A PHONOLOGY OF

LIMBUM

(Nsungli)

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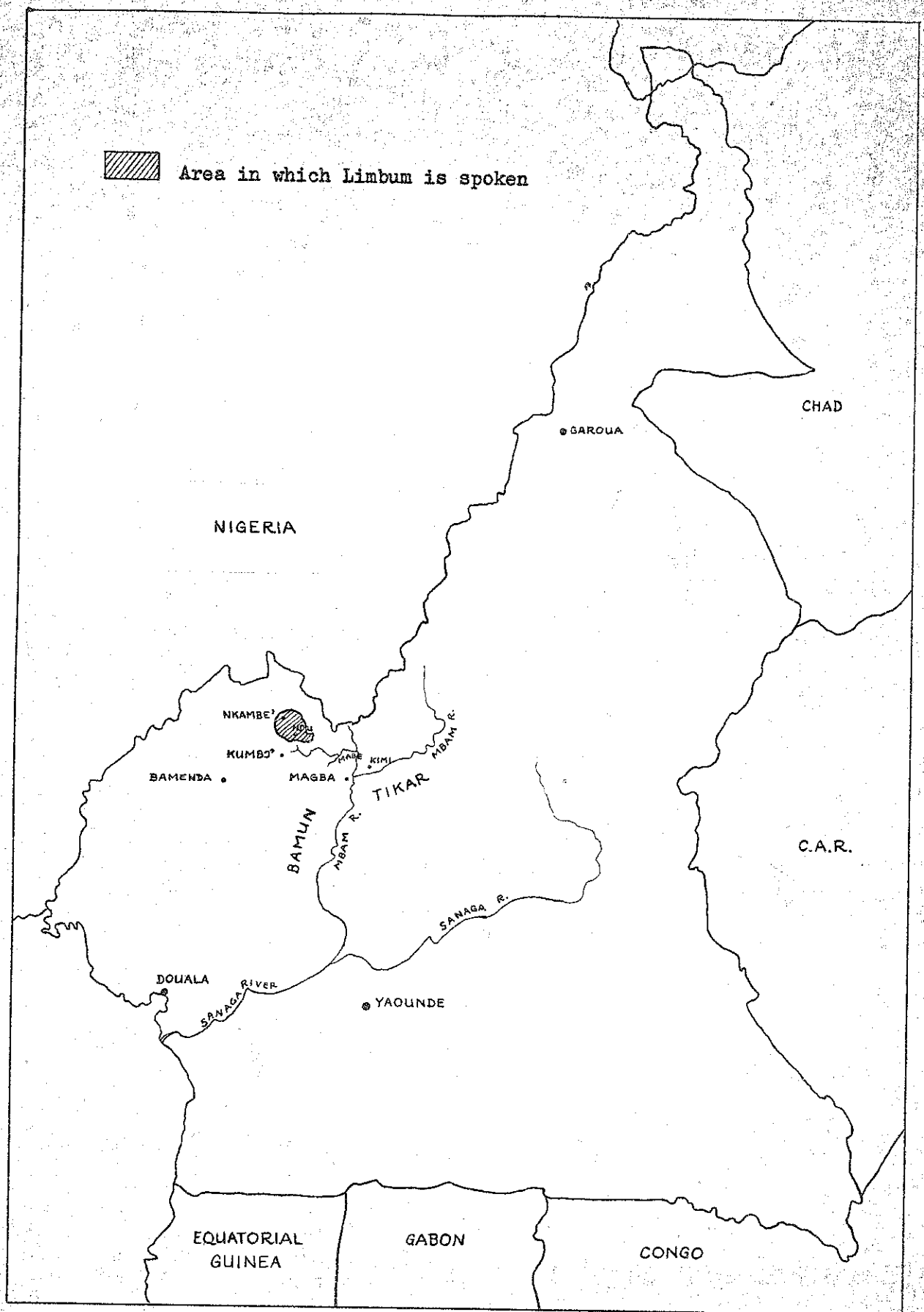
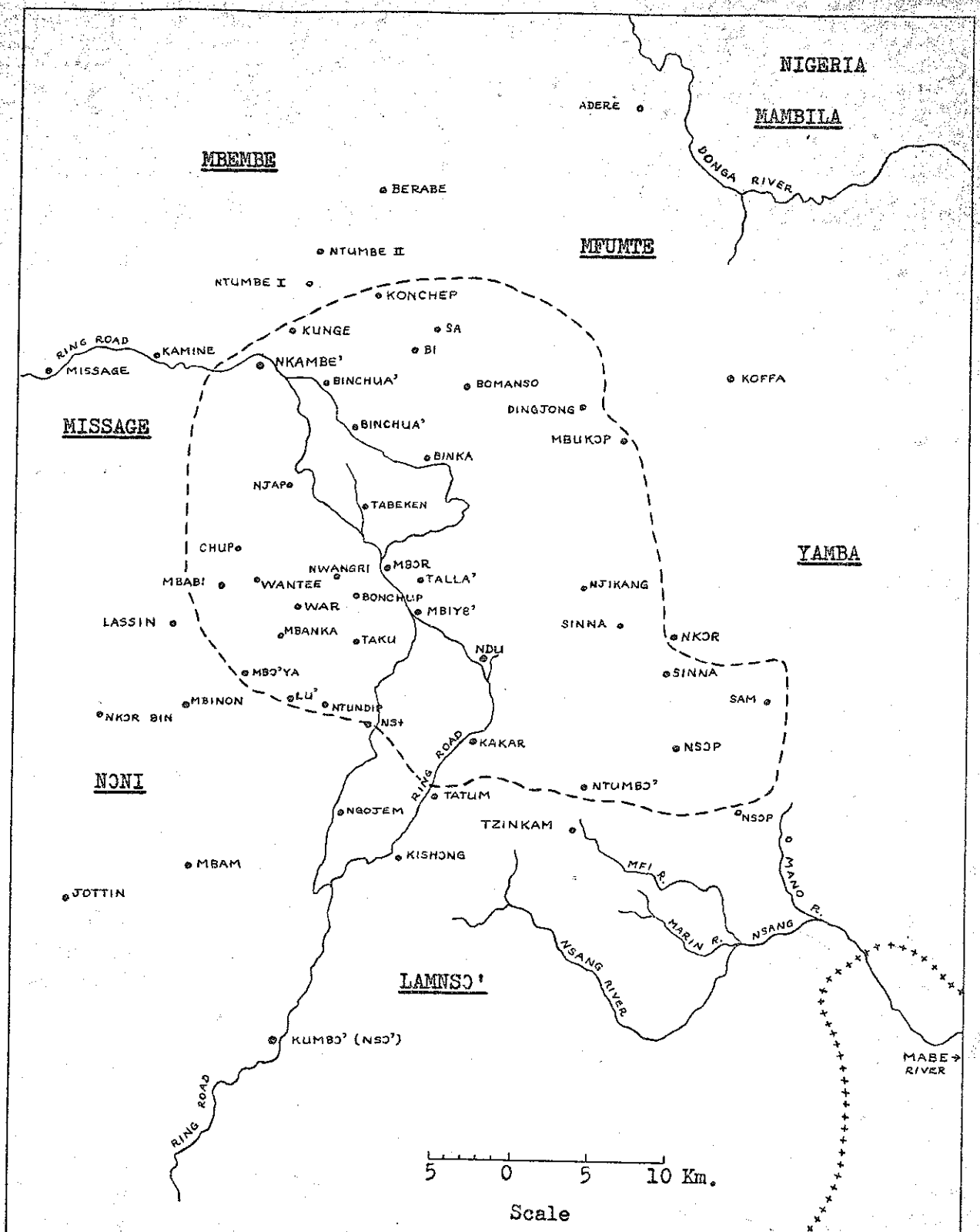

Area in which Limbum is spoken
CHAD
GAROUA
NIGERIA
NKAMBE'
KUMBO'
BAMENDA
MAGBA
MABE
KIMI
MBAM R.
TIKAR
BAMUN
MBAM R.
C.A.R.
SANAGA R.
DOUALA
SANAGA RIVER
YAOUNDE
EQUATORIAL GUINEA
GABON
CONGO

CAMEROON



KEY

Area in which Limbum is spoken - - - - -

Former West Cameroon boundary + + + + +

Language names are underlined: MBEMBE

THE WIMBUM AREA

Chapter 1

INTRODUCTION

1.1 General

Limbum is the language spoken by the Wimbum people, who live in Donga-Mantung Division of the Northwest Province of Cameroun. In Limbum, /li/ means "language", and /we:-/ is a prefix meaning "people", so Limbum means Mbum language, and Wimbum means Mbum people. (Not to be confused with the Bum language, which is also spoken in the Bamenda grasslands at a short distance to the west of the Wimbum area.) The Wimbum and their language have often been referred to by outsiders as Nsungli, which is an anglicized version of a name given them by their neighbors to the South, the Nsɔ? people. The word in Lamnsɔ? means "talkers" or "speakers".

The number of Wimbum is estimated to be about 60,000. The area in which they live extends from about 10 km. north-east of Nkambe to about 18 km. east of Ndu, an area about 43 km. long and about 30 km. wide at its furthest points. The largest towns of the Wimbum area are Ndu and Nkambe, both located on the Ring Road which goes north from Bamenda. Nkambe is the government seat of Donga-Mantung Division.

The Wimbum are composed of three clans, the War, Tang, and Yaa, which live in several different non-contiguous areas within the Wimbum territory. Like a number of ethnic groups of the Bamenda grasslands, the Wimbum trace their origin to the Tikar area, which lies just to the north-east of the Bamun region. (see map) They say that their ancestors left "Tikari" and went to Kimi, a town in the Tikar region north of Magba. Then they left Kimi, and members of the Tang clan at least, say that they came along a tributary of the Mabé river (referred to by Chilver and Kayberry as the Mairin), and settled in a place called Jop before moving to their present location.

Chilver and Kayberry (1967:27,28) mention that the Wiya (Yaa) clan claim to have come via a northern route from Kimi to their present location, rather than via the Mairin River valley, and that while some of the War villages claim Tikar origin via the Mairin valley, others do not claim origin outside their present area.

1.2 Linguistic

The Limbum language is not mentioned by Greenberg in his work Languages of Africa (1963). He states, however, on page 37, that "In the present work, absence of mention in the list of Benue-Congo languages of a border language is tacit evidence of my opinion that it is Bantu." This would indicate that Greenberg considers Limbum to be one of the Bantu languages of the Bantoid branch of the Benue-Congo sub-family of the Niger-Congo family of languages. (Greenberg [1963:9, 37])

Richardson (1957:46) classifies Limbum as Bantoid, and as part of what he terms the ƆKƆM group.

The language is quite homogeneous, with only minor dialectal variations, mainly differences in the pronunciation of a few phonemes and differences of tone on a few words, so that speakers from the different dialect areas understand each other easily. On the basis of pronunciation, one could define three dialectal areas: northern, central and southern, the northern being smaller than the central or southern areas. Most Wimbum seem to consider the central or Wat dialect as the purest form of their language, and it is the Wat dialect which is taken as the basis for the present study. The three dialectal areas do not correspond in any way to the three clans mentioned above, and there are villages of the different clans in each dialect area. The dialectal differences would seem to be due rather to the influence of languages to the north and south of the Wimbum area.

1.3 Linguistic Work Done in the Language

The works of a linguistic nature that I know to have been done on the Limbum language are a Dissertation on the Phonetics of Limbum, including also the resulting phonetic problems which Limbum speakers might encounter in learning to pronounce English,

written for a diploma in Cardiff Wales by the Honorable D.S. Njini of Ndu, and a Preliminary Phonology Statement (unpublished) done in 1968 by Elaine Berry and Virginia Bradley of the Summer Institute of Linguistics.

Limbum has also been mentioned in various works and articles on the classification of African languages, more so those on Bantoid or Bantu languages.

Publications in the Limbum language of which I know are:

Catechism of Mons. Plissonneau translated into Nsungli Language; Catechism a li Mbum, Vicariate of Buea, Cameroons, 1940.

Limbum Baptist Hymn Book, Cameroon Baptist Mission, Ndu, 1969.

"Limbum Calendar", published yearly since 1972 by Dennis Ndi, Tabeken.

Mr. Samuel B. Ngwa' of Ndu has written many hymns and songs in Limbum, including the majority of those found in the Limbum Baptist Hymn Book. Pastor D.W. Tangko and E.N. Nsang and others have also written hymns and songs in the language. Some years ago Mr. Aloysius Nfoba' of Wat devised a writing system for Limbum and for some time taught children to read and write their language.

1.4 This Paper

The present study of the sound system of Limbum is based upon field work carried out from December 1972 to June 1974 by the author, as a member of the Summer Institute of Linguistics (Société Internationale de Linguistique), which works under the direction of CE.RE.L.TRA, Institute des Sciences Humaines, of the Office National de Recherche Scientifique et Technique of Cameroon.

During the time of the research, the author and her colleague, Pat Peck, resided in Taku, a village located about 9 km. west of Ndu between the central and southern dialect areas. Visits were made to a number of other villages and towns of the Wimbum area. As mentioned above, it is the central dialect which is taken as the basis for this study.

I would like to thank Mr. Augustine Tanto' Ndi, Pastor Jonah C.T. Lamfu', Pastor Isaac Fai Nga', and the late Jonah C. Ngonge' for their assistance to me in collecting data for

this research and in learning the language. I would also like to thank the many other Wimbum who patiently helped us to learn their language.

I would also like to thank my colleagues of the Summer Institute of Linguistics, Mona Perrin, for help with the analysis of the phonemes, Pat Peck, who, though she worked mainly on aspects of the language other than phonology, also did some work on tone, Karl Grebe and Eva Flik, who offered helpful suggestions for the tonal analysis, Eunice Pike, who did the analysis of the phonological clause and paragraph which is here presented, and Don Burquest, who read part of the manuscript and offered suggestions for it.

The analysis presented here focuses mainly on the syllable and the phoneme. It is expected that further work will be done on the phonology, including the phonological word. Further study of the tonal system is now being carried out by Pat Peck.

1.5 Key to Symbolization of the Data

[...]	signifies phonetic data
/.../	signifies phonemicized data
"..."	signifies meaning in English
C	consonant
V	vowel
N	nasal consonant
B	bilabial consonant
:	signifies that the preceding segment is lengthened
ʔ	glottal stop
tʃ	voiceless alveopalatal affricate
dʒ	voiced alveopalatal affricate
ʃ	voiceless alveopalatal fricative
ʒ	voiced alveopalatal fricative
ɣ	voiced velar fricative
ɱ	voiced labiodental nasal
ɲ	voiced alveopalatal nasal
ŋ	voiced velar nasal
ɬ	voiced lateral fricative
r (or ř)	voiced alveolar flap
r̲	voiceless alveolar flap
i	high-close front unrounded vocoid
ɪ	high-open front unrounded vocoid
e̝	vowel articulated between high-close front unrounded vocoid [i] and mid-close front unrounded vocoid [e]
e	mid-close front unrounded vocoid
e̞	vowel articulated between mid-close front unrounded vocoid [e] and mid-open front unrounded vocoid [ɛ]
ɛ	mid-open front unrounded vocoid

ɛ^{e}	mid-open front unrounded vocoid gliding to mid-close front unrounded vocoid
ɨ	high-close central unrounded vocoid
ə	mid-close central unrounded vocoid
ʌ	mid-open central unrounded vocoid
a	low-open central unrounded vocoid
u	high-close back rounded vocoid
ʊ	high-open back rounded vocoid
ɤ	vocoid articulated between [u] and [o]
o	mid-close back rounded vocoid
ɔ	vocoid articulated between [o] and [o]
ɔ	mid-open back rounded vocoid
ɔ^{o}	mid-open back rounded vocoid gliding to mid-close back rounded vocoid
1	high tone
2	mid tone
3	low tone
1-2	high to mid tone glide
1-3	high to low tone glide
2-3	mid to low tone glide
3-4	low to extra-low tone glide
3-2	low to mid tone glide

Note: Although the initial [r] before a consonant in Limbum is not heard unless it is preceded by a vowel, for purposes of clarity in this paper, when isolated words are cited phonetically, I have included the [r] as though the word were being pronounced after a syllable ending in a vowel. (Before [l], the [r] is realized as [l].)

Chapter 2

PHONOLOGICAL MODEL

For the purposes of this paper, we shall make use of a hierarchical model of phonology, which considers the sound systems of languages to be comprised of various levels. For example, in the case of Limbum, one may identify the following levels:

phonological paragraph
phonological clause
phonological word
syllable
phoneme

Units at each level combine to form units of the next higher level. The phonemes combine together to form syllables, syllables combine to form phonological words, phonological words combine to form phonological clauses, and phonological clauses combine to form phonological paragraphs.

There are certain features which characterize and thereby serve to distinguish the units of each level. In Limbum, the phonological paragraph is a unit composed of one or more phonological clauses,and which has certain intonational features at its beginning and ending.

The phonological clause is a unit composed of one or more phonological words. Its boundaries are marked by pauses, and it also has certain intonational features, especially at its end.

The syllable is made up of one or more phonemes and is characterized by a peak of sonority, which in the case of Limbum, is a vowel or a syllabic nasal carrying tone. Its boundaries are places of less sonority, filled by consonants. We thus have waves of sonority, which could be diagramed:

For every wave there is a syllable.

The phoneme is the lowest unit of the hierarchy. Each phoneme is characterized by certain features, such as voicing or lack of voicing, nasality, bilabialness, etc. Its boundaries are marked by movement of the parts of the articulatory apparatus (tongue, lips, vocal cords, etc.) to the different positions necessary to produce each different phoneme in the sequence.

This paper deals mainly with the levels of the syllable and the phoneme. The phonological clause and paragraph are treated very briefly. It is hoped that in the future more study will be done of the higher levels, especially the phonological word.

Chapter 3

THE SYLLABLE

There is a basic tendency in Limbum towards CV type syllables. At the same time there is a tendency towards shortening of words, which produces other syllable types such as CVC and CCV(C). Also, there is a very small number of morphemes of the form V, limited to pronouns and prepositions. Although few in number, these occur very frequently in the language. Looking at Limbum as it is spoken now we can see clear examples of the following syllable types:

CV	[bɛ^{1}]	"to go without"
CVC	[sɔp^{3}]	"to pierce"
CCV	[ptə^{2}]	"heads"
CCVC	[blɛr^{2}]	"cords worn around babies' waists"
V	[a^{1}]	"with"

There are,however, various forms which present problems in the analysis of the syllable. These will be considered below in the following order:

1. Noun Class Prefixes
   - 1.1 Singular plus plural prefix
   - 1.2 Nasal plus non-nasal consonant
   - 1.3 Bilabial closure before consonant
   - 1.4 /ř/ plus consonant
2. Palatalization and labialization
3. Labiodental affricates
4. Alveopalatal affricates and nasal
5. Lengthened vowels

3.1 Noun Class Prefixes

The main problems of syllabic interpretation in Limbum result from the affixation of noun class prefixes to noun stems. Limbum is a Bantoid or a Bantu language, and the noun

class prefixes of Proto-Bantu, and in many instances present-day Bantu languages, are of the form CV-.

The noun class prefixes of Limbum also seem to have an underlying CV form. This is shown by the occurrence of the prefixes in isolation as pronouns and also when they occur as part of some possessive forms, in which cases they are of the form CV. As noun class prefixes, however, in present day Limbum speech, for the most part the vowel has dropped out, leaving prefixes of the form C-, which, when affixed to a stem, result in consonant clusters. For example, vi-tʃɛʔ ⟶ [p-tʃɛʔ] "clothes", vi-lɔ̰r ⟶ [b-lɔ̰r] "stones". ([v] is an allophone of /w/ which occurs before the high front vowel /i/.)

The long CV- forms as prefixes, are used, however, in a few words in the speech of many people. Also, in the speech of a very few people they are used more frequently. This is very rare, though, and I never heard anyone use the long forms in a more frequent manner until I had been in the area for one and one half years.[1]

Though Limbum has noun classes, it has a much smaller number than that found in most Bantu languages. It would be helpful to show the noun prefix system of the language. The chart on the following page was prepared using Welmers' chart of Swahili Noun Classes as a guide. (Welmers [1973:172]) Also included are examples, which are written phonetically, except that I have set off the prefixes with hyphens, which distorts the phonetics of the sequences of two nasal prefixes, since actually one does not clearly hear both nasals. (The addition of plural to singular prefixes is discussed below and in section 3.1.1.) The possessive "my" is shown here as the secondary concord element. Possessives are the concordial morphemes in Limbum which have the greatest number of different forms.

[1] Unfortunately I did not hear a speaker who used the long forms until just before I left the Wimbum area, and so was unable to investigate further as to where or by whom or under what conditions they might be used.

