating each tone with a word as below.

	tone diacritic	word	gloss
a)	“ˊ”	fú	‘moon’
b)	“ˋ”	fì	‘ahead’
c)	“ˊˋ”	n̄-cēŋ	‘reach’
d)	“ˊˋˊ”	ngwǒŋgwòghá	‘all of you’
e)	“ˊˋˋ”	ghâ	‘time’

6.1.4 Orthographic rules

In this section, we summarise rules that can help in the easy readability of Círàmbo. This orthography is phonemic in the sense that the letters or letter sounds are based on the phonemes in the language.

As far as consonants are concerned, read consonants as they are phonemically realised or as they are indicated in the above section 6.1.2 except in the following cases.

a) Read	“l”	as [lʲ]	when it occurs before	“e”
Example	/ l é k ó /	→	[lʲ é k ó]	‘beg’
b) Read	“mb”	as [mbʷ]	when it occurs before	“a”
Example	/ nàmbà /	→	[nàmbʷà]	‘banana’
c) Read	“n”	as [nʲ]	when it occurs before	“i”
Example	/ n̄ndʷi /	→	[nʲndʷi]	‘hippopotamus’
d) Read	“ŋ”	as [ŋʷ]	when it occurs before	“a”
Example	/ ŋá’á /	→	[ŋʷá’á]	‘hive’

Read all labialised sounds as a

- e) Read “sh” as [ʃ^j] when it occurs before open and mid-open vowels
 Example /shí’à/ → [ʃ^j í’à] ‘today’
- f) Read “ny” as [ɲ^j] when it occurs before open and mid-open vowels
 Example /ɲgónyè/ → [ɲgón^jè] ‘ridge’
- g) Read “nd” as [nd^w] when it occurs before “i”
 Example /ndí/ → [nd^wí] ‘clothes’
- h) Read “j” as [dʒ^j] when it occurs before “a” and “ɛ”
 Example /n̄ -j ā/ → [n̄ -dʒ^j ā] ‘xylophone’
- i) Read “t” as [t^h] when it occurs before “o”
 example /tón dô / → [t^hón dô] ‘roof’
- j) Read “nj” as [ndʒ^j] when it occurs before “e”
 example /nj ē -ndâ / → [ndʒ^j ē - ndâ] ‘room’
- k) Read “nd” as [nd^j] when it occurs between two vowels
 example /fùndì / → [fùnd^jì] ‘chimpanzee’
- l) Read “g” as [g^j] when it occurs before “e”
 example /gě / → [g^jě] ‘to lie’
- m) Read “k” as [k^j] when it occurs before “e”
 Example /ɲ-kē/ → [ɲ-k^jē] ‘squeeze’
- n) Read “p” as [p^j] when it occurs before “e”
 Example /piipê/ → [piip^jê] ‘red’
- o) Read “j” as [dʒ^w] when it occurs before front vowels
 Example /jǐgǐ/ → [j^wǐgǐ] ‘duck’
- p) Read “p” as [b] when it occurs before “ɔ”
 Example /pɔ/ → [bɔ] ‘hand’

The above (16) orthographic rules capture the reading of phonetic realisations that do not feature in the orthography.

6.1.5. Illustrative text

The text that follows illustrates the alphabet in 6.1.3 and the orthographic rules in 6.1.4.

Anĩ mbóó ngā'ó ícô pà mínyè fà'ò kíírí pò
 once there year ago the animals had feast sky
 k^wimāngà lõ n^hinjĩ káyèn há'án yí shĩ ícēŋ pò
 tortoise not know means of he will reach sky
 á fóó pèrà mbòpà míshĩ á ghâ ngô ícēŋ pò, ā
 He borrowed feathers from birds He time that reach sky he
 cō líkĩyĩ nĩ ng^wōng^waghíghò pìghâ tō nĩmô á
 name name as all - of - you when bring food he
 píyé ñà á yĩ gǒ? pí ícú ñà á yí ng^wōng^waghíghò
 ask that it belong who They said that it belong all - of - you
 k^wimāngà jĩ ng^wōŋ mō pìghó nū ng^wǒ lá'ò té'ví pà
 tortoise ate all food all drink all drinks, alone The
 míshĩ píghí t^wá ŋ-k^wé ng^wōŋ pà pèrà púghù mböyù
 birds vex neck took all the feathers their from him
 ñjè pìnénù nèfúghú k^wimāngà lékó fūghū ñá púghú
 start return them tortoise beg them that they
 cú ñng^wēē ânó'ò mów pópórò tərùshĩ'én yū púghú cú
 tell wife put things soft yard his They told
 ñng^wēē píñà ânó'ò pàngó'ò tərùshĩ'én yū á ghâ
 wife instead put stones yard his he time
 ndípò, ngû ŋkùnó pàngó'ò é shíná ŋkùnú yí á

skip sky fell on stones then broke back his it
 chǐyí ghō shú'ò nkùnú k^wimāngà póyǐ shínà
 that why today back tortoise is broken

The literary translation of the illustrative text above is as shown below.

Once upon a time, the animals had a feast in the sky. The tortoise did not know how to get to the sky. He borrowed feathers from birds. When he arrived the sky, he named himself all –of – you. When food was brought he asked “whose food is it”. They said, “it is for all – of - you”. He ate all the food alone. When drinks were brought, he asked “whose drinks are these?”. They said, “These are for all of you”. He ate the food and drank all the drinks alone. The birds became angry and took all their feathers from the tortoise and started returning home. The tortoise pleaded with them to tell the wife to put soft things on his yard. They told her instead to put stones on his yard. When he skipped, he fell on these stones and broke his shell. That is why today the tortoise has a cracked shell.

GENERAL CONCLUSION

We set out in this work to describe the phonology of Círàmbó using the structural phonology theoretical framework. We made a phonetic inventory of ⁵⁷68 phonetic sounds and 5 tones. These ⁵⁴68 phonetic sounds included ⁴⁹50 consonants and 18 vowels. The phonetic tones included three level tones and two contour tones.

After analysing the phonetic sounds in a bid to establish the distinctive sounds or the phonemes, we came out with ³⁴53 phonemic sounds and 5 tonemes. The ³⁴53 contrastive sounds are divided into ³⁴35 consonant phonemes and ¹⁸18 vowel phonemes. The contrastive tones are divided into three level tones and two contour tonemes.

After establishing the ³⁴53 contrastive sounds and tonemes in Círàmbó, we went further to propose an orthography for Círàmbó. This orthography consist of ²⁴35 consonant letters, ¹⁰18 vowel letters and five tone marks.

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