A				B		
Primary Concords				Secondary Concords		
		example:		"my"	example:	
Ø		tɔ́^{2}	"head"	ya^{1}-	ya^{1}-tɔ́^{2}	"my head"
B-	(wi^{2}-)	p-tɔ́^{2}	"heads"	wa^{1}-	wa^{3}-p-tɔ́^{2}	"my heads"
		m-n-ti:^{2}	"hearts"		wa^{1}-m-n-ti:^{2}	"my hearts"
Ø		tfɨ?^{2}	"night"	ya^{3}-	ya^{3}-tfɨ?^{2}	"my night"
B-	(wi^{2}-)	p-tfɨ?^{2}	"nights"	wa^{3}-	wa^{3}-p-tfɨ?^{2}	"my nights"
		m-ŋ-gwɛ́^{2}	"dogs"		wa^{3}-m-ŋ-gwɛ́^{2}	"my dogs"
N-		n-ti:^{2}	"heart"	ya^{1}-	ya^{1}-n-ti:^{2}	"my heart"
N-		ŋ-gwɛ́^{2}	"dog"	ya^{3}-	ya^{3}-ŋ-gwɛ́^{2}	"my dog"
N-		n-dɔ́r^{1}	"brother" (fem.speaker)	-ya^{3}	n-dɔ́r^{1}-ya^{3}	"my brother"
N-		ŋ-fər^{2}	"sib. same sex as spkr"	-a^{3}	ŋ-fər^{2}-a^{3}	"my brother; sister"
N-		n-du:^{2}	"husband"	-wa^{3}	n-du:^{2}-wa^{1}	"my husband"
B-	(wi^{2}-)	b-du:^{2}	"husbands"	-wa^{1}	b-du:^{2}-wa^{1}	"my husbands"
		p-fər^{2}	"(sibs.)"		p-fər^{2}-wa^{1}	"my bros;sis"
ř-	(li^{2}-)	r-sɔŋ^{3}	"tooth"	la-^{1}	la^{1}-r-sɔŋ^{3}	"my tooth"
m-	(mi^{2}-)	m-n-sɔŋ^{3}	"teeth"	ma^{1}-	ma^{1}-m-n-sɔŋ^{3}	"my teeth"
*(ki^{3}-		k^{y}i^{3}-bɔ́?^{3}	"court-room"	ya^{1}-	ya^{1}-k^{y}i^{3}-bɔ́?^{3}	"my court-room")

*In Limbum there are a very small number of loan words from Lamnsɔ? which have the prefix ki^{3}-.

Note: I do not know to which Proto-Bantu noun classes all of these prefixes correspond, though some correspondances are clear. For example, the r- or li - and the m- or mi- prefixes correspond to classes 5 and 6 of Proto-Bantu. Also, one or more of the B- or wi- prefixes correspond to Proto-Bantu class 8. The Lamnsɔ? prefix ki- would correspond to Proto-Bantu class 7. Ø might correspond to class la in Welmers' list of Proto-Bantu noun classes. (Welmers [1973:165]) More study would be necessary to determine to which class(es) the Limbum N- prefixes correspond. The same is true of the Ø prefixes.

For our purposes here we may simplify this chart by simply considering the noun prefixes themselves, which gives a system of three noun genders, each having a singular and a plural prefix. The plurals of genders I and II being the same, we have a total of 5 classes. These are shown below with the current forms on the left, and the rare long forms on the right.

	Short Forms (current)		Long Forms (rare)	
	Singular	Plural	Singular	Plural
I	ø	B-	ø	wi^2-
II	N-		N-	
III	ř- (l-)*	m-	li^2-	mi^2-

*in northern dialect

The singular nasal prefix N- of gender II assimilates to the point of articulation of the following consonant. It is [m] before bilabials, [ɱ] before labiodentals, [n] before alveolars and alveopalatals, and [ŋ] before velars. (All noun and verb stems begin with consonants.) The short form singular prefix r-, which may occur before any consonant, is deleted except when preceded by a syllable ending in a vowel. The short form plural prefix B- assimilates to the manner of articulation of the following consonant, so that it is [p] before voiceless consonants, [b] before voiced consonants (except nasals and sometimes /ɡ/), [m] before nasals, and [w] or [b] before /ɡ/. (Though some of these variants are separate phonemes, we know that they are variations of one morpheme because in their long forms they are all /wi^2-/. (The problems of interpretation of these prefixes are treated in the sections which follow.)

In Limbum, the plural noun class prefixes seem to be added in every case to the singular prefixes, rather than replacing them, so that in the plurals both the singular and plural prefixes are present. This is most evident in the long forms, for example, [n-dap^2] "house" and [vi^2-n-dap^2] "houses" or [ŋ-ka:$^{3-4}$] "basket" and [vi^2-ŋ-ka:$^{3-4}$] "baskets". The

presence of the singular prefix N- is also evidenced in the shortened forms of the plurals: [m-dap^{2}] "houses", [m-ka:$^{3-4}$] "baskets" by the fact that the plural prefix B- becomes a nasal [m] by assimilating to the nasality of the singular nasal prefix, in these cases [n] and [ŋ]. When the prefix B- is added to a noun stem with a zero singular marker, such as [tɔ^{2}] "intestine", the plural is [vi^{2}-tɔ^{2}] or [p-tɔ^{2}]. The B- does not become a nasal. There are a few words having the N- prefix in the singular which do drop it before the addition of the plural prefix: [n-du:^{2}] "husband", [b-du:^{2}] "husbands", [ŋ-kar^{2}] "friend", [p-kar^{2}] "friends". Here the bilabial prefix assimilates to the manner of articulation of the stem-initial consonant, showing that the N- prefix has dropped.

That the singular prefix also remains in the plural forms of the third gender is shown by the forms:[ɬi^{2}-d^{y}ip^{2}] "water, (body of)(sg.)" and [m^{y}i^{2}-n-d^{y}ip^{2}] "water (pl.)"; [ɬi^{2}-fa?^{3}] "work" and [m^{y}i^{2}-ŋ-fa?^{3}] "works". Here the singular prefix seems to be shortened to C-, which then assimilates to the nasality of the plural prefix. The short forms of the preceding examples are: [r-d^{y}ip^{2}] "water (sg.)" and [m-d^{y}ip^{2}] "water (pl.)", [r-fa?^{3}] "work" and [m-fa?^{3}] "works".[2] ([ɬ](or [ɬd]) and [m^{y}] are allophones of /l/ and /m/ respectively before the high front vowel /i/.)

One might wonder if the plural prefixes are not simply wiN^{2}- and miN^{2}-, rather than wi^{2}- and mi^{2}- , which would explain the presence of the N . That this is not the case is shown by the occurrence of the prefixes in isolation as pronouns, in which case they are wi^{2} and mi^{2}. Also, when wi^{2}- is added to a noun with a zero singular prefix, such as [tʃé^{2}] "tree", the plural is [vi^{2}-tʃé^{2}] or [p-tʃé^{2}], and not *[vin^{2}-tʃé^{2}] or *[m-tʃé^{2}], thus showing that the prefix is, in fact, wi^{2}- and not wiN^{2}-. In the case of mi^{2}-, with a word like [ɬi^{2}-rɔ?^{3}] or [r-rɔ?^{3}] "palm wine", the long form of the plural is usually [m^{y}i^{2}-r-rɔ?^{3}] rather than [m^{y}i^{2}-n-rɔ?^{3}] The r- does not usually become a nasal as it does in other

[2] Although the prefix r- in Limbum is not heard unless it is preceded by a vowel, for purposes of clarity in this paper, when isolated words are cited phonetically, I have in every case included the r- as though the word were being pronounced after a syllable ending in a vowel. (Before /l/ the r- is realized as [l-].)

words, for example [$m^{y}i^{2}$-n-$d^{y}ip^{2}$] "water", [$m^{y}i^{2}$-ŋ-kwa?^{3}$\int^{y}i^{3-4}$] "thoughts", [$m^{y}i^{2}$-n-soŋ^{3}] "teeth", presumably because it is reinforced by the initial [r] of the stem. If the prefix were miN^{2}-, we would normally expect a nasal rather than an [r] in the middle of the plural [$m^{y}i^{2}$-r-rɔ?^{3}]. Also, the prefixes li^{2}-, mi^{2}-, and wi^{2}- correspond to the Proto-Bantu prefixes for classes 5, 6, and 8, all of which are of the form CV-.

We could simply analyze all of the noun class prefixes, even the N-, as CV- syllables which drop out their vowels when affixed to another syllable. Then we would have three syllable types in Limbum:

CV
CVC
V

This is a very neat, simple solution, and in some ways would probably be accurate diachronically as well as synchronically. (I am not sure that it is completely accurate diachronically because perhaps previously the singular prefixes did not remain in the plurals. This might have been something which came about with the shortening of the singular forms. Also, synchronically we don't have evidence of a CV- form for the N- prefix.) The solution is still quite appealing, though. Its main drawback would be that it does not seem to really come to grips with the actual syllabic structure which one now hears in Limbum. It does away with the sticky questions of whether or not there are syllabic nasals in Limbum and what consonant clusters there are.

My aim here is really to describe the situation as it actually is, rather than to say what the underlying forms are, so I will attempt to do that, treating the various problems of syllabic interpretation and trying to come to a solution for each.

3.1.1 Singular plus plural prefix

As shown above, we can attest to the persistence of the singular prefixes N- and r- in both the shortened and long forms of the plural. In the plural of gender II, the singular prefix remains N-, and in the case of gender III, the singular prefix r- is realized as N- when the plural prefix mi^{2}- is added. Although it can be demonstrated that the singular

prefixes remain in the plurals, for the purposes of syllabic interpretation of the short forms, such as [m-dap^{2}] "houses" and [m-fa?^{3}] "works", it is difficult to know whether the N- prefix is actually phonetically present or not. One wonders if one is hearing a sequence of two nasals, e.g. [mn], [mŋ], or [mɱ], and if phonemically these two nasals are actually present but compressed in length, or whether the second nasal has assimilated to the point of articulation of the first: [mŋ] ⟶ [mm] and the whole is reduced in length, or if there is simply one operation of bilateral fusion taking place, so that the B- plural prefix plus the N- singular prefix merge completely, producing one segment: [m].

Phonetically, if there is a sequence [mN], it is not as long as a sequence of two nasals. It is difficult to say, however, relying on one's ears, if it is longer than a single nasal. Also, it is difficult to know if one is still hearing the N- when the plural, in the form of [m-] is present, because even when one might think he is hearing it, for example: [m^{n}dap^{2}], [m^{ŋ}ka:$^{3-4}$], it might simply be an automatic transition element between [m] and the consonant in question, rather than being the singular prefix. In many words, however, it seems quite clear phonetically that there is no transition element, for example: [m-sa?^{2}] "court cases", [m-kwa?^{3}ʃ^{y}i$^{3-4}$] "thoughts", [m-la?^{2}] "compounds", [m-sɔŋ^{3}] "teeth". In some cases, though, after certain morphemes of the form CV, depending on the tonal pattern of the phrase, one does hear the bilabial [m-] more as a final consonant on the preceding syllable, in which case the homorganic nasal of the singular prefix is more perceptible at the onset of the syllable in question. e.g. [wɔ^{1}m^{ŋ}gaŋ^{3}]. "your ribs". Often in this situation in the case of the prefix B-, there is a non-nasal on-glide before the [m], either [p] or [b]: [wɔ^{p}m^{ŋ}gaŋ]. In most cases, however, one does not seem to hear the homorganic nasal in the plural, but just the bilabial nasal.

It would be interesting to record the plurals on a sound spectograph to see if the nasal of the plural is longer than the nasal of the singular. One reason for thinking that there might be a difference in length is that in words such as [m-ba:^{2}] "leopard" and [m-bvɨ^{2}] "goat", there is a difference in length between the singular and plural forms,

the [m] of the plural being longer: [m:-ba:^{2}] "leopards", [m:-bv̀^{2}] "goats". So the process seems to be:

B + m-ba: ⟶ m-m-ba: ⟶ [m:ba:]

Of course there is the possibility that in words such as these, where it is necessary to keep the distinction in length, it is kept, and in words such as [ndap] vs. [mdap], where it is not necessary, it is not kept. Without the use of instruments we can not precisely determine whether the nasal of the plural is longer than the nasal of the singular, and whether the homorganic nasal is phonetically present or not.

If the homorganic nasal is still present in the plural, we would say that the plural prefix B- assimilates to the nasality of the singular prefix N-, thus becoming [m], and that the resulting sequence [mn] or [mŋ], etc. is compressed in length so that it is either the same length or not much longer than a single nasal, whichever the case may be:

B + n-dap ⟶ m-n-dap ⟶ [m^{n}dap]

If the homorganic nasal is not present, we could say that after the plural prefix B- assimilates to the nasality of the singular prefix N-, the N- assimilates regressively to the point of articulation of the following consonant. The sequence of two [m]'s is reduced in length so that it is either the same length or a little bit longer than a single nasal:

B + n-dap ⟶ m-n-dap ⟶ m-m-dap ⟶ [mdap]

Or we could simply say that we have bilateral fusion between the B- and the N-, producing [m]:

B + n-dap ⟶ [mdap]

Note that when the plural prefix is added to a syllable which begins with a nasal plus a vowel, i.e. the stem is NV(C), the sequence of two nasals is clearly heard: [na?^{3}] "cow", [m-na?^{3}] "cows" and [ɲɔ^{2}] "snake", [m-ɲɔ^{2}] "snakes".

Since it more often sounds to me that there is no transition element between the [m] of the plural and the initial consonant of the noun stem, and that the nasal of the plural is not longer than the nasal of the singular, I shall consider in this paper that there is fusion of the singular N- and the plural B- or m- prefixes, resulting in a single

nasal consonant [m]. When the manifestation of the singular N- prefix is [m], the addition of the plural prefix B- results in a longer consonant: [m:]. In certain cases, after a CV syllable, the fusion between the plural and singular prefixes is incomplete because the plural prefix functions more like a final consonant on the preceding syllable. These phenomena illustrate the tendency in Limbum away from consonant clusters.

3.1.2 Nasal plus non-nasal consonant

Four possible ways to interpret the nasal plus non-nasal consonant in Limbum would be:

1. To posit a syllabic nasal as a syllable type:
   NCVC: [n̩dap] [m̩dap]
2. To posit a series of prenasalized consonants:
   CVC: [^{n}dap]
3. To consider prenasalization as a feature of the syllable:
   ^{n}CVC: ^{n}dap ^{nb}dap
4. To consider the nasal plus consonant as a simple sequence of consonants:
   CCVC: [ndap] [mdap]

Let us examine these possibilities.

3.1.2.1 To posit a syllabic nasal as a syllable type:

According to Welmers (1973:66) for a nasal to be syllabic, it should have contrastive tone and give the impression of syllabicity. According to these criteria, there seem to be two types of nasals in Limbum. One is syllabic and the other is not. The syllabic nasal occurs in the case of just one morpheme in the language. It is the morpheme m̩^{2}- which indicates a multiple of ten in the number system. For example: [ta:r̲^{1}] "three", [m̩^{2}-ta:r̲^{1}] "thirty"; [kyè:$^{3-4}$] "four", [m̩^{2}-kyè:$^{3-4}$] "forty". This morpheme gives a definite impression of syllabicity and has clearly a mid tone of its own, distinct from the tone of the morpheme to which it is prefixed. If a Limbum speaker whistles these words, he will whistle twice, indicating that there are two syllables.

However, in the case of all other nasals followed by consonants, which are all cases of noun class prefixes, there is not an impression of syllabicity, nor do they carry contrastive tone. The pitch of these nasals is usually non-descript, since they do not have that much sonority, but sometimes they take the pitch of the syllable to which they are prefixed, or sometimes that of the preceding syllable. When a Limbum speaker whistles words containing these nasals, he whistles only once, indicating that there is just one syllable.

It is very convenient to compare the syllabic nasal [m̩^{2}] of the prefix meaning "ten" with the [m] of the nasal prefix [m-] meaning plural, because the long form of the prefix [m-] is [vi^{2}-] with the same tone as the prefix meaning "ten". Therefore if the prefix [vi^{2}-] carrying tone 2 (mid-tone), when shortened in length to [m] still retained its syllabicity and tone, it should sound like [m̩^{2}-] "ten". This, however, is not the case, and the difference is clearly heard in a set of words such as [m̩^{2}ba:$^{1-2}$] "twenty", [mba:^{2}] "leopard", and [m:ba:^{2}] "leopards", in which the nasals are all different.

So it seems that in Limbum there is one morpheme which is a syllabic nasal, so we will have the syllable type N̩ . However, the other occurrences of nasal before a consonant are not syllabic and so will not fit this pattern, so we must find another solution for them.

3.1.2.2 <u>To posit a series of prenasalized consonants</u>:

Another possible interpretation would be to say that there is a series of prenasalized consonants, e.g. /^{m}b/, /^{n}t/, /^{ŋ}k/, /^{n}l/, etc. Though possible, this solution is not very appealing to me for three reasons.

One reason is that it creates twice as many consonant phonemes, since all of the consonants, with the exception of /g/ (in which case it is not really phonetically possible), occur preceded by a homorganic nasal.

Another drawback is that there would be a morphological boundary in the middle of each of these phonemes, since the nasal is a morpheme.

The third drawback is that though this solution would take care of the homorganic nasals plus consonant, it would

not take care of the heterorganic nasals plus consonant of the plurals, such as [mka:$^{3-4}$] "baskets". Another solution would have to be found for this.

3.1.2.3 To consider the prenasalization as a feature of the Syllable:

A third possible interpretation would be to say that we have a feature of prenasalization on the syllable level, similar to what Hoffmann (1965) and Mohrlang (1972) have done for Higi. In Limbum the feature would have a corresponding grammatical signification indicating number and membership in a noun class. This is a tempting solution because the plural could be handled in the same way, as a feature of "prelabialization". We would thereby retain just the three basic syllable types characteristic of Limbum: CV, CVC, and V. The CV and CVC syllable types could occur either with or without a feature of prenasalization or prelabialization. The occurrence of the heterorganic nasal prefix [m-] would be the result of both features occurring simultaneously:

(Small superscript letters indicate the presence of a given feature.)

CVC	[tɔ?^{2}]	"country"
^{n}CVC	[ntɔ?^{2}]	"chief's palace"
^{b}CVC	[ptɔ?^{2}]	"countries"
^{nb}CVC	[mtɔ?^{2}]	"chief's palaces"

The disadvantage of this solution in the case of Limbum is that it would seem that the N-, B- and m- prefixes are not features of the syllable in the strict sence of the word, because they do not affect the whole syllable, but rather just the beginning of it. The nasal, for example, does not have the effect of nasalizing the vowel nucleus of the syllable, which we would expect if the nasalization were a feature of the whole syllable. Of course, by calling it a feature of "prenasalization" we do limit its range of influence, but somehow this seems incongruous with calling it a feature of the syllable as a whole. Its grammatical meaning does, however, apply to the whole morpheme or word, which is usually one syllable.

3.1.2.4 To consider the nasal plus consonant as a sequence of two consonants:

Another solution would be to consider that we have simply a sequence of two consonants: [nd]. This results in consonant clusters and necessitates the syllable types CCV and CCVC. However, as was pointed out at the beginning of this chapter, there are univalent examples of consonant clusters in the case of bilabial stops plus consonant, so this would not introduce new syllable types, but would fit into the univalent forms which we already have (depending on the interpretation of these bilabials). In light of what has been said about the nasal element in Limbum, this would seem to me to be the solution which best reflects the present phonological situation of the language.

3.1.3 Bilabial closure before consonants

As mentioned before, the plural of genders I and II in Limbum is produced by prefixing a bilabial consonant to the word in question. The bilabial is voiceless before a voiceless consonant, voiced before a voiced consonant, nasal before a nasal consonant, and either [w] or [b] before /ɡ/.

Examples:

[p-tʃə́^{2}] "trees"

[p-sa?^{3}] "cutlasses"

[p-fa:$^{3-4}$] "mistakes"

[b-gu:$^{3-4}$] "marriage transactions"

[b-lɔ́r$^{3-4}$] "stones"

[b-bap^{3}] "wings"

[m-na?^{3}] "cows"

[m-ɲɔ^{2}] "snakes"

[m-ndap^{2}] "houses"

[m-nsu:^{2}] "farm"

[m-mbap^{3}] "rats"

[w-gar^{3}bi:$^{3-4}$] "young people"

[b-gɔ:^{3}nė$^{3-4}$] "blessings"

The interpretation of the nasal realizations of the prefix B- were treated in the preceding sections along with the gender III plural prefix m- .

The bilabial prefixes are articulated as much as possible with the following consonant, yet the consonant clusters which result when the prefix B- is realized as a stop are of the type which by their nature are sequences of two consonants rather than one complex segment. e.g. [břa:^{3}] "bridge", [blɛ?^{2}] "calabashes", [ptʃɛ?^{3}] "clothes", [mna?^{3}] "cows". So Limbum does have the pattern of a cluster consisting of two consonants.

There is the possibility, mentioned in the preceding section, of treating the labialization before a consonant as a feature of prelabialization on the syllable level, which has the drawback that the pre-labialization does not seem to have a phonological effect on the syllable as a whole.

If we do not treat the labialization as a feature, then we will have the syllable types CCV and CCVC. As seen in the preceding section, the nasal plus consonant will fit into this pattern also. I feel that the CC pattern is the best solution for both the bilabial and the nasal prefixes.

3.1.4 /r/ plus consonant

Another question of interpretation in Limbum is the initial /r/ plus consonant. Again, the r- is a noun class prefix. It occurs before all of the consonants. There is not much problem with this phonologically, since the /r/ is not heard utterance initially or after a consonant. It is realized only after a vowel, in which case it seems to function phonologically more like a final consonant on the previous syllable than an initial consonant of the syllable in question. As was mentioned previously, the same thing sometimes happens with the nasal bilabial prefixes after vowels. (This is also true of the prefix B- when it is realized as a stop: [a ptʃɛ? a] "Are they clothes?")

After a consonant the [r] is deleted. Utterance initially, sometimes one can see the tongue moving as if to produce the [r] before the stem initial consonant, though it is not heard. (In careful, emphatic pronunciation of a word, in order to make it clear to me, a foreigner, my assistants sometimes pronounced it utterance initially, in which case it was often voiceless before a voiceless consonant and voiced before a voiced consonant. Normally, though, it is not heard in this position. Also in speech after a vowel the /r/ is often voiced, whether before a voiced or a voiceless consonant.)

Examples:

[ku:^{3}ʂ^{y}i$^{3-4}$] "memory"

[lap^{1} ku:^{3}ʂ^{y}i$^{3-4}$] "their memory"

[a r^{1} ku:^{3}ʂ^{y}i$^{3-4}$] "it is a memory"

[bv̈:$^{3-4}$] "stomach"

[ndʒɪ b^{1} bv̈:$^{3-4}$] "in the stomach"

[lɔ r^{1} bv̈:$^{3-4}$] "your stomach"

To consider the /r/ phonologically as the final consonant of the preceding syllable would involve establishing a VC syllable type. This does seem to be the case with both the /r/ and sometimes the bilabial prefixes after a vowel. Or rather than establish a new syllable type, we could simply consider these as examples of CCV(C) syllable types and state that in certain cases when syllables beginning with r-, B-, or m- are preceded by a vowel, the initial consonant of the syllable functions more as a final consonant of the preceding syllable.

We would still need a VC syllable type, however, for a few words like [rŋgɔ:$^{3-4}$] "women's pride" and [rnsu:$^{3-4}$] "men's pride", which have two prefixes. When these words occur after a consonant or silence they are of the form CCV, but when they occur after a vowel, the VC syllable type is needed to accomodate the sequence of three consonants.

3.2 Palatalization and labialization

There are two types of palatalization in Limbum. One is a slight palatalization: [b^{y}i^{1}] "to bear a child", and the

other is a stronger palatalization which sounds somewhat more vocalic: [byé^{3}] ~ [bié^{3}] "to plant". The slighter form of palatalization is heard with most consonants, but only before the high front vowel /i/. It is therefore an allophonic variation of the consonant and is due to the very close articulation of the high front vowel. Often there is some friction heard with this palatalization before /i/, and as one moves south [ʃ] or [ʒ] is heard with the consonant rather than [^{y}], depending on whether it is voiceless or voiced. In the southern dialect this friction takes the form of [s] or [z], and the high front vowel is centralized to a sound between [ɿ] and [ɨ]. ([b^{y}i] [bʒi] [bzɿ]) In the phonetic data in the present study I have represented the palatalization before /i/ with a raised [^{y}], and the stronger palatalization with a [y] or an [i] on the line after the consonant.

The stronger form of palatalization occurs only with four consonants: /b/, /f/, /m/, and /k/. Labialization occurs with only three consonants: /k/, /g/, /ŋ/. Both labialization and palatalization occur only before the vowels /e/, /ɛ/, and /a/. One might interpret the labialization and palatalization of consonants in several ways:

1. As a sequence of consonant plus vowel: CVV [bié] [kua]
2. As a sequence of two consonants: CCV [byé] [kwa]
3. As features of palatalization or labialization: ^{y}CV ^{w}CV ^{y}bé ^{w}ka
4. As palatalized and labialized consonants: CV [b^{y}é] [k^{w}a]

These will be considered below.

3.2.1 <u>As a sequence of consonant plus vowel</u>:

We could consider the palatalization and labialization to be occurrences of the vowels /i/ and /u/ after a consonant: [bié^{3}] "to plant", [kua$^{1-3}$] "corn". This solution does not seem tenable because it would involve establishing new syllable patterns involving VV sequences for which there is no pattern in the language. Also, the palatalization and labialization do not carry a tone of their own, so they could not be the peak of a separate syllable.

3.2.2 As a sequence of two consonants:

Another possibility would be to consider consonants occurring with palatalization or labialization as sequences of two consonants: [by$\acute{e}^{3}$] "to plant", [kwa$^{1-3}$] "corn". This would necessitate the establishing of CCCV(C) syllable types for words such as [pkwaŋ$^{3-4}$] "bracelets" and [mkwa?^{3}ʂ^{y}i$^{3-4}$] "thoughts", but there is no unambivalent pattern for these in the language.

3.2.3 As features of palatalization and labialization:

A third alternative would be to consider that we have an optional suprasegmental feature of palatalization or labialization which may occur on the syllable or word level. So we would say that syllables may occur with or without a feature of labialization or palatalization, and that syllables which have the feature contrast with syllables which do not have it. There seem to be two objections to this solution:

a. The labialization or palatalization does not appear to affect the entire syllable, but rather only the initial consonant as a palatal or labial release.

b. Not all consonants occur with palatalization or labialization. So these are not features which may occur with any syllable, but only with certain consonants.

For these reasons this does not seem to be a good solution.

3.2.4 As palatalized and labialized consonants:

A fourth possibility would be to consider the palatalization and labialization as features of the consonants with which they occur, and thereby establish a set of palatalized and a set of labialized consonants. This seems to be the solution which would best fit the data so far as I can see at present. Though it involves adding seven more consonants to the number of phonemes, it conforms to the syllable structure of the language and fits well into the overall pattern of the phonemes. Therefore, I am positing a set of palatalized consonants: /b^{y}/, /f^{y}/, /m^{y}/, and /k^{y}/, and a set of labialized consonants: /k^{w}/, /g^{w}/, and /ŋ^{w}/, which fall into the

following pattern:

Labial	Velar
b^y	k^y k^w
f^y	g^w
m^y	$ŋ^w$

It is interesting that in the southern dialect the set of palatalized labial consonants is replaced by a set of labialized palatal consonants: /$dʒ^w$/, /$ʃ^w$/, /$ɲ^w$/. The phoneme /k^y/ is realized simply as /tʃ/. So rather than a set of four palatalized and three labialized consonants, there is a set of six labialized consonants:

Palatal	Velar
$dʒ^w$	k^w
$ʃ^w$	g^w
$ɲ^w$	$ŋ^w$

The phenomenon of palatalized labial consonants becoming labialized palatal consonants would also seem to support the idea that the palatalized or labialized consonants are single units having the features: stop, palatal, and labial, rather than sequences of two units.

3.3 Labiodental affricates

All of the consonants in Limbum may be articulated with a labiodental release which sounds phonetically like an [f] after a voiceless consonant and a [v] after a voiced consonant: [tfɨ^{2}] "night", [bvɨ^{1}] "to be lost", [ŋgvɷp^{2}] "hen". These labiodental affricates occur only before the high central vowel /ɨ/, and are therefore allophones of their corresponding non-affricate consonants. The very close articulation of the vowel /ɨ/ produces friction before it in the same way that the close articulation of the high vowel /i/ produces prepalatalization and in some dialects a fricative [s/z] release of the consonant and centralization of the vowel.

So syllables such as [kfɨ^{3}] "to pick" and [sfɷŋ$^{3-4}$] "python" are syllables of the form CV and CVC (/kɨ/ and /sɨŋ/).

3.4 Alveopalatal affricates and nasal

The alveopalatals [tʃ], [dʒ], and [ɲ] in Limbum clearly function as single consonants, rather than as sequences of two consonants, because they occur in all the positions and only the positions in which single consonants may occur:

-- before a vowel syllable initially:	[dʒa?^{3}]	"to help"	[ɲɛ́:^{1}]	"to go early"
-- after a nasal:	[ntʃa:^{2}]	"fish"	[mɲa:$^{3-4}$]	"animals"
-- after /r/:	[rdʒɛ́^{3}]	"100"	[rɲɛŋ^{3}]	infinitive form "to step on" (no example of simple noun)
-- as labiodental affricates before /ɨ/:	[ndʒvɨ?^{3}]	"type of wild cat"	[ɲvɑ̃$^{3-4}$]	"God, sun"

To consider these as sequences of two consonants would necessitate establishing CCC clusters and new syllable types.

3.5 Long vocoids

Vowel length is contrastive in Limbum for all of the vowels as shown on the chart on page 50. The contrast occurs primarily in open syllables. Almost all closed syllables have short vowels. In my data of about 1650 words there are only seven morphemes which have a long vocoid in a closed syllable. e.g. [ta:r^{1}] "three" vs. [tar^{1}] "to give something to a guest". However, about 60% of morphemes with open syllables have long vowels. Some of the words which have long vowels in Limbum are of the form CVN in related languages. For example:

Lamnso?:^{3}	[yun]	"to buy"	[ɲam]	"animal, meat"
Limbum:	[yu:]	"	[ɲa:]	"
Ngemba:^{4}	[nə-bum]	"egg"	[mun]	"child"
Limbum:	[r-bu:]	"	[mũ:]	"
Nkwen:^{5}	[ɓuŋ]	"		

^{3}Grebe (1975)
^{4}Eastlack (1968)
^{5}Dunstan (1971)

The lengthened vowels in Limbum could be considered in different ways:

1. As sequences of two short vowels: VV
2. Length as a feature of the syllable: S: (CV: CV:C)
3. As long vowel phonemes: V

3.5.1 As sequences of two short vowels:

There are no sequences of heterogeneous vowels in Limbum, so if this solution were adopted, the only vowel sequences would be those of like vowels. Also the same tone patterns occur on the lengthened vowels as on the short ones. All of the level tones and the glides occur on each of the short and lengthened vowels. For these reasons the interpretation of vowel length as a sequence of two short vowels does not seem good. There is no factor of a morphological boundary involved in the length, either, which might make us want to break it up (with the exception of some verb aspects, which is a different case--one of contraction).

3.5.2 Length as a feature of the syllable:

Another solution would be to consider length as a feature of the syllable, in which case there would be long syllables contrasting with short syllables. This is supported by the fact that the same tone patterns occur on long and short syllables. It is a very appealing solution. It has the drawback, though, of creating four additional syllable types: CV:, CV:C, CCV:, CCV:C.

3.5.3 As long vowel phonemes:

A third possibility would be to posit a series of seven long vowel phonemes. This is also supported by the fact that the same tone patterns occur on both the long and short vowels. The disadvantage of this interpretation is that it would result in twice the number of vowel phonemes, for a total of fourteen vowels rather than seven.

Given a choice between having four additional syllable types and seven additional vowel phonemes, the better alternative to me at this point seems to be to have seven additional phonemes. This goes along with the the thought of some (e.g. Grimes, 1969) that where there is such a choice, it is more

desirable to have simplicity and fewer contrastive types on the higher levels of the phonological hierarchy than the lower levels. For this reason I will posit a series of seven long vowel phonemes.

3.6 Conclusion

As mentioned before, there is a tendency in Limbum towards CV syllables and away from consonant clusters. There is at the same time a tendency towards shortening of words. These two factors tend to play against each other.

At the end of words, for example, we can see that words which are of the form (C)CVC (presumably historically (CV)CVCV) often add a final vowel /e/, apparently to make them sound better or more balanced. When the final vowel is not pronounced, the form is (C)CVC, but the final consonant is weakened, thus tending again towards a CV form. For example, a syllable final /k/ is realized as [ʔ], and /b/ and /r/ become voiceless: [p] and [r̥] at the end of an utterance. The only other consonant which occurs syllable or word finally is /ŋ/.[6] Also, what are CVN syllables in neighboring languages are often CV: in Limbum, again illustrating the tendency towards CV syllables. E.g. Lamnsɔ? [yun], Limbum [yu:] "to buy".

We can also see the shortening effect at the beginning of words, in that what were presumably CV- prefixes (and still are in the speech of a few people) have been shortened to C-, thus producing consonant clusters. The tendency towards CV syllable types continues to work to do away with these clusters, so that utterance initially or after a consonant they are fused or compressed as much as possible by either:

--being articulated as simultaneously as possible, as in [p-tʃə̀] "trees", where the initial two consonants are pronounced as much as possible at the same time.

--being fused like the m-n of m-n-dap "houses", which sounds like [mdap].

--dropping out completely, as with /r/. rbu: "egg" is realized as [bu:] after a consonant or silence.

[6]It seems possible that historically the [ʔ] could represent a neutralization of contrast between /k/ and /t/ in syllable final position, since the other stops /b/ and /k/ are both represented syllable finally, and [ʔ] has a high frequency of occurrence (about twice that of either [ŋ], [p] or [r] in syllable final position).

Also, after a vowel the initial C of the cluster, either r-, b-, or m-, often functions phonologically as the final consonant of the preceding syllable. The case of a homorganic nasal plus consonant seems to be a more tolerable type of cluster in Limbum than the others, since it does not tend to separate after a vowel as the others do, but remains linked together.

That CVC syllables are sometimes pronounced without a final V, and that the initial consonants of clusters function as the final consonants of the preceding syllable would indicate that syllables of the form CVC are more tolerable in Limbum than those of the form CCV.

Also, the language does not seem to permit a build-up of more than two consonants in a cluster. All consonant clusters fit into the pattern CC. For example:

r-n-su:	⟶	[nsu:]	CCV	/rnso:/	"men's pride"
m-ŋ-gvɷr	⟶	[mgvɷr]	CCVC	/mgɨr/	"palm oil"
m-r-byɛ́:	⟶	[mbyɛ́:]	CCV	/mb^{y}ɛ:/	"shields"
m-ŋ-gwaŋ	⟶	[mb$^{\wedge}$aŋ]	CCVC	/mg^{w}aŋ/	"salt, chiggers"
m-ŋ-kwa?ʃ^{y}i	⟶	[mkwa?ʃ^{y}i]	CCV.CV	/mk^{w}ak.ʃi/	"thoughts"
m-m-ba:	⟶	[m:ba:]	CCV	/m:ba:/	"leopards"
m-n-dʒvɨ?	⟶	[mdʒvɨ?]	CCVC	/mdʒɨk/	"type of wild cat"

According to the conclusions reached in the preceding sections on interpretation problems, we would have the following syllable types in Limbum:

V	[é^{1}]	"he, she, subj"		
CV	[sɛ^{3}]	"to be tired"	[dɔ:^{3}]	"to drive, push"
CVC	[kɔ́r^{1}]	"to tie"	[b^{y}i:r^{1}]	"red"
CCV	[blɔ́$^{3-4}$]	"honey"	[pti:^{1}]	"rings"
CCVC	[md^{y}ip^{2}]	"water"	[ŋfu:r$^{3-2}$]	"crysop fly"
VC	[ar^{1}bɔ?^{3}]	"it is a pumpkin"	[ar^{1}ŋgɔ́:$^{3-4}$]	"women's pride"
N̩	[m̩^{2}ta$^{1-3}$]	"fifty"		

Contrast between consonant and nasal plus consonant:

[b]		[mb]	
[be?^{3}]	"to read, count"	[mbe?^{3}]	"water heated to make fufu"
[ba:^{2}]	"fufu"	[mba:^{2}]	"leopard"

[by]		[mby]	
[byɛ̀^{3}]	"to plant"	[mbyɛ̀$^{3-4}$]	"type of small animal"

[t]		[nt]	
[tar^{1}]	"to give something to a guest"	[ntar^{2}]	"something given to a guest"
[tu:^{1}]	"to send"	[ntu:^{2}]	"message"

[d]		[nd]	
[da:^{3}]	"to slice"	[nda^{2}]	"who?"
[dɔ̀:^{3}]	"to drive, push"	[ndɔ̀:^{3}]	"bad luck"

[tʃ]		[ntʃ]	
[tʃɪp^{1}]	"to tell, advise"	[ntʃɪp^{1}]	"advice"
[tʃa?^{3}]	"only; to check a trap"	[ntʃa?^{3}]	"damp, rich soil of valley"

[dʒ]		[ndʒ]	
[dʒap^{3}]	"to garble one's speech"	[ndʒap^{3}]	"vegetable, soup"
[dʒɔ̀?^{3}]	"elephant"	[ndʒɔ̀?^{3}]	"type of dance"

[k]		[ŋk]	
[kɪŋ^{1}]	"canoe"	[ŋkɪŋ^{1}]	"potion drunk to show who is guilty"
[ka?^{3}nɛ̀^{1}]	"to promise, prophesy"	[ŋka?^{3}nɛ̀^{1}]	"promise, prophecy"

[ky]		[ŋky]	
[kyɛ̀:^{3}]	"to put cross bars on fence"	[ŋkyɛ̀:$^{3-4}$]	"cross bars of fence"

[kw]

[kwɛ̀^{1}] "to die"

[kwa$^{1-3}$] "corn"

[ŋkw]

[ŋkwi:^{1}] "chief"

[ŋkwa:^{3}] "slave"

[g]

[gi:^{3}] "to do"

[gɔʔ^{3}] "to grind"

[ŋg]

[ŋgi:^{3}] "character"

[ŋgɔʔ^{3}] "grinder"

[gw]

[gwɛ̀^{3}] "to fall"

[gwar^{3}] "to cut"

[ŋgw]

[ŋgwɛ̀^{2}] "dog"

[ŋgwar$^{3-4}$] "blacksmith's instrument for cutting iron"

[f]

[feʔ^{3}] "year"

[fɔ̀:^{1}] "to be good"

[ɱf]

[ɱfeʔ^{3}] "time"

[ɱfɔ̀:^{2}] "type of green leaf vegetable"

[fy]

[fyɛ̀:^{3}] "to untie, undo"

[fyɛ̀^{1}] "to make slashes with a blade"

[ɱfy]

[ɱfyɛŋ^{2}] "chidken gizzard"

[ɱfyi:^{3} ɲvɷ̃^{2}] "nose"

[s]

[s^{y}iʔ^{1}] "base of clump of rafia palm"

[sɔ̀ŋ^{1}] "to tell"

[ns]

[ns^{y}iʔ^{1}] "inside of base of rafia palm"

[nsɔ̀ŋ^{2}] "message"

[ʃ]

[ʃɛ̀^{1}] "to burn"

[nʃ]

[nʃɛ̀^{2}] "soil"

[w]

[wɹr^{3}] "we (exclus)"

[wɛ$^{3-4}$] "you (sg)"

[ŋw]

[ŋwɹr^{2}] "selfish person"

[ŋwɛ̀:$^{3-4}$] "person"

[l]

[l̥d^{y}i?^{1}] "to poison"

[la:^{3}] "to say"

[nl]

[nl̥d^{y}i?^{2}] "poison"

[nla:$^{3-4}$] "place where iron is worked"

[ř]

[řa:^{3}] "to spread"

[nř]

[nřa$^{3-4}$] "type of green leaf vegetable"

[y]

[yɛ́:^{3}] "to steal"

[ny] or [ɲ]

[ɲɛ́:$^{3-4}$] "thief"

Chapter 4

THE PHONEME

4.1 The Vowels

The central dialect of the Limbum language has a set of seven short vowel phonemes and a corresponding set of seven long vowel phonemes. These may be charted as follows:

i	ɨ			i:	ɨ:		
e		o		e:		o:	
ɛ		ɔ		ɛ:		ɔ:	
	a				a:		

Evidence for the contrast between long and short vowels is given on the chart on page 50. Further evidence for the contrast between the seven vowel qualities is given on the charts on pages 44 to 48, and a description of the vowel phonemes and their allophones is given on pages 73-76.

An interesting aspect of the vowels of Limbum, mentioned in the chapter on the syllable (sections 3.2 and 3.3), is the fricativization and palatalization which result from the very close articulation of the high vowels /i/ and /ɨ/. In the central and northern dialects, the high tongue position of the vowel /i/ results in palatalization of the preceding consonant: [b^{y}i^{1}] /bi^{1}/ "to give birth", [t^{y}i:^{1}] /ti:^{1}/ "to remove chiggers". The palatalization is more clearly heard on the stops than on the other consonants, though the vowel also has the effect of changing the lateral /l/ and semi-vowels /w/ and /y/ to their fricative allophones [ɮ] or [ɮd], [v] and [ʒ]. E.g. [v^{y}i^{2}] /wi^{2}/ "they (non-human)".

As one moves from north to south one hears a progressive increase in the amount of friction before the vowel /i/, so that in the southern dialect, rather than palatalization, there is an [s] or [z] after the consonant, depending on whether the consonant is voiceless or voiced, and the vowel is centralized to a sound between [ɿ] and [ɨ]. So /bi^{1}/ "to give birth" is realized as [bzɿ^{1}] rather than [b^{y}i^{1}] and /ti:/ "to remove chiggers" is realized as [tsɿ:^{1}] rather than [t^{y}i:^{1}]. Inter-

mediate pronunciations between the two are [bʒi^{1}] and [tʂi:^{1}].

The high back vowel, which is centralized by almost all Limbum speakers, so that I have represented it as /ɨ/ rather than /u/, causes fricativization of the preceding consonant in the form of an [f] or [v] release, depending again on whether the consonant is voiceless or voiced. So the word /bɨ^{1}/ "to be lost" is realized [bvɨ^{1}] and the word /tɨ:^{1}/ "to knit" is realized [tfɨ:^{1}]. This happens with all of the consonants, as shown on the chart on page and also changes the semi-vowels /w/ and /y/ to their fricative allophones [v] and [ʒ]. In much of the northern and part of the central area the vowel is pronounced [ɷ], but still has the same preceding friction. A small number of speakers in the northern dialect area have a symmetrical system of three front, three back, and one central vowel with no friction before the high back vowel. The back vowels of this system compare with the usual ones as follows:

	Chup (one speaker)		Taku	
"white"	[bu:]	/bu:/	[bvɨ:]	/bɨ:/
"grass"	[bo:]	/bo:/	[bu:]	/bo:/
"whiskers"	[bɔ:]	/bɔ:/	[bɔ̈:]	/bɔ:/

Intermediate pronunciations of the high back or central vowel between the [u] with no friction and the [ɨ] preceded by [f] or [v] are [u] and [ɷ] both preceded by [f] or [v]. As one moves from north to south one hears first the friction developing before the vowel and then the vowel becoming more centralized. In the central dialect the vowel is realized as [ɨ] in open syllables after a non-nasal consonant, and as [ɷ] in closed syllables and in open syllables after a nasal consonant. The variant [ə] is also heard in some words in open or closed syllables.

Those few speakers whom I heard having the three way back vowel contrast with no friction before the high back vowel were older speakers. Their children did not speak this way, though perhaps further north in some areas there might be young people who speak this way. Most Wimbum do not regard

this pronunciation as true to their language. They regard it as a foreign element or oddity and attribute it to influence from the Mfumte language spoken just north of the Wimbum area. Because the majority of Wimbum regard the high central vowel with preceding friction as the norm for their language, and because the basis for this analysis is the central dialect, I have chosen to represent the vowel phonemically as /ɨ/ rather than /u/.

In summary, we see that for some northern speakers, the seven vowel system consists of three front vowels, three back vowels, and one central vowel. For those of the central dialect there are three front, two back, and two central vowels. In the southern dialect there are two front, two back, and three central vowels:

(Some Northern) Chup		Central Wat, Taku		Southern Ndu	
i	u	i	ɨ	i	ɨ u
e	o	e	o		
ɛ	ɔ	ɛ	ɔ	ɛ	ɔ
a		a		a	

Like the two highest vowels, /i/ and /ɨ/, the next two lower vowels, /e/ and /o/ are also very closely articulated, and in open syllables are phonetically quite close to [i] and [u], especially their long counterparts. Because the quality of the short vowels is actually phonetically between that of [e] and [i] and [o] and [u], and to distinguish them from the higher vowels, I have represented them in this paper (in open syllables) mostly by the symbols [e̞] and [o̞]. (In a few cases, such as in the text in chapter 7, where they more definitely sound like [i] or [u], I have written them as such.)

The vowel quality of the long vowels /i:/, /ɨ:/ and /a:/ seems to be the same as that of their short counterparts /i/, /ɨ/ and /a/. This is not true of the mid vowels /e:/, /o:/, /ɛ:/ and /ɔ:/, however, which are all more closely articulated than their short counterparts. /e:/ and /o:/ are realized as [i:] and [u:]. The quality of the vowels /ɛ:/ and /ɔ:/ is between that of [e] and [ɛ] in the case of /ɛ:/, and between

[o] and [ɔ] in the case of /ɔ:/. I have symbolized these higher vowel qualities by [e̞] and [o̞], so the long vowels are symbolized phonetically by [e̞:] and [o̞:]. Sometimes /ɛ:/ and /ɔ:/ are realized as glides from the open vowels [ɛ] and [ɔ] to the closed vowels [e] and [o]. These I have symbolized [ε^{e}] and [o^{o}].

After a nasal consonant the back vowels /o/, /o:/, /i̱/ and /i̱:/ are nasalized. Other vowels are also sometimes slightly nasalized after nasal consonants.

4.2 Consonants

The consonant phonemes of the central dialect of Limbum are:

		t	tʃ	k	k^w	k^y
b	b^y	d	dʒ	g	g^w	
f	f^y	s	ʃ	ɡ		h
m	m^y	n	ɲ	ŋ	$ŋ^w$	
m:		r				
w		l	y			

These phonemes contrast as shown by the charts on pages 44-49. The various consonantal variants are demonstrated by the charts on pages 51-55, and a descriptive statement of the consonants and their allophones appears on pages 62-72. Alternations of phonemes are shown by the chart on page 58. and charts showing the consonantal phonemes of the three dialect areas are found on page 56.

4.2.1 Some notes on rare phonemes and dialectal variants

a) The Phoneme /ʃ/:

The phoneme /ʃ/ is rare in the northern and central dialects and appears to be derived from the phoneme /tʃ/. It occurs contrastively in only four morphemes in the northern dialect and five in the central that I have encountered:

[ʃə́^{1}] "to burn"

[nʃə́^{2}] "soil"

[ʃa$^{3-4}$] "corn beer"

[ʃaŋ^{1}] "prison"

[-ʃ^{y}i^{2} $^{(1)}$] "(verb suffix)" ([tʃ^{y}i] in northern dialect)

/ʃ/ does occur, though, as a variant of /tʃ/ in a few other morphemes in the central dialect (but not in the northern dialect):

/tʃe^{2}/ ~ /ʃe^{2}/ ~ /he^{2}/ "which (rel. pron.)"

/tʃa^{1}/ ~ /ʃa^{1}/ "this (dem. pron.)"

/tʃa:$^{2-3}$/ ~ /ʃa:$^{2-3}$/ "that (dem. pron.)"

In the southern dialect /ʃ/ almost completely replaces /tʃ/.

b) The phoneme /h/:

The phoneme /h/ is very rare and also seems in some of its occurrences to be derived from the phoneme /tʃ/ (for example in the demonstratives shown below and in the relative pronoun above). It is necessary to establish /h/ as a phoneme because it does occur contrastively in a few morphemes:

[ha^{1}] "this (dem. adj.)"

[ha:$^{2-3}$] "that (dem. adj.)"

[ha?^{1}-] "the last, the next" in the expressions:

[ha?^{1}ŋga:^{3}né^{2}] "a year ago, next year"

[ha?^{1}nt^{y}i^{3}né^{2}] "a week ago today, a week from today"

/h/ also occurs in a few expletives.

In the northern dialect the phoneme /h/ replaces the phoneme /f/ in some words. E.g. /ha^{1}/ rather than /fa^{1}/ "give".

c) The phoneme /r/:

The phoneme /r/ does not occur in the northern dialect. It is replaced by the phoneme /l/ in every case.

d) Palatalized and labialized consonants:

The central and northern dialects of Limbum have a set of four palatalized consonants and a set of three labialized consonants. The palatalized consonants, with the exception of /k^{y}/ are all at the labial point of articulation, and the labialized consonants are all at the velar point of articulation:

Labial	Velar	
b^{y}	k^{y}	k^{w}
f^{y}		g^{w}
m^{y}		ŋ^{w}

These consonants occur only before the vowels /e/, /ɛ/, and /a/. The reasons why I have chosen to consider these as separate consonants are given in the chapter on the syllable (section 3.2).

As mentioned in the chapter on the syllable, an interesting phonemenon with the palatalized labial consonants is that in the southern dialect they are realized as labialized palatal consonants, so that /b^y/, /f^y/, /m^y/ are respectively /$dʒ^w$/, /$ʃ^w$/, /$ɲ^w$/. The /k^y/ is also palatal: /tʃ/, but without the labialization:

Central and Northern	Southern	
[by$\acute{e}^3$]	[dʒw$\acute{e}^3$]	"to plant"
[fyɛ?^{1}]	[ʃwɛ?^{1}]	"to look at"
[myɛ?^{3}t$\acute{e}^1$]	[ɲwɛ?^{3}t$\acute{e}^1$]	"to be muddy, soggy"
[ky$\acute{e}$:$^{3-4}$]	[tʃ$\acute{e}$:$^{3-4}$]	"type of striped rodent"

So in the southern dialect, rather than four palatalized and three labialized consonants, there are six labialized consonants, three at the palatal and three at the velar point of articulation:

Palatal	Velar
$dʒ^w$	k^w
$ʃ^w$	g^w
$ɲ^w$	$ŋ^w$

In the case of some words containing /f^y/ or /$ʃ^w$/ there is an intermediate pronunciation between the two, which is /tʃ^w/. E.g.:

[fyi:^{1}]	[tʃwi:^{1}]	[ʃwi:^{1}]	"to make slashes with a blade"
[fya?^{2}]	[tʃwa?^{2}]	[ʃwa?^{2}]	"to remove hulls from corn by pounding in a mortar"

e) <u>Velar Consonants before /i/</u>:

There is a tendency for velar consonants to become palatal consonants before the vowel /i/. In the northern and central dialects there are very few words in which a velar consonant is followed by /i/. Near the southern dialect area these consonants are palatal. Further south in the southern dialect area they are even further forward and are alveolar. Here the vowel is also centralized as mentioned in the section on the vowel (4.1). Also in a few words in the southern dialect, the

consonant /b/ is replaced by the alveolar /d/.

Southern	South Central	Northern and Central
Alveolar	Palatal	Velar
ts	tʃ	k
dz	dʒ	g
z	y	ɡ
no example	ɲ	ŋ

Examples:

Northern and Central Labial	Southern Alveolar	South Central Palatal	Northern and Central Velar	
	[rtsɿŋ]	←[tʃʸiŋ]	←[rkʸiŋ]	"pot"
[be?]→[dzɿ?]	[ndzɿ?]	←[ndʒʸi?]	←[ŋgʸi?]	"agusi"
	[rzɿ]	←[ryė]	←[rgʸi] ~ [rgė]	"mortar
		[ɲi?]	←[ŋʸi?] ~ [ŋė?]	"to open slightly to look in"

(/r/ is replaced by /l/ in the northern dialect, e.g. [lkʸiŋ] rather than [rkʸiŋ] "pot".)

f) Other variants:

In a few morphemes in the southern dialect the phoneme /g/ replaces the phoneme /k/, e.g. /ger$^{3-4}$/ rather than /ker$^{3-4}$/ "again", and the phoneme /ɔ/ replaces the phoneme /a/ in the word /a^{1}/ "subject".

As mentioned in the vowel section, the rare system of three back vowels with no friction before the high back vowel is regarded by some Wimbum as being the result of influence from the Mfumte language to the north. I heard it only in the speech of a few older people. Also, the differences in the southern form of speech are regarded by some to be due to influence from the Nsɔ? language to the south, which has these sounds. Though I may be wrong, it is my impression that

the southern pronunciation is spreading northward. Whether this is the result of a more general trend, or whether it is due to the fact that Ndu (in the southern area) is the main commercial center and the largest town of the area, I do not know.

WORK CHART OF VOWEL PHONES

		Front	Central	Back
High	close:	i i: ɨ ɨ: ɨ̃ ɨ̃:	ɨ ɨ: ɨ̃ ɨ̃:	u u: ũ:
	open:	ɪ		ʊ ʊ: ʊ̃ ʊ̃:
Mid	close:	e	ə ə:	o
	open:	ɛ: ɛ̃: ɛ ɛ^{e}	ʌ	ɔ: ɔ ɔ^{o}
Low	open:		a a:	

WORK CHART OF CONSONANT PHONES

		Bi-Labial	Labio-Dental	Alveo-lar	Alveo-palatal	Velar	Glottal
Stops:	vl:	p		t		k	ʔ
				t^y		k^y	
						ky	
						kw	
	vd:	b		d		g	
		b^y		d^y		g^y	
		by					
						gw	
Affri-cates:	vl:				tʃ		
					$tʃ^y$		
				tf	tʃf	kf	
	vd:				dʒ		
					$dʒ^y$		
		bv		dv	dʒv	gv	
Fric:	vl:		f	s	ʃ		h
			f^y	s^y	$ʃ^y$		
			fy				
				sf			
	vd:		v		ʒ	ɣ	
			v^y				
					$ʒ^v$		
Nasals:	vd:	m	ɱ	n	ɲ	ŋ	
		m^y		n^y		$ŋ^y$	
		my					
						ŋw	
		mv		nv	ɲv		
Laterals:	vd:			l			
				$ɬ^y$			
				$ɬd^y$			
				lv			
Flap:	vl:			r̆			
	vd:			ř			
				r^y			
				rv			
Semi-Vowels:	vd:	w			y		

Consonant and Vowel Contrasts:

	[b]	[by]	[f]	[fy]	[m]	[my]	[v]	[w]
/i-i:/	[b^{y}i^{1}] "to give birth"		[f^{y}i$^{1-3}$] "type of snake"		[m^{y}i^{3}] "to finish"		[v^{y}i^{2}] "they" (non-human)	
/e-e:/	[bė^{1}] "to inform"	[byė^{3}] "to plant"	[fe?^{3}] "year"	[fyė^{1}] "to pay tax"				[wi:^{3}] "you (plu)"
/ɛ-ɛ:/	[bė:^{3}] "to be astonished"	[byė:^{1}] "shield"	[fɛ^{2}] "where"	[fyė:^{3}] "to untie"	[mɛ$^{3-4}$] "I, me"	[myɛ?^{3}tė^{1}] "to be muddy, soggy"		[wɛ$^{3-4}$] "you (sg)"
/a-a:/	[ba^{1}] "and"		[fa^{1}] "to give"	[fya^{1}] "to spit out chaff"	[ma^{2}] "mother"			[wa:^{3}] "edge of stream"
/ɔ-ɔ:/	[bɔ^{2}] "hand"		[fɔ^{1}] "there"		[mɔ?^{2}] "one, other"			[wɔ^{1}] "your (sg)" (plu obj)
/o-o:/	[bu:^{1}] "to be missing"		[fǒ^{3}] "leaf"		[mũ:^{2}] "child"			
/ɨ-ɨ:/	[bvɨ^{1}] "to be lost"		[fɨ$^{3-4}$] "legacy"		[mvɨ̃^{2}] "middle"		[vɨ^{3}] "to come"	

	[t]	[d]	[tʃ]	[dʒ]	[s]	[ʃ]	[ʒ]	[y]
i-i:	[t^{y}i:^{1}] "to remove chiggers"	[d^{y}i?^{1}] "to stay behind"	[ntʃ^{y}i:$^{3-4}$] "necklace"	[dʒ^{y}i^{3}] "to ignore someone"	[s^{y}i:^{1}] "to be black"	[-ʃ^{y}i$^{2\ (1)}$] (verb suffix)	[ʒi^{2}] "it" (non-human)	
e-e:	[ti:^{1}] "to divide"	[de?^{1}] "to be	[tʃé^{1}] "to choose"	[dʒi:^{2}] "anthill"	[sé$^{1-3}$] "very"	[ʃé^{1}] "to burn"		[yi:^{1}] "your (plu)" (sing.obj)
ɛ-ɛ:	[té:^{1}] "to stand"	[dɛŋ^{1}] "to stagger"	[tʃé:^{1}] "to urinate"	[dʒé:^{1}] "different"	[sé:^{1}] "to slice"			[yé:^{1}] "to sing"
a-a:	[ta:^{3}] "to blame"	[da:^{3}] "to slice"	[tʃa:^{3}] "to pass"	[dʒa:^{3}] "to act as if in a daze"	[sa:^{3}] "to cut"	[ʃa$^{3-4}$] "corn beer"		[ya:$^{3-2}$] "queen"
ɔ-ɔ:	[tɔ:^{3}] "to roast"	[dɔ:^{3}] "to push"	[tʃɔ:^{1}] "to enter; to set (sun)"	[dʒɔ:^{3}] "to touch"	[sɔ:^{2}] "a hoe"			[yɔ^{1}] "your (sg)" (sg. obj.)
o-o:	[tó^{2}] "head"	[dó^{3}] "to go"	[tʃó^{1}] "to sit"	[dʒu:^{3}] "to drive away"	[su:^{3}] "to go down"			[yu:^{1}] "to buy"
ɨ-ɨ:	[tfɨ:^{1}] "edge of cooking fire"	[dvɨ:^{1}] "to be roudy"	[tʃfɨ:^{1}] "to tie"	[dʒvɨ:^{1}] "to doze"	[sfɨ:^{3}] "to shut"		[ʒvɨ^{1}] "to kill"	

	[k]	[ky]	[kw]	[g]	[gw]	[ɡ]	[ŋ]	[ŋw]
/i-i:/	[rk^{y}i$^{3-4}$] "center pole of house"			[ŋg^{y}i?^{3}] "agusi"			[ŋ^{y}i?^{1}]	
/e-e:/	[ké^{1}] "habitual action"	[kyé^{1}] "to beg"	[kwé^{1}] "to die"	[gi:^{3}] "to do, make"	[gwé^{3}] "to fall"	[ɡi:^{2}] "calabash bowl"	~ [ŋe?^{1}] "to open slightly"	
/ɛ-ɛ:/	[kɛ^{2}] "what"	[kyɛ́:^{3}] "type of rodent"	[kwɛ?^{3}] "to pick up"	[gɛ?^{1}] "to provide for abundantly"		[ɡɛ́:^{1}] "to be enough"	[ŋɛ?^{1}] "to force one's way"	[ŋwɛ́:^{2}] "moon"
/a-a:/	[ka:^{1}] "to press"	[kya^{3}] "to laugh" (ideophone)	[kwa$^{1-3}$] "corn"	[gaŋ^{1}] "type of grass"	[gwa^{1}] "to wrestle"	[ɡa:^{1}] "to shout"	[ŋa:^{1}] "to take"	[ŋwa:^{3}] "to make lizard's eyes"
/ɔ-ɔ:/	[kɔ́:^{1}] "to catch"			[gɔ́:^{1}] "to bend one's arm"		[ɡɔ́:^{1}] "to plane"	[ŋɔ?^{3}] "to scoop up"	
/o-o:/	[ku:^{3}] "to strike"			[gu:$^{3-4}$] "marriage transactions"		[ɡɔ́p^{1}] "truly"		
/ɨ-ɨ:/	[kfɨ^{3}] "to pick"			[gvɨ$^{3-4}$] "mat for sifting"				

	[m]	[n]	[ɲ]	[ŋ]
/i-i:/	[m^{y}i^{3}] "to finish"	[n^{y}i?^{3}] "to sprain"	[ɲ^{y}i^{1}] "to refuse"	[ŋ^{y}i?^{1}]
/e-e:/	([mė^{1}]) "upon (contraction of [mbė^{1}])"	[nė^{3}] "with"		~[ŋe?^{1}] "to open slightly"
/ɛ-ɛ:/	[mɛ$^{3-4}$] "I, me"	[ˊ^{1}nɛ^{2}] "that"	[ɲɛ́:^{1}] "to go early"	[ŋɛ?^{1}] "to force one's way"
/a-a:/	[ma^{2}] "mother"	[na^{1}] "here"	[ɲa:^{1}] "to not blame"	[ŋa:^{1}] "to take"
/ɔ-o:/	[mɔ?^{2}] "one, other"	[nɔ^{1}] "to drink"	[ɲɔ^{2}] "snake"	[ŋɔ?^{3}] "to scoop up"
/o-o:/	[mũ:^{2}] "child"			
/ɨ-ɨ:/	[mvɨ̃:^{2}] "middle"	[nvɨ̃:^{1}] "to ferment"	[ɲvõ:$^{3-4}$] "God, sun"	

	[d]	[n]	[l]	[ř]
/i-i:/	[d^{y}i?^{1}] "to stay	[n^{y}i?^{3}] "to sprain"	[l̪d^{y}i?^{1}] "to lock"	[ř^{y}iŋ^{3}] "to know"
/e-e:/	[de?^{1}] "to be able"	[-nė^{2}] "time suffix"	[li:^{3}] "to be	[řė^{3}] "to fight"
/ɛ-ɛ:/	[dɛŋ$^{1-3}$] "stick for dancing"	[ˊ^{1}nɛ^{2}] "that"	[lɛ^{3}] "to put down"	[řɛŋ^{3}] "to tap palm wine"
/a-a:/	[da:^{3}] "to slice"	[na:^{3}] "to raise"	[la:^{3}] "to say"	[řa:^{3}] "to spread"
/ɔ-ɔ:/	[dɔ̀:^{3}] "to push"	[nɔ^{1}] "to drink"	[lɔ̀:^{1}] "to beg"	[rɔ̀:^{3}] "to look for"
/o-o:/	[dò^{3}] "to go"		[lu:^{1}] "to hurt; to bite"	[ru:^{1}] "to be full"
/ɨ̞-ɨ̞:/	[dvɨ̞:^{1}] "to be roudy"	[nvɨ̞̃:^{1}] "to ferment"	[lvɐr^{1}] "foolish person"	[řvə$^{2-3}$] "ten"

	[f]	[h]	[g]	[k]	[tʃ] ~	[ʃ]	[tʃ]	[ʃ]
/a-a:/	[fa^{1}] "to give"	[ha^{1}] "this (dem.pro)"	[ga:^{1}] "to shout"	[ka^{1}] "even"	[tʃa^{1}] ~ "this (dem.adj)"	[ʃa^{1}] "this (dem.adj)"		
/a-a:/	[fa:^{3}] "to make a mistake"	[ha:$^{2-3}$] "that" (dem.pro)		[ka:^{3}] "scrap of cloth"	[tʃa:$^{2-3}$] ~ "that" (dem.adj)	[ʃa:$^{2-3}$] "that" (dem.adj)	[tʃa:^{3}] "to pass"	[ʃa$^{3-4}$] "corn beer"
/a-a:/	[fa?^{3}] "to work"	[ha?^{1}] "the next; the last"	[ga?^{1}] "to surpass"	[ka?^{1}] "to set a date"			[tʃa?^{3}] "only"	

[m]	[m:]
[mba:^{2}] "leopard"	[m:ba:^{2}] "leopards"
[mbv̈^{2}] "goat"	[m:bv̈^{2}] "goats"

Contrast of vowel length:

[i]	[i:]
[b^{y}i^{1}] "to give birth"	[b^{y}i:^{1}] "to dance"
[nsap^{3}s^{y}i^{2}] "forehead"	[ps^{y}i:^{1}] "black (plu)"

[ɛ̇]	[i:]
[bɛ̇^{1}] "to inform"	[bi:^{3}] "to make a fence"
[yɛ̇^{1}] "to eat"	[yi:^{1}] "your (plu)"

[ɛ]	[ɛ̇:] ~ [ɛ^{e}]
[lɛ^{3}] "to put down"	[lɛ̇:^{2}] ~ [lɛ^{e2}] "blood"
[yɛ^{1}] "to see"	[yɛ̇:^{1}] ~ [yɛ^{e1}] "to sing"

[a]	[a:]
[ta^{1}] "to shoot"	[ta:^{1}] "to spread out"
[wa^{1}] "my"	[wa:^{1}] "to shout"

[ɔ]	[ɔ̇:] ~ [ɔ^{o}]
[sɔ^{1}] "to win"	[sɔ̇:^{1}] ~ [sɔ^{o1}] "to make a clicking sound with one's mouth"
[rɔ^{3}] "stream"	[rɔ̇:^{3}] ~ [rɔ^{o3}] "to look for; sheath"

[ɔ̇]	[u:]
[tɔ̇^{2}] "head"	[tu:^{1}] "to send"
[yɔ̇^{2}] "to be"	[yu:^{2}] "thing"

[ɨ̇]	[ɨ̇:]
[bvɨ̇^{1}] "to be lost"	[bvɨ̇:^{1}] "to bend"
[kvɨ̇^{3}] "to pick"	[kvɨ̇:^{3}] "to spring out of; rope"

Allophonic Variations of Phonemes:

/C/ ⟶ [C^{y}] before /i/ or /i:/

	before /e/ or /e:/:		before /i/ or /i:/:	
/b/	[bɛp^{1}]	"to be bad"	[b^{y}ip^{1}]	"to request"
/t/	[tè^{1}tè^{1}]	"piece (of meat, etc)"	[t^{y}i^{3}t^{y}i$^{3-4}$]	"floor"
/d/	[de?^{1}]	"to be able"	[d^{y}i?^{1}]	"to stay behind"
/tʃ/	[tʃɛp^{1}]	"to tell, advise"	[tʃ^{y}ip^{1}]	"to ignore"
/dʒ/	[dʒe?^{3}]	"to act foolishly"	[dʒ^{y}i?^{3}]	"to grope"
/k/	[kɛr$^{3-4}$]	"again"	[rk^{y}ir^{1}]	"louse"
/g/	[ge?^{3}]	"cheek"	[ŋg^{y}i?^{3}]	"agusi"
/f/	[fɛp^{3}]	"blind"	[f^{y}ip^{3}]	"to deceive"
/s/	[sɛŋ^{1}]	"to tie scarf on head"	[s^{y}iŋ^{1}]	"bird"
/ʃ/	[ʃè^{2}]	"rel. pronoun"	[-ʃ^{y}i^{2} or ^{1}]	"(verb suffix)"
/ɡ/	[ɡi:^{2}]	"calabash bowl"	- - - -	
/m/	([mè-^{1}])	contraction of [mbè^{1}] "upon"	[m^{y}i^{1}]	"to finish"
/n/	[nè^{3}]	"with"	[n^{y}i?^{3}]	"to sprain"
/ɲ/			[ŋ^{y}i?^{1}] ~ [ŋe?^{1}]	"to open slightly"
/l/	[le?^{1}]	"to put hands on hips"	[ɬd^{y}i?^{1}]	"to poison"
/r/	[rè^{3}]	"to fight"	[r^{y}iŋ^{3}]	"to know"
/w/	[wi:^{1}]	"your (pl)"	[v^{y}i^{1}]	"his, hers"
/y/	[yè^{1}]	"to eat"	[ʒi^{1}]	"to know"

/C/ ⟶ [CF] before /ɨ/, /ɨ:/

	before /o/ or /o:/:		before /ɨ/ or /ɨ:/:	
/b/	[rbu:^{3}]	"egg"	[rbvɨ:$^{3-4}$]	"stomach"
/t/	[tu:^{1}]	"to send"	[tfɨ:^{1}]	"to knit"
/d/	[ndɔŋ$^{3-4}$]	"storage place above ceiling"	[ndvɑŋ^{2}]	"day of week"
/tʃ/	[tʃɔʔ^{3}]	"to pour"	[tʃfɨʔ^{3}]	"to light"
/dʒ/	[dʒɔʔ^{3}]	"elephant"	[dʒvɨʔ^{2}]	"place of grass and trees in field"
/k/	[ŋku:^{3}]	"tail"	[ŋkfɨ:^{3}]	"piece of land"
/g/	[gu:$^{3-4}$]	"marriage transactions"	[gvɨ:^{3}]	"corpse"
/f/	[ɱfɔr̲^{2}]	"sore"	[ɱfər̲^{2}]	"brother (sis)"
/s/	[sɔŋ^{1}]	"to tell"	[sfɑŋ$^{3-4}$]	"python"
/ʃ/	- - - -		- - - -	
/ɡ/	[gɔp^{1}]	"truly"	- - - -	
/m/	[mũ:^{2}]	"child"	[mvɨ̃:^{2}]	"middle"
/n/	- - - -		[nvɨ̃ʔ^{1}]	"to eat dry flour"
/ɲ/	- - - -		[ɲvɑ̃:^{2}]	"bees"
/ŋ/	- - - -		- - - -	
/l/	[lu:^{3}s^{y}i^{2}]	"to heat"	[lvɨ^{3}ʃ^{y}i^{2}]	"to rest"
/r/	[ru:^{1}s^{y}i^{1}]	"to fill"	[rvɨ:^{3}s^{y}i^{2}]	"to smell"
/w/	- - - -		[vɨp^{2}]	"bone"
/y/	[yu:^{1}]	"to buy"	[ʒvɨ^{1}]	"to kill"

/w/ ⟶ [v^y] before /i/, /ɨ/
⟶ [w] elsewhere

/y/ ⟶ [ʒ] before /i/
⟶ [ʒv] before /ɨ/
⟶ [y] elsewhere

/l/ ⟶ [ɬd^y] [ɬ^y] before /i/
⟶ [lv] before /ɨ/
⟶ [l] elsewhere

[v]	[w]
[v^yi^2] "they" (non-human)	[wi:^{3}] "you (plu)"
[v^yi^1] "his,hers"	[wɛ$^{3-4}$] "you (sg)"

[ʒ]	[y]
[ʒi^2] "it" (non-human)	[yé^2] "he,she" (human)
[ʒi^1] "to know; his,hers" (sg obj)	[yé^1] "to eat"

[ɬd^y]	[l]
[ɬi:^{2}] "name"	[li:^{2}] "tongue"
[ɬdi?^{1}] "to poison"	[le?^{1}] "to put hands on hips"

[v]	[w]
[vɨ^3] "to come"	[wɔ^1] "your" (plu obj)
[vɨ^{3}ʂ^{y}i^2] "to laugh"	[wa:^{2}m^{y}i^1] "eight"
[vɨp^2] "bone"	[wʅp^2] "type of leaf vegetable"

[ʒv]	[y]
[ʒvɨ^1] "to kill"	[yɔ́^{2}] "to be"
[ʒvɨ?^{1}] "spirit"	[yɔ?^{2}] "to hear"
[rʒvɷr^2] "luck"	[yɔr^3] "to itch"

[lv]	[l]
[lvɨ^{3}ʂ^{y}i^2] "to rest"	[lu:^{3}s^{y}i^2] "to heat"
[lvɨ?^{3}ʂ^{y}i^2] "to be short"	[lɔ?^{1}ʂ^{y}i^1] "to be happy"
[llvɷŋ^2] "type of tree"	[llɔŋ^2] "musical instrument"

/b/ ⟶ [p] before a voiceless consonant or silence

[b]		[p]	
[bɛr^{1}]	"to save"	[wɛp^{1}]	"to fear"
[sa^{3}bə́^{2}]	"to be tall"	[sap^{3}]	"to be tall"
[ndʒɪ b^{1} lɛʔ^{2}]	"in the calabash"	[ndʒɪ p^{1} kaŋ^{2}]	"in the pan"
[bdɔʔ^{2}]	"plains"	[ptɔʔ^{2}]	"countries"
[bbap^{2}]	"wings"	[pfeʔ^{3}]	"years"

/k/ ⟶ [ʔ] syllable finally

[k]		[ʔ]	
[ka^{1}]	"even"	[kaʔ^{1}]	"to start a word or sentence for someone else to finish"
[kɔp^{3}]	"forest"	[bɔʔ^{1}]	"to deceive"
[ŋkɪŋ^{1}]	"potion drunk to see if one is guilty"	[feʔ^{3}]	"year"
[kfɨ^{1}ʃ^{y}i^{1}]	"to scrub"	[sfɨʔ^{1}s^{y}i^{1}]	"to bud"
[rkar$^{3-4}$]	"scabies"	[rbaʔ^{2}]	"branch of tree"

/r/ ⟶ [r] before silence
⟶ [r] ~ [r] before a voiceless consonant

[r]		[r]	
[rɔ^{3}]	"to look for"	[mɔr^{2}]	"fire"
[tfɷ^{1}rə́^{1}]	"to have"	[tfɷr^{1}]	"to have"

[r]		[r] ~ [r]	
[lɔr^{3} ŋwaʔ^{3}]	"take the book"	[lɔr^{3} kaŋ^{2}] ~ [lɔr^{3} kaŋ^{2}]	"take the pan"
[a r^{1} bu:^{3}]	"it is an egg"	[a r^{1} fɨ:^{3}] ~ [a r^{1} fɨ:^{3}]	"it is a feather"

/n/ ⟶ [ɱ] before /f/

[n]		[ɱ]	
[nta:^{2}]	"market"	[ɱfa:^{2}]	"moveable stone of cooking fire"
[ndɔ:$^{3-4}$]	"bad luck"	[ɱfɔ:$^{3-4}$]	"chief"
[nsé^{2}]	"sorrow"	[ɱfi:^{2}]	"leg"

CHART OF CONSONANT PHONEMES

Central Dialect

		Labial			Alv.	Avp.	Velar		
Stops	vl				t	tʃ	k	k^w	k^y
	vd	b		b^y	d	dʒ	g	g^w	
Fricatives		f		f^y	s	(ʃ)	ɡ		(h)
Nasals		m	m:	m^y	n	ɲ	ŋ	$ŋ^w$	
Flap					r				
Oral Resonants		w			l	y			

Northern Dialect

		Labial			Alv.	A	Velar		
Stops	vl				t	tʃ	k	k^w	k^y
	vd	b		b^y	d	dʒ	g	g^w	
Fricatives		f		f^y	s	(ʃ)	ɡ		h
Nasals		m	m:	m^y	n	ɲ	ŋ	$ŋ^w$	
Oral Resonants		w			l	y			

Southern Dialect

		Lab.	Alv	Alveopal.		Velar	
Stops	vl		t	(tʃ)		k	k^w
	vd	b	d	dʒ	$dʒ^w$	g	g^w
Fricatives		f	s	ʃ	$ʃ^w$	ɡ	
Nasals		m	m:	n	ɲ	$ɲ^w$	ŋ	$ŋ^w$
Flap			r				
Oral Resonants		w		l	y			

CHART OF VOWEL PHONEMES

Some Northern (rare)	Central Dialect	Southern Dialect
i u	i ɨ	i ɪ ɨ u
e o	e o	
ɛ ɔ	ɛ ɔ	ɛ ɔ
a	a	a
i: u:	i: ɨ:	i: ɪ: ɨ: u:
e: o:	e: o:	
ɛ: ɔ:	ɛ: ɔ:	ɛ: ɔ:
a:	a:	a:

4.3 Alternation of Phonemes:

/b/ ⟶ /m/ before a nasal
⟶ /b/ ~ /w/ before /g/

/b/		/m/	
/ndab^{2}/	"house"	/ndam^{2}-ŋwak^{3}/	"school" (house-book)
/tɔb^{1}/	"to mix with water"	/tɔm^{1} nʃe^{2}/	"to mix soil with water"
/bdɔk^{2}/	"plains"	/mɲɔ^{2}/	"snakes"

/b/		/b/ ~ /w/	
/bgo:$^{3-4}$/	"marriage transactions"	/bgɔ:^{3}/ ~ /wgɔ:^{3}/	"liquid for blessing"
/bkar^{2}/	"friends"	/bgar^{3}be:$^{3-4}$/ ~ /wgar^{3}be:$^{3-4}$/	"children"

/r/ ⟶ /l/ before /l/

/r/		/l/	
/rkɔ:^{2}/	"arm"	/llɔ:^{2}/	"prayer"
/rra:^{2}/	"light clarity"	/lla:$^{1-2}$/	"passion fruit"
/rɨ:^{3}ʃi$^{3-4}$/	"a laugh"	/llɨ^{3}ʃi$^{3-4}$/	"a rest"

/tʃ/ ⟶ /tʃ/ ~ /ʃ/ ~ /h/ in the morpheme /tʃe^{2}/ "which; prog.action"
⟶ /tʃ/ ~ /ʃ/ in the morphemes: /tʃa^{1}/ "this (dem. pron)"
/tʃa:$^{2-3}$/ "that (dem.pron

/tʃ/		/tʃ/~/ʃ/~/h/	
/tʃe^{2}/	"tree"	/tʃe^{2}/~/ ^{2}/~/he^{2}/	"which (rel.pron); prog. action"

/tʃ/		/tʃ/~/ʃ/	
/ntʃa^{2}/	"fish"	/tʃa^{1}/~/ʃa^{1}/	"this (dem.pron.)"
/tʃa:^{3}/	"to pass"	/tʃa:$^{2-3}$/ ~ /ʃa:$^{2-3}$/	"that (dem.pron.)"

4.4 Distribution of the Phonemes in the Syllable

All consonant phonemes may occur in the initial consonant slot of CV(C) syllables. The only consonants which may occur syllable finally are the following:

b (p) k (?)

ŋ

r

The following diagram shows in abreviated form which consonants may occur in each slot of a Limbum syllable:

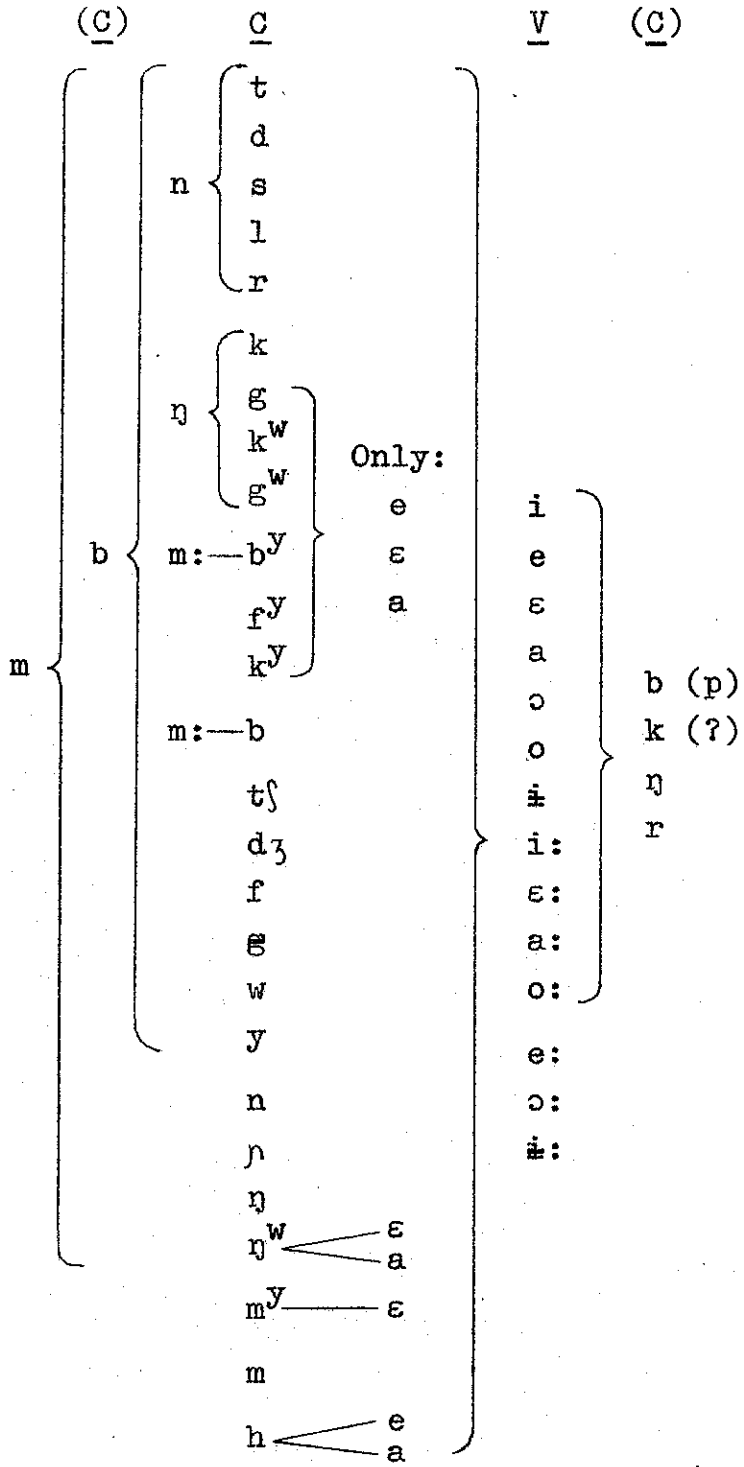
(C)	C	V	(C)
b	All	All	b (p)
m			k (?)
m:			ŋ
n			r
ŋ			

Of course there are certain restrictions as to which phonemes may occur in sequence with other phonemes. These restrictions are shown by the expanded diagram on the next page. Further restrictions as to which vowels may occur after which consonants are shown by the chart on page 66.

The three other syllable types in Limbum are: N̩, V, and VC. The phonemes which occur in each slot of these syllable types are shown below:

N̩	V	V	C
m	e	All	r
	a		
	ɛ:		

Diagram showing which phonemes occur in which slots of a Limbum syllable and the restrictions as to which phonemes may occur in sequence. Further restrictions as to which vowels are actually found to occur after which consonants are shown by the chart on the following page.



Should be:

n { t d tʃ dʒ f s ʃ r l }

This chart should be changed to include tʃ, dʒ, ʃ, and f with those consonants which may follow n rather than having them lower on the chart as they are now.

Chart showing which vowels may follow which consonants:

	i	e	ɛ	a	ɔ	o	ɨ	i:	e:	ɛ:	a:	ɔ:	o:	ɨ:
b	x	x	x	x	x	x	x	x	x	x	x	x	x	x
b^y		x	x							x				
t	x	x	x	x	x	x	x	x	x	x	x	x	x	x
d	x	x	x	x	x	x	x		x		x	x	x	x
tʃ	x	x	x	x	x	x	x	x	x	x	x	x	x	x
dʒ	x	x	x	x	x	x	x	x	x	x	x	x	x	x
k	x	x	x	x	x	x	x		x	x	x	x	x	x
k^y		x	x	x					x	x				
k^w		x	x	x							x			
g	x	x	x	x	x	x	x		x		x	x	x	x
g^w		x		x										
f	x	x	x	x	x	x	x		x	x	x	x	x	x
f^y		x	x	x					x	x				
s	x	x	x	x	x	x	x	x	x	x	x	x	x	x
ʃ	x	x		x							x			
ɣ	x	x	x	x	x	x	x		x	x	x	x		
h		x		x							x			
m	x		x	x	x	x	x						x	x
m:														
m^y			x											
n	x	x	x	x	x		x				x			x
ɲ	x		x	x	x		x			x	x			x
ŋ	x	(x)	x	x	x						x			
$ŋ^w$			x	x						x	x			
r	x	x	x	x	x	x	x			x	x	x	x	x
l	x	x	x	x	x	x	x	x	x	x	x	x	x	
w	x	x	x	x	x	x	x		x	x	x			
y	x	x	x	x	x	x	x		x	x	x		x	

4.5 Descriptive Statement of Phonemes

Consonants

/b/ [bv] voiced bilabial stop with labiodental release

occurs before /ɨ/ and /ɨ:/

[bvɨ:^{1}] /bɨ:^{1}/ "to bend"

[mbvɨ^{2}] /mbɨ^{2}/ "goat"

[b^{y}] voiced bilabial stop with palatal release

occurs before /i/ and /i:/

[b^{y}i^{3}] /rbi^{3}/ "kola nut"

[mb^{y}i:^{3}] /mbi:^{3}/ "silently"

[p] voiceless bilabial stop

occurs before a voiceless consonant or silence

[ptɔ^{2}] /bto^{2}/ "heads"

[gap^{3}ʃ^{y}i^{2}] /gab^{3}ʃi^{2}/ "to divide, to share"

[wɛp^{1}] /wɛb^{1}/ "to fear"

[b] voiced bilabial stop

occurs elsewhere

[bap^{3}] /bab^{3}/ "a wing"

[blɛ:^{1}] /blɛ:^{1}/ "bats"

[mbu:^{3}] /mbo:^{3}/ "reason"

/b^{y}/ [by] ~ [bi] voiced palatalized bilabial stop varying with voiced bilabial stop plus high front vowel

[byɛʔ^{3}] ~ [biɛʔ^{3}] /b^{y}ɛk^{3}/ "to carry"

[mbyɛ$^{3-4}$] ~ [mbiɛ$^{3-4}$] /mb^{y}e$^{3-4}$/ "type of animal"

/t/ [tf] voiceless alveolar stop with labiodental release

occurs before /ɨ/ and /ɨ:/

[tfɨ:^{3}] /tɨ:^{3}/ "lake"

[ntfɷŋ^{2}] /ntɨŋ^{2}/ "clay pot"

[t^y] voiceless alveolar stop with palatal release

occurs before /i/ and /i:/

[$t^y i ʔ^1$] /tik^1/ "to accompany someone"

[$nt^y i:^2$] /$nti:^2$/ "plant"

[t] voiceless alveolar stop

occurs elsewhere

[$tɔŋ^1$] /$toŋ^1$/ "to dig"

[$bvɨ̈^3 tɛ^1$] /$bɨ̈^3 tɛ^1$/ "to rot"

[$ta:^2$] /$rta:^2$/ "hat"

/d/ [dv] voiced alveolar stop with labiodental release

occurs before /ɨ̈/ and /ɨ̈:/

[$dvɨ̈:^1$] /$dɨ̈:^1$/ "to be rough, rowdy"

[$dvɨ̈ʔ^3$] /$rdɨ̈k^3$/ "horse's mane"

[d^y] voiced alveolar stop with palatal release

occurs before /i/

[$d^y i ʔ^3$] /dik^3/ "place"

[$nd^y i^{3-4}$] /ndi^{3-4}/ "man second to chief in village"

[d] voiced alveolar stop

occurs elsewhere

[$dɔ:^3$] /$do:^3$/ "to drive, push"

[nda^2] /nda^2/ "who?"

/tʃ/ [tʃf] voiceless alveopalatal affricate with labiodental release

occurs before /ɨ̈/ and /ɨ̈:/

[$tʃfɷ̈r^2$] /$rtʃɨ̈r^2$/ "one of the three stationary stones of cooking fire"

[$tʃfɨ̈:^1$] /$tʃɨ̈:^1$/ "to tie, to hold tightly"

[$tʃ^y$] voiceless alveopalatal affricate with palatal release

occurs before /i/ and /i:/

[tʃʸiŋ³] /tʃiŋ³/ "to tend"

[ntʃʸi:³⁻⁴] /ntʃi:³⁻⁴/ "necklace"

[tʃ] voiceless alveopalatal affricate

occurs elsewhere

[tʃɔ¹] /tʃo¹/ "to sit"

[ntʃa²] /ntʃa²/ "fish"

/d / [dʒv] voiced alveopalatal affricate with labiodental release

occurs before /ɨ/ and /ɨ:/

[dʒvɨ:¹] /dʒɨ:¹/ "to doze, be in a stupor"

[ndʒvɨʔ³] /ndʒɨk/ "type of wild cat"

[dʒʸ] voiced alveopalatal affricate with palatal release

occurs before /i/ and /i:/

[dʒʸir³] /dʒir³/ "to stick a stick in the ground"

[ndʒʸi:³⁻⁴] /ndʒi:³⁻⁴/ "back"

[dʒ] voiced alveopalatal affricate

occurs elsewhere

[dʒɔʔ³] /dʒok³/ "elephant"

[dʒɛ³] /rdʒe³/ "100"

/k/ [kf] voiceless velar stop with labiodental release

occurs before /ɨ/ and /ɨ:/

[kfɨ¹tʸi¹] /kɨ¹ti¹/ "to come back"

[ŋkfɨ:¹] /ŋkɨ:¹/ "chief (of village)"

[kʸ] voiceless velar stop with palatal release

occurs before /i/

[kʸi³⁻⁴] /rki³⁻⁴/ "center pole of house"

[ʔ] voiceless glottal stop

occurs syllable finally

[lɛʔ^{2}] /lɛk^{2}/ "calabash"

[maʔ^{3}ʃ^{y}i^{2}] /mak^{3}ʃi^{2}/ "to leave someone, to allow"

[k] voiceless velar stop

occurs elsewhere

[ka:^{1}] /ka:^{1}/ "to press, to wring"

[ŋkɔŋ^{3}] /ŋkɔŋ^{3}/ "pestle, stick for stirring fufu"

/k^{y}/ [ky] ~ [ki] voiceless palatalized velar stop varying with voiceless velar stop plus high front vowel

[kyɛ:^{3}] ~ [kiɛ:^{3}] /k^{y}ɛ:^{3}/ "to put cross bars on fence"

[kyė$^{3-4}$] ~ [kiė$^{3-4}$] /rk^{y}e$^{3-4}$/ "chest bone of animal"

/k^{w}/ [kw] voiceless labialized velar stop

[kwė^{1}] /k^{w}e^{1}/ "to die"

[ŋkwa:^{2}] /ŋk^{w}a:^{2}/ "creeping vine"

/g/ [gv] voiced velar stop with labiodental release

occurs before /ɨ/ and /ɨ:/

[gvɨ:^{1}] /gɨ:^{1}/ "to bend"

[ŋgvɷp^{2}] /ŋgɨb^{2}/ "hen"

[g^{y}] voiced velar stop with palatal release

occurs before /i/

[ŋg^{y}iʔ^{3}] /ŋgik^{3}/ "agusi"

[ŋg^{y}i^{1}r^{y}i$^{3-4}$] /ŋgi^{1}ri$^{3-4}$/ "type of juju"

[g] voiced velar stop

occurs elsewhere

[gi:^{3}] /ge:^{3}/ "to do, make"

[gɔŋ$^{3-4}$] /rgɔŋ$^{3-4}$/ "a summons"

/g^w/ [gw] voiced labialized velar stop

[gwa$\underline{r}^3$] /$g^w ar^3$/ "to cut"

[ŋgwė^2] /ŋ$g^w e^2$/ "dog"

/f/ [f^y] voiceless labiodental fricative with palatal release

occurs before /i/

[$f^y i\underline{r}^3$] /fir^3/ "to stir"

[$f^y ip^{3-4}$] /$nfib^{3-4}$/ "cheating"

[f] voiceless labiodental fricative

occurs elsewhere

[fɨ^1] /fɨ^1/ "to go out"

[fa^2] /rfa^2/ "gift, offering"

/f^y/ [fy] ~ [fi] voiceless palatalized labiodental fricative varying with voiceless labiodental fricative plus high front vowel

[fyė^1] ~ [fiė^1] /$f^y e^1$/ "to tax"

[fyɛp^1] ~ [fiɛp^1] /$f^y ɛb^1$/ "to blow"

/s/ [sf] voiceless alveolar fricative with labiodental release

occurs before /ɨ/ and /ɨ:/

[sfɨ:^{3}] /sɨ:^{3}/ "to shut"

[sfɨ$^1 s^y i^1$] /sɨ^{1}si^1/ "to weed"

[s^y] voiceless alveolar fricative with palatal release

occurs before /i/ and /i:/

[$ns^y i:^{3-4}$] /nsi:$^{3-4}$/ "porcupine quill"

[$s^y ip^{3-4}$] /sib^{3-4}/ "all, everything"

[s] voiceless alveolar fricative

occurs elsewhere

[sɔ$\underline{r}^3$] /$sɔr^3$/ "to wipe off"

[sɛ:^{1}] /rsɛ:^{1}/ "mole's secret hole"

/ʃ/ [ʃ^{y}] voiceless alveopalatal fricative with palatal release

occurs before /i/

[fɔ:^{3}ʃ^{y}i^{2}] /fɔ:^{3}ʃi^{2}/ "to find"

[kwa?^{3}ʃ^{y}i$^{3-4}$] /rk^{w}ak^{3}ʃi$^{3-4}$/ "thought"

[ʃ] voiceless alveopalatal fricative
occurs elsewhere

[ʃa$^{3-4}$] /ʃa$^{3-4}$/ "corn beer"

[nʃé^{2}] /nʃe^{2}/ "soil"

/ɡ/ [ɡ^{y}] voiced velar fricative with palatal release

occurs before /i/

[ɡ^{y}i$^{3-4}$] /rgi$^{3-4}$/ "mortar"

[ɡ] voiced velar fricative

occurs elsewhere

[ɡa?^{1}] /gak^{1}/ "to surpass"

[ɡɔ:^{3}] /rgɔ:^{3}/ "hail"

/h/ [h] voiceless glottal fricative

[ha?^{1}] /hak^{1}/ "the last, the next"

[ha:$^{2-3}$] /ha:$^{2-3}$/ "that (dem.pron)"

/m/ [mv] voiced bilabial nasal with labiodental release

occurs before /ɨ/ and /ɨ:/

[mvɨ:^{2}] /mɨ:^{2}/ "middle"

[mvɨ?^{3}] /mɨk^{3}/ "to open"

[m^{y}] voiced bilabial nasal with palatal release

occurs before /i/

[m^{y}i^{3}] /mi^{3}/ "to swallow"

[bɔ^{1}m^{y}i^{1}] /bo^{1}mi^{1}/ "to sleep"

[m̩] voiced bilabial syllabic nasal

occurs when /m/ functions as the nucleus of

a syllable

[m̩^{2}ta:r^{1}] /m^{2}ta:r^{1}/ "thirty"

[m̩^{2}sa:^{3}mba$^{2-3}$] /m^{2}sa:^{3}mba$^{2-3}$/ "seventy"

[m] voiced bilabial nasal

occurs elsewhere

[mɔr^{2}] /mɔr^{2}/ "fire"

[mbap^{3}] /mbab^{3}/ "rodent"

[maŋ^{2}] /rmaŋ^{2}/ "branch of rafia palm"

/m:/ [m:] long voiced bilabial nasal

[m:bɛ:^{2}] /m:bɛ:^{2}/ "trumpets"

[m:ba?^{3}] /m:bak^{3}/ "clouds"

/m^{y}/ [my] ~ [mi] voiced palatalized bilabial nasal varying with voiced bilabial nasal plus high front vowel

[myɛ?^{3}tə̀^{1}] ~ [miɛ?^{3}tə̀^{1}] /m^{y}ɛk^{3}te^{1}/ "to be muddy, soggy"

/n/ [nv] voiced alveolar nasal with labiodental release

occurs before /ɨ/ and /ɨ̀/

[nvɨ?^{1}] /nɨk^{1}/ "to eat dry flour"

[nvɨ:^{1}] /nɨ:^{1}/ "to ferment"

[n^{y}] voiced alveolar nasal with palatal release

occurs before /i/

[n^{y}i?^{3}] /nik^{3}/ "to sprain"

[ɱ] voiced labiodental nasal

occurs before /f/

[fe?^{3}] /nfek^{3}/ "time"

[fɨ^{3} fɨ^{1}] /nfɨ^{3}nfɨ^{1}/ "dust"

[n] voiced alveolar nasal

occurs elsewhere

[nɔ^{1}] /nɔ^{1}/ "to drink"

[ndʒé$^{3-4}$] /ndʒe$^{3-4}$/ "hunger"

[kɔ^{1}né^{1}] /kɔ^{1}ne^{1}/ "to help"

[rnaŋ^{3}] /rnaŋ^{3}/ "type of juju"

/ɲ/ [ɲv] voiced alveopalatal nasal with labiodental release

occurs before /ɨ/ and /ɨ:/

[ɲvɶ̃$^{3-4}$] /ɲi$^{3-4}$/ "God, sun"

[ɲvɶ̃:^{2}] /ɲɨ:^{2}/ "bees"

[ɲ^{y}] voiced alveopalatal nasal with palatal release

occurs before /i/

[ɲ^{y}i^{1}] /ɲi^{1}/ "to refuse"

[ɲ] voiced alveopalatal nasal

occurs elsewhere

[ɲɔ^{2}] /ɲɔ^{2}/ "snake"

[ɲɛŋ^{3}] /ɲɛŋ^{3}/ "to step on"

/ŋ/ [ŋ^{y}] voiced velar nasal with palatal release

occurs before /i/

[ŋ^{y}iʔ^{1}] /ŋik^{1}/ "to open slightly to look in"

[ŋ] voiced velar nasal

occurs elsewhere

[ŋɔʔ^{3}] /ŋɔk^{3}/ "to scoop up"

[bɛŋ^{3}] /bɛŋ^{3}/ "to lick"

[baŋ^{1}ʃ^{y}i^{1}] /baŋ^{1}ʃi^{1}/ "to be sour"

[ŋkar^{2}] /ŋkar^{2}/ "friend"

[ŋwɛ̃:$^{3-4}$] /ŋwɛ:$^{3-4}$/ "person"

/ŋ^{w}/ [ŋw] voiced labialized velar nasal

[ŋwa:^{3}] /ŋ^{w}a:^{3}/ "to make lizard's eyes"

[ŋwaŋ^{1}] /ŋwaŋ^{1}/ "to sow seed by throwing"

/r/ [rv] voiced alveolar flap with labiodental release

occurs before /ɨ:/

[rvɨ:$^{2-3}$] /rɨ:$^{2-3}$/ "ten"

[rvɨ:^{3}s^{y}i^{2}] /rɨ:^{3}si^{2}/ "to smell"

[r^{y}] voiced alveolar flap with palatal release

occurs before /i/

[r^{y}iŋ^{3}] /riŋ^{3}/ "to know"

[ŋg^{y}i^{1}r^{y}i$^{3-4}$] /ŋgi^{1}ri$^{3-4}$/ "type of juju"

[Ø] deleted

after silence or a consonant and before a consonant

[gɔŋ$^{3-4}$] /rgɔŋ$^{3-4}$/ "summons"

[lap^{1} byé^{2}m^{y}i$^{3-4}$] /lab^{1} rb^{y}e^{2}mi$^{3-4}$/ "their belief"

[r̲] voiceless alveolar flap

occurs after a vowel and before silence

[fɛr̲^{3}] /fɛr^{3}/ "to do"

[ɲɔr̲^{2}] /ɲɔr^{2}/ "body"

[r̲] ~ [r] voiceless alveolar flap varying with voiced alveolar flap

occurs after a vowel and preceding a voiceless consonant

[a^{1}r̲kɔ́p^{1}] ~ [a^{1}rkop^{1}] /a^{1} rkob^{1}/ "it is a fingernail"

[tfɷr̲^{1} tʃɛʔ^{3}] ~ [tfɷr^{1} tʃɛʔ^{3}] /tɨr^{1} tʃɛk^{3}/ "to have a piece of cloth"

[r] voiced alveolar flap

occurs after a vowel and preceding a voiced consonant

also occurs after any$^{\text{other}}$ environment when preceding a vowel

[a^{1}rbvɨ:$^{3-4}$] /a^{1} rbɨ:$^{3-4}$/ "it is a stomach"

[lɔr^{3} ndɔŋ^{2}] /lɔr^{3} ndɔŋ^{2}/ "take the cup"

[ré^{1}] /re^{1}/ "to jump"

[nra$^{3-4}$] /nra$^{3-4}$/ "type of green leaf vegetable"

[ra:^{2}] /rra:^{2}/ "light, clarity"

/l/ [lv] voiced alveolar lateral with labiodental release

occurs before /i̱/

[lvi̱^{3}ʃ^{y}i^{2}] /li̱^{3}ʃi^{2}/ "to rest"

[lvɷŋ^{2}] /lli̱ŋ^{2}/ "type of tree"

[ɮd^{y}] ~ [ɮ^{y}] voiced alveolar lateral fricative followed by voiced alveolar stop with palatal release varying with voiced alveolar lateral fricative with palatal release.

occurs before /i/ and /i:/

[ɮd^{y}i:^{2}] [ɮ^{y}i:^{2}] /lli:^{2}/ "name"

[ɮd^{y}ip^{3}] [ɮ^{y}ip^{3}] /lib^{3}/ "to beat"

[Ø] deleted

after silence or a consonant and before a consonant (/l/ here is the manifestation of the morpheme /r-/ (noun class prefix), when it occurs before /l/.)

[lɔŋ^{2}] /lloŋ^{2}/ "musical instrument"

[li:^{2}] /lle:^{2}/ "tongue"

[l] voiced alveolar lateral

occurs elsewhere

[lɔŋ^{3}] /loŋ^{3}/ "to be saved, rescued, to recuperate"

[la:^{1}] /la:^{1}/ "to cook"

[nlɔp^{3}] /nlɔb^{3}/ "red chalk"

/w/ [v] voiced labiodental fricative

occurs before /i̱/ and /i̱:/

[vi̱p^{2}] /wi̱b^{2}/ "bone"

[vi̱:^{3}ʃ^{y}i^{2}] /wi̱:^{3}ʃi^{2}/ "to laugh"

[v^{y}] voiced labiodental fricative with palatal release

occurs before /i/

[vʸi²] /wi²/ "they (non-human)"

[vʸi¹] /vi¹/ "his, hers"

[w] voiced labio-velar semi-vowel

occurs elsewhere

[war¹] /war¹/ "to cry"

[wɛp²] /rwɛb²/ "fear"

[ŋwɛ̀:³⁻⁴] /ŋwɛ:³⁻⁴/ "person"

/y/ [ʒv] voiced alveopalatal fricative with labiodental release

occurs before /ɨ/

[ʒvɨ¹] /yɨ¹/ "to kill"

[ʒvɷr²] /ryɨr²/ "luck"

[ʒ] voiced alveopalatal fricative

occurs before /i/

[ʒi¹] /yi¹/ "to know"

[ʒi?¹] /yik¹/ "to squeeze"

[y] voiced palatal semi-vowel

occurs elsewhere

[yɛ¹] /yɛ¹/ "to see"

[yɔŋ³⁻⁴] /ryɔŋ³⁻⁴/ "life"

Vowels

/i/ [i] voiced very high close front unrounded vocoid

[$b^{y}i^{1}$] /bi^{1}/ "to bear a child"

[$s^{y}ip^{3-4}$] /sib^{3-4}/ "all"

/i:/ [i:] voiced very high close front unrounded vocoid

[$b^{y}i:^{1}$] /$bi:^{1}$/ "to dance"

[$s^{y}i:^{3}$] /$si:^{3}$/ "left over food or water"

[$b^{y}i:r^{1}$] /$bi:r^{1}$/ "red"

/e/ [ɩ] voiced high open front unrounded vocoid

occurs in closed syllables except those closed by /k/ ([ʔ])

[bɩp^{1}] /beb^{1}/ "to be bad"

[sɩ$ŋ^{1}$] /$seŋ^{1}$/ "to tie on a hat or wrapper

[e] voiced mid close front unrounded vocoid

occurs in syllables closed by /k/

[be$ʔ^{3}$] /bek^{3}/ "to count, read"

[se$ʔ^{3}$$ne^{2}$] /$sek^{3}ne^{2}$/ "now"

[ė] voiced vocoid articulated between high close front unrounded vocoid [i] and mid close front unrounded vocoid [e]

occurs in open syllables

[bė^{1}] /be^{1}/ "future tense"

[sė$^{1-3}$] /se^{1-3}/ "very"

/e:/ [i:] voiced high close front unrounded long vocoid

[$bi:^{3-4}$] /$bi:^{3-4}$/ "people"

[$si:^{3}$] /$si:^{3}$/ "we (inclus. plu.)"

/ɛ/ [ɛ] voiced mid open front unrounded vocoid

[bɛ^{1}] /$bɛ^{1}$/ "to go without"

[sɛ^{3}] /$sɛ^{3}$/ "to be tired"

[bɛr^{1}] /$bɛr^{1}$/ "to be left over"

/ɛ:/ [ɛ̝:] ~ [ɛ^{e}] voiced vocoid articulated between the mid close front unrounded long vocoid [e:] and the mid open front unrounded long vocoid [ɛ:], varying with mid open front unrounded vocoid gliding to mid close front unrounded vocoid

occurs in open syllables

[bɛ̝:^{3}] ~ [bɛ^{e3}] /bɛ:^{3}/ "to be astonished"

[sɛ̝:^{1}] ~ [sɛ^{e1}] /sɛ:^{1}/ "to slice"

[ɛ:] voiced mid open front unrounded long vocoid

occurs in closed syllables

[mtʃɛ:r$^{3-2}$] /mtʃɛ:r$^{3-2}$/ "games"

/a/ [a] voiced low open central unrounded vocoid

[ba^{2}] /ba^{2}/ "to be (past tense)"

[tar^{1}] /tar^{1}/ "to give something to a guest"

/a:/ [a:] voiced low open central unrounded long vocoid

[ba:^{2}] /ba:^{2}/ "fufu"

[sa:^{3}] /sa:^{3}/ "to tear"

[ta:r^{1}] /ta:r^{1}/ "three"

/ɔ/ [ɔ] voiced mid open back rounded vocoid

[bɔ^{2}] /bɔ^{2}/ "hand"

[sɔ$^{3-4}$] /sɔ$^{3-4}$/ "we (inclus.dual)"

[tɔp^{1}] /tɔb^{1}/ "to mix with water"

/ɔ:/ [ɔ̞:] ~ [ɔ^{o}] voiced vocoid articulated between the mid close back rounded long vocoid [o:] and the mid open back rounded long vocoid [ɔ:], varying with mid open back rounded vocoid gliding to mid close back rounded vocoid

[bɔ̞:$^{3-4}$] [bɔ$^{o3-4}$] /bɔ:$^{3-4}$/ "whiskers"

[sɔ̞:^{2}] [sɔ^{o2}] /sɔ:^{2}/ "short handled hoe"

/o/ [o̞] voiced vocoid articulated between high close back rounded vocoid [u] and mid close back rounded vocoid [o]

[dɔ̈^{3}] /do^{3}/ "to go"

[bɔ̈?^{1}] /bok^{1}/ "chimpanzee"

[sɔ̈ŋ^{1}] /soŋ^{1}/ "to tell"

/o:/ [ũ:] voiced high close back rounded long nasalized vocoid

occurs after a nasal consonant

[mũ:^{2}] /mo:^{2}/ "child"

[u:] voiced high close back rounded long vocoid

occurs elsewhere

[bu:^{1}] /bo:^{1}/ "to be absent"

[su:^{3}] /so:^{3}/ "to go down"

[ɱfu:r$^{3-2}$] /nfo:r$^{3-2}$/ "crysop fly"

/ɨ/ [ɨ] voiced high close central unrounded vocoid

occurs after non-nasal consonants in open syllables and syllables closed with /k/ ([?])

[bvɨ^{1}] /bɨ^{1}/ "to be lost"

[sfɨ^{1}s^{y}i^{1}] /sɨ^{1}si^{1}/ "to weed"

[bvɨ?^{2}] /bɨk^{2}/ "waist"

[tfɨ?^{2}] /tɨk^{2}/ "night"

[ɷ] voiced high open back rounded vocoid

occurs after non-nasal consonants in syllables which are closed with a consonant other than /k/

[sfɷŋ$^{3-4}$] /sɨŋ$^{3-4}$/ "python"

[lvɷr^{1}] /lɨr^{1}/ "foolish person"

[ɷ̃] voiced high open back rounded nasalized vocoid

occurs after nasal consonants

[mvɷ̃?^{3}] /mɨk^{3}/ "to open"

[ɲvɷ̃$^{3-4}$] /ɲɨ$^{3-4}$/ "God, sun"

/ɨ:/ [ɷ̃:] voiced high open back rounded nasalized long vocoid

occurs after nasal consonants

[mvɷ̃:^{2}] /mɨ:^{2}/ "middle"

[ɲvɷ̃:^{2}] / ɨ:^{2}/ "bees"

[ɨ:] voiced high close central unrounded long vocoid

occurs after non-nasal consonants

[bvɨ:^{1}] /bɨ:^{1}/ "to bend"

[sfɨ:^{3}] /sɨ:^{3}/ "to shut"

Chapter 5

TONE

Tone is treated as a suprasegmental phoneme in this analysis. Each syllable in Limbum carries a tone. Almost all morphemes are monosyllabic. Verb stems may carry one of two phonemic tones (high or low), and noun and other non-verbal stems may carry one of seven phonemic level tones or glides.

5.1 Tone on non-verbal morphemes

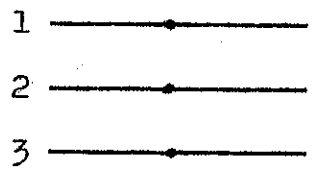
The seven contrastive tones which may occur on the syllables of nouns and other non-verbal morphemes are as follows:

Three level tones:

Tone 1 - high

Tone 2 - mid

Tone 3 - low

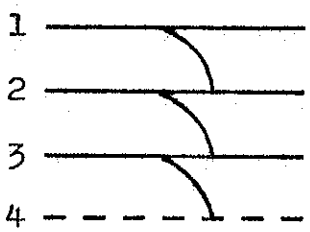


Three downglides:

Tone 1-2 - high to mid

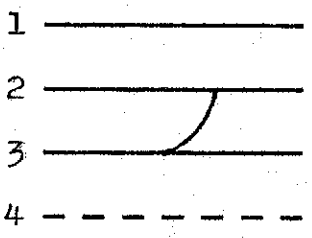
Tone 2-3 - mid to low

Tone 3-4 - low to extra-low



One upglide (occurs only on syllables containing long vowels):

Tone 3-2 - low to mid



Examples of these on different syllable types are shown on the following page.

Examples:

	CV	CV:	CVC	(C)CV:C (rare)
Tone 1	[yɔ^{1}] "your"	[ba:^{1}] "madness"	[b^{y}i?^{1}] "type of tree"	[b^{y}i:r^{1}] "red"
Tone 2	[bɔ^{2}] "hand"	[ba:^{2}] "fufu"	[bv̈i?^{3}] "waist"	
Tone 3	[bv̈i^{3}] "tadpole"	[ba:^{3}] "part in hair"	[bap^{3}] "wing"	
Tone 1-2	[b^{y}i$^{1-3}$] "co-wife"	[ba:$^{1-2}$] "two"	[dɛŋ$^{1-3}$] "dancing stick"	[k^{y}i:r$^{1-2}$] "chameleon"
Tone 2-3	[ta$^{2-3}$] "father"	[rv̈i:$^{2-3}$] "ten"		
Tone 3-4	[gv̈i$^{3-4}$] "mat"	[ba:$^{3-4}$] "bag"	[fɔ̈p$^{3-4}$] "poverty"	
Tone 3-2		[ba:$^{3-2}$] "father" ([ya:$^{3-2}$]) "queen"		[ŋfɔ̈r$^{3-2}$] "crysop fly"

The phonetic pitches which contrast on syllables with short vowels as compared with those which contrast on syllables with long vowels are as follows:

(C)CV(C)	(C)CV:
1	1
2	2
3	3
1-3	1-2
2-3 (except CVC)	2-3
3-4	3-4
	3-2

We conclude that pitches [1-3] and [1-2] are different manifestations of the same tone, which I have chosen to call tone /1-2/. The allophone [1-3] of tone /1-2/ occurs in syllables with short vowels, and the allophone [1-2] occurs in syllables with long vowels.

Tone /3-2/ occurs only on syllables with long vowels.

Tone /3-4/ is realized as tone /3/ when immediately followed by another syllable.

e.g.: [mɛ$^{3-4}$] "I, me"

[mɛ^{3} dɔ́^{3}] "I go."

The tone combinations possible on two syllable non-verbal words are as follows:

S_1	S_2	Example:	
1	1	[nsa^{1}rɔ́ŋ^{1}]	"sand, desert"
1	2	[bɔ́?^{1}lɔ́ŋ^{2}]	"type of insect"
1	3	[bɩ^{1}rʌŋ^{3}]	"ground nut (peanut)"
1	1-3	[tʃɛ^{1}m^{y}ir$^{1-3}$]	"type of yam"
1	3-4	[ma^{1}gɔr$^{3-4}$]	"much, many"
1	3-2	[ma^{1}ya:$^{3-2}$]	"queen"

S_1	S_2	Example:	
2	1	[wa:^{2}m^{y}i^{1}]	"eight"
2	2	[ntɔ́^{2}bɔ^{2}]	"finger"
2	1-3	[ŋkfɨ^{2}ɲa$^{1-3}$]	"name of quarter of Taku village"
2	3-4	[rb^{y}ɛ́^{2}m^{y}i$^{3-4}$]	"belief"
3	1	[nta:^{3}sɛ́^{1}]	"type of bird"
3	2	[sɛ́?^{3}nɛ́^{2}]	"now"
3	3	[bvɨ^{3}ʃ^{y}i^{3}]	"corn hulls"
3	1-2	[ka^{3}ka:r$^{1-2}$]	"green"
3	2-3	[sa:^{3}mba$^{2-3}$]	"seven"
3	3-4	[t^{y}i^{3}t^{y}i$^{3-4}$]	"floor"
3-2	2	[ki:$^{3-2}$ntɔ?^{2}]	"chief's wife"
3-2	3	[wi:$^{3-2}$mbɔ́m^{3}]	"Wimbum"

5.2 Verb Tone

Verb stems in Limbum, as mentioned above, are monosyllabic. There is only a two way contrast of tone on these stems. They may bear either a high tone (tone 1) or a low tone (tone 3).

e.g.: [tar^{1}] "to give something to a guest"

[tar^{3}] "to pick out bad beans, etc."

Most of the verb stems may also take a suffix. The suffixes are of the form -CV and bear either a tone 1 or a tone 2. They have various significations, including plurality of subject, repetitive action, progressive action, intransitive action, transitive action, etc. The signification of a verb suffix may vary depending upon the verb stem with which it is used. The same suffixes occur on some nouns, especially nouns which are derived from verbs. The various verb suffixes are: (written phonemically)

-ti^{1}	-ʃi^{1}
-ti^{2}	-ʃi^{2}
-te^{1}	-mi^{1}
-si^{1}	-mi^{2}
-si^{2}	-ne^{1}
-se^{1}	-ne^{2}
	-re^{1}
	-re^{2}

A verb stem may only take one suffix at a time, and a given stem may occur with usually from one to three of the above suffixes, each of which either alters some aspect of its meaning or changes the meaning of the verb quite a bit. Some verbs always occur with the same suffix. Some very rarely take a suffix. Here are a couple examples of verbs with and without suffixes:

[ke?^{3}]	" to look at" (trans)
[ke?^{3}nė^{2}]	" to look after" (trans)
[ke?^{3}sė^{1}]	"to stay awake" (intrans)
[tʃɔ?^{1}]	"to remove" (trans)
[tʃɔ?^{1}ʃ^{y}i^{1}]	"to remove (repetitive action)" (trans)
[tʃɔ?^{1}t^{y}i^{1}]	"to come out, off" (intrans)

A thorough study of the suffixes and how they affect the meanings of verbs and the different verb classes which they seem to create has not yet been done.

The possible combinations which may result when a verb suffix is added to a stem are as follows:

S_1	S_2	Example:	
1	1	[bɛ^{1}t^{y}i^{1}]	"to be left over"
3	1 *	[k^{y}i^{3}sė^{1}]	"to add to"
3	2	[m^{y}i^{3} ^{y}i^{2}]	"to swallow"

*not as common as the other two combinations.

Chapter 6

THE PHONOLOGICAL CLAUSE AND PHONOLOGICAL PARAGRAPH

The end of a phonological clause in Limbum is marked by a pause, and if the clause is a statement type, there is a slight decrescendo on the last one or two syllables before the pause. The decrescendo involves relaxation of the articulators, with a resulting slowing down in speed and lowering of pitch, so that the tone of the final one or two syllables is lower than it would normally be. When the final syllable of the clause ends in a glottal stop, the decrescendo is less.

There are other pauses in the string of speech which do not mark the end of a phonological clause. The difference is that these pauses are not accompanied by a decrescendo, but pitch and timing of the syllables before the pause remain constant.

A question clause ends with the question marker [ka?^{2}], which always has a mid-tone (2). Up to this point, no other particular distinguishing marks of the intonation of the interrogative clause have been observed. However, not much study has yet been done on this or the intonational contours of other non-statement types of clauses such as the imperative, exclamatory, and clauses showing anger, etc.

The end of a phonological paragraph is also marked by a pause with preceding decrescendo, but the decrescendo is greater than that at the end of the phonological clause, and begins up to six syllables before the pause. After the pause, the beginning of a new phonological paragraph is marked by a higher than normal pitch and a quick tempo on the first few syllables.

Chapter 7

TEXT

Each line of the text is presented in the following manner:

- phonetic transcription
- phonemic transcription
- literal translation of the morphemes

The following symbols are used:

/ tentative pause (pause without decrescendo)
// final pause (pause with decrescendo)

ps^{y}iŋ^{1} ba^{1} mɲa:$^{3-4}$/ v^{y}im^{1} ʃé^{2} ma?^{3} b^{y}ir^{3}// é^{1} ba^{2}
bsiŋ^{1} ba^{1} mɲa:$^{3-4}$ wi^{2} m ʃe^{2} mak^{3} bir^{3}// e^{1} ba^{2}
pl-bird and pl-animal they dist. prog. fight war it was
past

a^{3} ɲfe?^{3} ʃé^{2}/ mɲa:$^{3-4}$/ v^{y}i^{1} ga?^{2} ŋgɪr^{2} ps^{y}iŋ^{1} na^{3}/
a^{3} nfek^{3} ʃe^{2} mɲa:$^{3-4}$ wi^{2} gak^{1} ŋger^{2} bsiŋ^{1} na^{3}
at sg-time which pl-animal they surpass sg-strength pl-bird then

lɛ:^{1} kfɨ^{1}t^{y}i^{3} a^{3} mbɪb^{3} ʒi^{3} mɲa:$^{3-4}$// mɲa:^{3} v^{y}i^{1} la:$^{2-3}$
lɛ:^{1} kɨ^{1}ti^{1} a^{3} mbeb^{3} yi^{3} mɲa:$^{3-4}$// mɲa:$^{3-4}$ wi^{2} la:^{3}
bat come back to sg-side poss. pl-animal pl-animal they say

ni^{3} yé^{2}/ ɪ^{1}nɛ^{2} é^{1} yu^{2} s^{y}iŋ^{1}// lɛ:^{1} ɪ^{1}nɛ^{2} m yu^{2} ba^{1} ndʒé:^{3}
ne^{3} ye^{2} e^{1}nɛ^{2} e^{1} yo^{2} siŋ^{1} // lɛ:^{1} e^{1}nɛ^{2} m yo^{2} ba^{1} ndʒɛ:^{3}
to him that he is bird bat that I is just sg-kind

$s^{y}iŋ^{1}$ $kɛ^{2}$ $ʃé^{3-2}$ $tfɷr^{1}i^{1-2}$ $msɔŋ^{3}$ $kó^{3}$ $tʃu:^{3-4}$// a^{1} $mɛ^{3}$

$siŋ^{1}$ $kɛ^{2}$ $ʃe^{2}$ $tɨr^{1}$ $msɔŋ^{3}$ ko^{3} $tʃo:^{3-4}$// a^{1} $mɛ^{3-4}$

bird what which have pl-tooth up mouth it is I

$ɲa:^{3-4}$// $mɲa:^{3}$ $v^{y}i^{1}$ $ma?^{2}ʃ^{y}i^{3-4}$// a^{1} $wɔ:^{2}wi^{3}$ a^{1} $ʃé^{1}$

$ɲa:^{3-4}$// $mɲa:^{3-4}$ wi^{2} $mak^{3}ʃi^{2}$ // a^{1} $wɔ:^{2}we^{3-4}$ a^{1} $ʃe^{2}$

animal pl-animal they leave with they subj. prog.

$ré^{3}$// $é^{1}$ $kɪr^{3}$ ba^{2} a^{3} $ŋfe?^{3}$ $ʃé^{2}$ $ɪ^{1}nɛ^{2}$ $ps^{y}iŋ^{1}$ $v^{y}i^{1}$ $ga?^{2}$

re^{3}// e^{1} ker^{3-4} ba^{2} a^{3} $nfek^{3}$ $ʃe^{2}$ $e^{1}nɛ^{2}$ $bsiŋ^{1}$ wi^{2} gak^{1}

fight it again was at sg-time which that pl-bird they surpass

$ŋgɪr^{2}$ $mɲa:^{3}$ na^{3}/ $lé:^{1}$ $byé:^{2}ŋgɪr^{1}$ $kfɨ^{1}t^{y}i^{1}$/ a^{3} $mbɪp^{3}$

$ŋger^{2}$ $mɲa:^{3-4}$ na^{3} $lɛ:^{1}$ $b^{y}e:^{2}ŋger^{1}$ $kɨ^{1}ti^{1}$ a^{3} $mbeb^{3}$

sg-strength pl-animal then bat turn around come back to sg-side

$ps^{y}iŋ^{1}$// $ps^{y}iŋ^{1}$ $v^{y}i^{1}$ $la:^{2-1}$ $nɛ^{2-3}$/ a^{3} yu^{2} $ɲa:^{3-4}$// a^{3} $tfɷr^{1}$

$bsiŋ^{1}$ // $bsiŋ^{1}$ wi^{2} $la:^{3}$ $e^{1}nɛ^{2}$ a^{3} yo^{2} $ɲa:^{3-4}$// a^{3} $tɨr^{1}$

pl-bird pl-bird they say that you is pl-animal you have

$msɔŋ^{3}$ $kó^{3}$ $tʃu:^{3-4}$// $ɪ^{1}nɛ^{2}$ m yu^{2} ba^{1} $ndʒé:^{3}$ $ɲa:^{3}$ $kɛ^{2}$ $ʃé^{3}$

$msɔŋ^{3}$ ko^{3} $tʃo:^{3-4}$// $e^{1}nɛ^{2}$ m yo^{2} ba^{1} $ndʒɛ:^{3}$ $ɲa:^{3-4}$ $kɛ^{2}$ $ʃe^{2}$

pl-tooth up mouth that I is just sg-kind animal what which

$tfɷr^{1}i^{1}$ $bbap^{3}$// a^{1} $kó^{1}$ $gi:^{3}$ $wa?^{1}a^{2}$// $ka:^{1}$ a^{3} $ŋfe?^{3}$

$tɨr^{1}$ $bbab^{3}$// a^{1} ko^{3} $ge:^{3}$ wak^{1} // $ka:^{1}$ a^{3} $nfek^{3}$

have pl-wing subj.just do thus then at sg-time

(contraction: a^{3} $ka?^{1}$ ba^{2})

mɔʔ^{3}ɔ^{2} / ps^{y}iŋ^{1} ba^{1} mɲa:$^{3-4}$/ v^{y}i^{1} ka:^{1}ri$^{3-4}$// a^{1} dʒu:^{2}

mɔk^{3} bsiŋ^{1} ba^{1} mɲa:$^{3-4}$ wi^{2} ka:^{1}re^{1}// a^{1} dʒo:^{3}

other pl-bird and pl-animal they gather subj. drive away

lɛ̀:^{1}// lɛe^{1} a^{3} lɔ^{2} a^{1} faʔ^{3} ʒi^{1} seʔ^{3}nè^{2} ba^{1} nè^{3}tfɨ̀ʔ^{2}//

lɛ:^{1}// lɛ:^{1} a^{3} lɔ^{3} a^{1} fak^{3} yi^{1} sek^{3}ne^{2} ba^{1} ne^{3}tɨ̀k^{2}//

bat bat past leave subj. work his now-time only time-night

a^{1} mbu:^{3} lɛe^{1}/ è^{1} kɔ̀^{1} gi:^{3} ʒi^{3} bu:^{2} ba^{1} nè^{3}tfɨ̀ʔ^{2}//

a^{1} mbo:^{3} lɛ:^{1} e^{1} ko^{1} ge:^{3} yi^{3} bo:^{2} ba^{1} ne^{3}tɨ̀k^{2}//

it is sg-reason bat he just do his pl-thing only time-night

The birds and animals were having a war. At the time when the animals were stronger than the birds, the bat came to the side of the animals saying that he was an animal. The animals told him that he was a bird. The bat said, "Just what kind of a bird am I who have teeth in my mouth? I am an animal." The animals consented. He fought with them. Again, when the birds were stronger than the animals, the bat turned around and came back to the side of the birds. The birds said, "You are an animal. You have teeth in your mouth." "And what kind of an animal am I that have wings?" He just kept doing it. Then at another time the birds and the animals gathered. They drove away the bat. The bat left and now works only at night. That is the reason the bat just does his things at night.

Chapter 8

WORD LIST

The 250 words in the following list are for the most part extracted from the "Ibadan 400 Word List". They are given first phonetically, then phonemically. If it is the plural form of a word which is given, that is indicated, followed in most cases by the singular prefix.

head	[tɔ̀^{2}]	liver	[ma^{1} nti:^{2}]
	/to^{2}/		/ma^{1} nte:^{2}/
hair (of head)	[ɲvə̃^{3} tɔ̀^{2}]	stomach	[rbvə́:$^{3-4}$]
	/ɲə́^{3} to^{2}/		/rbə́:$^{3-4}$/
eye	[llɟd^{y}ir^{2}]	intestines	[pto^{2}]
	/llir^{2}/		/bto^{2}/ (pl) sg: Ø-
ear	[tɔ̀?^{3}]	back	[ndʒ^{y}i:$^{3-4}$]
	/tok^{3}/		/ndʒi:$^{3-4}$/
nose	[ŋfyi:^{3} ɲvə̃^{2}]	arm	[rkɔ̀:^{2}]
	/nf^{y}e:^{3} ɲə́^{2}/		/rkɔ:^{2}/
mouth	[tʃu:$^{3-4}$]	hand	[bɔ̀^{2}]
	/tʃo:$^{3-4}$/		/bɔ^{2}/
tooth	[rsɔŋ^{3}]	nail	[rkɔ̀p^{1}]
	/rsɔŋ^{3}/		/rkɔb^{1}/
tongue	[lli:^{2}]	leg	[ŋfi:^{2}]
	/lle:^{2}/		/nfe:^{2}/
neck	[ndɔŋ^{2}]	knee	[ŋkfə́^{1} ŋfi:^{1}]
	/ndɔŋ^{2}/		/ŋkə́^{1} nfe:^{1}/
breast	[rbi:^{2}]	body	[ɲɔr^{2}]
	/rbe:^{2}/		/ɲɔr^{2}/
heart	[nti:^{2}]	skin	[ŋgɔ̀p$^{3-4}$]
	/nte:^{2}/		/ŋgɔb$^{3-4}$/

bone	[vɨp^{2}]	plantain, banana	[yɔ̀ʔ^{2}]
	/wɨb^{2}/		/yok^{2}/
blood	[blɛ̀:^{2}]	ground nut (peanut)	[bɪ^{1}rʌŋ^{3}]
	/blɛ:^{2}/ (pl) sg: Ø-		/be^{1}raŋ^{3}/
saliva	[mtʃè^{2}]	kola nut	[rb^{y}i^{3}]
	/mtʃe^{2}/ (pl)		/rbi^{3}/
water	[md^{y}ip^{2}]	seed	[ŋgvɨ$^{3-4}$]
	/mdib^{2}/ (pl) sg: r-		/ŋgɨ$^{3-4}$/
meat	[ɲa:$^{3-4}$]	grass	[bu:^{2}]
	/ɲa:$^{3-4}$/		/bo:^{2}/
meat fat	[ŋfɔ̀:^{2} ɲa:$^{3-4}$]	tree	[tʃè^{2}]
	/nfɔ:^{2} ɲa:$^{3-4}$/		/tʃe^{2}/
fish	[ntʃa^{2}]	leaf	[fɔ̀^{2}]
	/ntʃa^{2}/		/fo^{2}/
oil	[mgvɔ̃r^{2}]	bark	[kɔ̀p^{3} tʃè^{2}]
	/mgɨr^{2}/ (pl) sg: r-		/kob^{3} tʃe^{2}/
salt	[mgwaŋ^{2}]	root	[ŋgaŋ^{3}]
	/mg^{w}aŋ^{2}/ (pl) sg: r-		/ŋgaŋ^{3}/
palm wine	[mrɔ̀ʔ^{3}]	fire	[mɔr^{2}]
	/mrok^{3}/ (pl) sg: r-		/mɔr^{2}/
manioc (cassava)	[ŋga:^{3}ʃɪ^{1}ŋga^{1}]	smoke	[ndʒè^{1} mɔr^{2}]
	/ŋga:^{3}ʃe^{1}ŋga^{1}/		/ndʒe^{1} mɔr^{2}/
maize (corn)	[kwa$^{1-3}$]	ash	[bvɨ^{2}]
	/k^{w}a$^{1-3}$/		/bɨ^{2}/
beans	[mku:^{2}]	calabash	[lɛʔ^{2}]
	/mko:^{2}/ (pl) sg: r-		/lɛk^{2}/
pepper	[msɔ̀r^{2}]	hoe	[sɔ̀:^{2}]
	/msor^{2}/ (pl) sg: r-		/sɔ:^{2}/

cutlass (machete)	[sa?^{3}]	farm (2)	[nsu:^{2}]
	/sak^{3}/		/nso:^{2}/
spear	[rkɔŋ^{3}]	stream	[rɔ^{3}]
	/rkɔŋ^{3}/		/rɔ^{3}/
basket	[ŋka:$^{3-4}$]	boat	[kɪŋ^{1}]
	/ŋka:$^{3-4}$/		/keŋ^{1}/
bag	[ba:$^{3-4}$]	stone	[lɔ̰r$^{3-4}$]
	/ba:$^{3-4}$/		/lɔr$^{3-4}$/
rope	[kfɨ:^{3}]	mountain	[rtu:$^{3-4}$]
	/kfɨ:^{3}/		/rto:$^{3-4}$/
cloth	[tʃɛ?^{3}]	ground, soil	[nʃɵ^{2}]
	/tʃɛk^{3}/		/nʃe^{2}/
hat	[rta:^{2}]	world	[ŋgɔŋ$^{3-4}$]
	/rta:^{2}/		/ŋgɔŋ$^{3-4}$/
money	[mba:$^{3-4}$]	sand	[nsa^{1}rɵŋ^{1}]
	/mba:$^{3-4}$/		/nsa^{1}rɔŋ^{1}/
compound	[lla?^{2}]	dust	[ŋfɨ^{3}ŋfɨ^{1}]
	/llak^{2}/		/nfɨ^{3}nfɨ^{1}/
town, a country	[tɔ?^{2}]	wind	[fɵ?^{2}]
	/tɔk^{2}/		/fɔk^{2}/
road	[ndu:^{2} ndʒ^{y}i$^{3-4}$]	rain	[mbɪŋ$^{3-4}$]
	/ndo:^{2} ndʒi$^{3-4}$/		/mbɵŋ$^{3-4}$/
market	[nta:^{2}]	God, sun	[ɲvɶ$^{3-4}$]
	/nta:^{2}/		/ɲɨ$^{3-4}$/
forest	[kɔp^{3}]	moon	[ŋwɛ̃:^{2}]
	/kɔb^{3}/		/ŋ^{w}ɛ:^{2}/
farm	[mkfɨ:^{3}]	star	[rkaŋ^{3}s^{y}i$^{3-4}$]
	/mkɨ:^{3}/ (pl) sg: ŋ-		/rkaŋ^{3}si$^{3-4}$/

day	[nɔŋ^{3}]	dog	[ŋgwɛ̀^{2}]
	/nɔŋ^{3}/		/ŋg^{w}e^{2}/
night	[tfɨ?^{2}]	rat	[mbap^{3}]
	/tɨk^{2}/		/mbab^{3}/
work	[rfa?^{3}]	chicken	[ŋgvɔp^{2}]
	/rfak^{3}/		/ŋgɨb^{2}/
war	[b^{y}ir^{3}]	egg	[rbu:^{3}]
	/bir^{3}/		/rbo:^{3}/
fear	[rwɛp^{2}]	wing	[bap^{3}]
	/rwɛb^{2}/		/bab^{3}/
year	[fe?^{3}]	feather	[rfɨ:^{3}]
	/fek^{3}/		/rfɨ:^{3}/
song	[yɛ̀:^{2}]	horn	[rdɔŋ^{2}]
	/yɛ:^{2}/		/rdɔŋ^{2}/
story	[rga^{3}gar^{1}]	tail	[ŋku:^{3}]
	/rga^{3}gar^{1}/		/ŋko:^{3}/
word	[la:^{3}]	leopard	[mba:^{2}]
	/la:^{3}/		/mba:^{2}/
lies	[mdɛ?^{2}]	elephant	[ʤɔ́?^{3}]
	/mdek^{2}/ pl		/ʤɔk^{3}/
thing	[yu:^{2}]	monkey	[ŋka:^{2}]
	/yo:^{2}/		/ŋka:^{2}/
animal	[ʃa:$^{3-4}$]	snake	[ʃɔ^{2}]
	/ʃa:$^{3-4}$/		/ʃɔ^{2}/
goat	[mbvɨ^{2}]	toad	[tʃa^{3}mdʒɛŋ^{2}]
	/mbɨ^{2}/		/tʃa^{3}mdʒɛŋ^{2}/
cow	[na?^{3}]	housefly	[ndʒ^{y}i^{3}k^{y}i$^{3-4}$]
	/nak^{3}/		/ndʒi^{3}ki$^{3-4}$/

bee	[ɲvɑ̃:^{2}]	/ɲɨ:^{2}/
louse	[rk^{y}ir̲$^{1-3}$]	/rkir$^{1-3}$/
bird	[s^{y}iŋ^{1}]	/siŋ^{1}/
bat	[lɛ̂:^{1}]	/lɛ:^{1}/
person	[ŋwɛ̃:$^{3-4}$]	/ŋ^{w}ɛ:$^{3-4}$/
man	[mbaŋ^{1} ^{ə}ru:^{3}ŋwɛ̃:$^{3-4}$]	/mbaŋ^{1}ro:^{3}ŋ^{w}ɛ:$^{3-4}$/
husband	[ndu:^{2}]	/ndo:^{2}/
woman	[ndʒɩ^{1}ŋwɛ̃:$^{3-4}$]	/ndʒe^{1}ŋ^{w}ɛ:$^{3-4}$/
wife	[ŋgwa^{2}]	/ŋg^{w}a^{2}/
father	[ta$^{2-3}$] [tar̲^{3}]	/ta$^{2-3}$/ /tar^{3}/
mother	[ma$^{1-3}$] [ma^{2}]	/ma$^{1-3}$/ /ma^{2}/
child	[mũ:^{2}]	/mo:^{2}/
brother or sist.-(sibling same sex as speaker)	[ɱfər̲^{2}]	/nfɨr^{2}/
brother (female speaker)	[ndôr̲^{1}]	/ndor^{1}/
sister	[ndʒar̲$^{3-4}$]	/ndʒar$^{3-4}$/
friend	[ŋkar̲^{2}]	/ŋkar^{2}/
chief	[ŋkfɨ:^{1}]	/ŋkɨ:^{1}/
thief	[ɲɛ̂:$^{3-4}$]	/ɲɛ:$^{3-4}$/
medicine	[mtʃɛp$^{3-4}$]	/mtʃɛb$^{3-4}$/ (pl) sg: n-
fetish	[ntʃɛp$^{3-4}$]	/ntʃɛb$^{3-4}$/
corpse	[gvɨ:^{3}]	/gɨ:^{3}/
one	[mɔʔ^{3} s^{y}ir̲^{1}]	/mɔk^{3} sir^{1}]
two	[ba:$^{1-2}$]	/ba:$^{1-2}$/
three	[ta:r̲^{1}]	/ta:r^{1}/
four	[kyi:$^{3-4}$]	/k^{y}e:$^{3-4}$/
five	[ta$^{1-3}$]	/ta$^{1-3}$/

six [ntu:^{2}ŋfə^{1}]
/nto:^{2}nfo^{1}/

seven [sa:^{3}mba$^{2-3}$]
/sa:^{3}mba$^{2-3}$/

eight [wa:^{2}m^{y}i^{1}]
/wa:^{2}mi^{1}/

nine [bvɨ?^{3}ɨ$^{2-3}$]
/bɨk^{3}ɨ$^{2-3}$/

ten [rvə$^{2-3}$]
/rɨ$^{2-3}$/

eleven [ntʃɔb^{3} mɔ?^{3}s^{y}ir^{1} (a^{3} rvə$^{2-3}$)]
/ntʃɔb^{3} mɔk^{3}sir^{1} (a^{3} rɨ$^{2-3}$)/

fifteen [ntʃɔp^{3} ta$^{1-3}$ (a^{3} rvə$^{2-3}$)]
/ntʃɔb^{3} ta$^{1-3}$ (a^{3} rɨ$^{2-3}$)/

twenty [m̥^{2}ba:$^{1-2}$]
/m^{2}ba:$^{1-2}$/

thirty [m̥^{2}ta:r^{1}]
/m^{2}ta:r^{1}/

thirty-five [ntʃɔp^{3} ta$^{1-3}$ a^{3} m̥^{2}ta:r^{1}]
/ntʃɔb^{3} ta$^{1-3}$ a^{3} m^{2}ta:r^{1}/

sixty [m̥^{2}ntu:^{2} ŋfə^{1}]
/m^{2}nto:^{2}nfo^{1}/

sixty-eight [ntʃɔb^{3} wa:^{2}m^{y}i^{1} a^{3} m̥^{2}ntu:^{2}ŋfə^{1}]
/ntʃɔb^{3} wa:^{2}mi^{1} a^{3} m^{2}ntɔ:^{2}nfo^{1}/

100 [rdʒə́^{3}]
/rdʒe^{3}/

101 [rdʒə́^{3} ba^{1} mɔ?^{3}s^{y}ir]
/rdʒe^{3} ba^{1} mɔk^{3}sir^{1}/

159 [rdʒə́^{3} ba^{1} ntʃɔb^{3} bvɨ?^{3}ɨ$^{2-3}$ a^{3} m̥^{2}ta$^{1-3}$]
/rdʒe^{3} ba^{1} ntʃɔb^{3} bɨk^{3} a^{3} m^{2}ta$^{1-3}$/

200 [mdʒə́^{3} mba:$^{1-2}$]
/mdʒe^{3} mba:$^{1-2}$/

400 [mdʒə́^{3} kyi:$^{3-4}$]
/mdʒe^{3} k^{y}e:$^{3-4}$/

1000 [ntʃfɨ^{3}k^{y}i$^{3-4}$]
/ntʃɨ^{3}ki$^{3-4}$/

2000 [ntʃfɨ^{3}k^{y}i^{3} ba:$^{1-2}$]
/ntʃɨ^{3}ki$^{3-4}$ ba:$^{1-2}$/

black [s^{y}i:^{1}]
/si:^{1}/

white [bvɨ:^{1}]
/bɨ:^{1}/

red [b^{y}i:r^{1}]
/bi:r^{1}/

green [ntʃə́:^{3} ka^{3}ka:r$^{1-2}$]
/ntʃɔ:^{3} ka^{3}ka:r$^{1-2}$/

small	[mu^{1}tʃar$^{3-4}$]
	/mu^{1}tʃar$^{3-4}$/
to be big	[kɔ̀^{3}]
	/kok^{3}/
long	[sa^{3}sap^{1}]
	/sa^{3}sab^{1}/
short	[lvɨʔ^{3}ʃ^{y}i^{2}]
	/lɨk^{3}ʃi^{2}/
old	[rvɨ:$^{3-4}$]
	/rɨ:$^{3-4}$/
new	[fyè^{2}]
	/f^{y}e^{2}/
wet	[tʃɔŋ$^{3-4}$]
	/tʃɔŋ$^{3-4}$/
dry	[yɔ̀r^{1}]
	/yor^{1}/
hot	[tʃɔ́ŋ^{1}]
	/tʃɔŋ^{1}/
to be cold	[fɨ^{1}tè^{1}]
	/fɨ^{1}te^{1}/
good	[bɔŋ^{3}bɔŋ^{1}]
	/bɔŋ^{3}bɔŋ^{1}/
bad	[bɪ^{1}bɪp^{1}]
	/be^{1}beb^{1}/
to be sweet	[li:^{3}]
	/le:^{3}/
hard	[ti:^{3}ti:^{1}]
	/te:^{3}te:^{1}/
soft	[ɲɔ^{b}m^{3}ɲɔp$^{3-4}$]
	/ɲɔb^{3}ɲɔb$^{3-4}$/
eat	[yè^{1}]
	/ye^{1}/
drink	[nɔ^{1}]
	/nɔ^{1}/
swallow	[m^{y}i^{3}]
	/mi^{3}/
bite	[lu:^{1}]
	/lo:^{1}/
vomit	[ɡap^{1}]
	/ɡab^{1}/
urinate	[tʃɛ́:^{1}]
	/tʃɛ:^{1}/
give birth	[b^{y}i^{1}]
	/bi^{1}/
die	[kwè^{1}]
	/k^{w}e^{1}/
sit	[tʃɔ́^{1}]
	/tʃo^{1}/
lie down	[nɔŋ^{3}]
	/nɔŋ^{3}/
sleep	[bɔ́^{1}m^{y}i^{1}]
	/bo^{1}mi^{1}/
go	[dɔ̀^{3}]
	/do^{3}/

come	[vɨ^{3}]	touch	[dʒɔ:^{3}]
	/wɨ^{3}/		/dʒo:^{3}/
return	[kfɨ^{3}t^{y}i^{1}]	know	[r^{y}iŋ^{3}]
	/kɨ^{3}ti^{1}/		/riŋ^{3}/
arrive	[ba?^{3}]	remember	[ku:^{1}ʃ^{y}i^{1}]
	/bak^{3}/		/ko:^{1}ʃi^{1}/
enter	[n^{y}iŋ^{1}]	forget	[lɛ̀^{3}sɛ̀^{1}]
	/niŋ^{1}/		/le^{3}se^{1}/
ascend	[kɔ?^{1}]	think	[kwa?^{3}ʃ^{y}i^{2}]
	/kɔk^{1}/		/k^{w}ak^{3}ʃi^{2}/
descend	[su:^{3}]	learn	[yɛ?^{1}nɛ̀^{1}]
	/so:^{3}/		/yɛk^{1}ne^{1}/
fall (v.)	[gwɛ̀^{3}]	laugh	[vɨ^{3}ʃ^{y}i^{2}]
	/g^{w}e^{3}/		/wɨ^{3}ʃi^{2}/
walk (v.)	[dʒɛr^{3}]	weep, cry	[war^{1}]
	/dʒɛr^{3}/		/war^{1}/
run (v.)	[tʃaŋ^{1}]	sing	[yɛ̀:^{1}]
	/tʃaŋ^{1}/		/yɛ:^{1}/
jump	[rɛ̀^{1}]	dance (v.)	[b^{y}i:^{1}]
	/re^{1}/		/bi:^{1}/
fly (v.)	[ʒvɨ?^{3}]	fear (v.)	[wɛp^{1}]
	/yɨk^{3}/		/wɛb^{1}/
pass	[tʃa:^{3}]	greet	[tʃa?^{3}nɛ̀^{2}]
	/tʃa:^{3}/		/tʃak^{3}ne^{2}/
see	[yɛ^{1}]	fight (v.)	[rɛ̀^{3}]
	/yɛ^{1}/		/re^{3}/
hear	[yɔ̀?^{1}]	send	[tu:^{1}]
	/yok^{1}/		/to:^{1}/

say	[la:^{3}]	grind	[gɔʔ^{3}]
	/la:^{3}/		/gɔk^{3}/
ask	[b^{y}ip^{1}ʃ^{y}i^{1}]	throw	[maʔ^{3}]
	/bib^{1}ʃi^{1}/		/mak^{3}/
refuse	[ka^{1}nė^{1}]	burn	[ʃė^{1}]
	/ka^{1}ne^{1}/		/ʃė^{1}/
like (v.)	[kɔŋ^{3}]	weave	[baʔ^{1}]
	/kɔŋ^{3}/		/bak^{1}/
look	[fyɛʔ^{1}]	sew	[tar^{1}]
	/f^{y}ɛk^{1}/		/tar^{1}/
carry	[byɛʔ^{3}]	wash	[sėʔ^{3}s^{y}i^{2}]
	/b^{y}ɛk^{3}/		/sɔk^{3}si^{2}/
give	[fa^{1}]	pierce	[sɔp^{3}]
	/fa^{1}/		/sɔb^{3}/
sell	[fyė^{3}nė^{2}]	dig, bury	[tɔŋ^{1}]
	/f^{y}e^{3}ne^{2}/		/tɔŋ^{1}/
buy	[yu:^{1}]	plant	[byė^{3}]
	/yo:^{1}/		/b^{y}e^{3}/
count	[bėʔ^{3}]	make, do	[gi:^{3}]
	/bek^{3}/		/ge:^{3}/
divide	[ti:^{1}]	untie	[fyė:^{3}ʃ^{y}i^{2}]
	/te:^{1}/		/f^{y}ɛ:^{3}ʃi^{2}/
finish	[m^{y}i^{3}s^{y}i^{2}]	open	[mvɔ̃ʔ^{3}]
	/mi^{3}si^{2}/		/mėk^{3}/
kill	[ʒvė^{1}]	close	[tʃė^{1}tė^{1}]
	/yė^{1}/		/tʃe^{1}te^{1}/
cook	[la:^{1}]	cloud	[m:baʔ^{3}]
	/la:^{1}/		/m:bak^{3}/

round	[$k^{y}i^{3}ŋka^{1}rɛ^{2}$]	we (exclus)	[$wɪr^{3}$]
	/$ki^{3}ŋka^{1}re^{2}$/		/wer^{3}/
I, me	[$mɛ^{3-4}$]	we (inclus, dual)	[$sɔ^{3-4}$]
	/$mɛ^{3-4}$/		/$sɔ^{3-4}$/
you (sg)	[$wɛ^{3-4}$] ([a^{3}])	we (inclus, plu.)	[$si:^{3}$]
	/$wɛ^{3-4}$/ (/a^{3}/)		/$se:^{3}$/
he, she	[$ɛ^{1}$] (subj.)	you (plu)	[$wi:^{3}$]
	/e^{1}/		/$we:^{3}$/
	[$yɛ^{2}$] (other)	they (human)	[$wɔ:^{2}wi^{3-4}$] ([a^{1}])
	/ye^{2}/		/$wo:^{2}we^{3-4}$/ (/a^{1}/)
it (non-human)	[$ʒi^{2}$]	they (non-human)	[$v^{y}i^{2}$]
	/yi^{2}/		/wi^{2}/

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Additions and corrections to: APHONOLOGY OF LIMBUM, manuscript for checking

p. 1, paragraph 1, Nsɔ? and Lamnsɔ? should be Nsɔʔ and Lamnsɔʔ (glottal stop instead of question mark)

p. 6, note at bottom of page, after last sentence before parentheses (after sentence which terminates "ending in a vowel.") insert: I have not done this, however, where the phonetic realizations of /r/ are specifically being discussed, nor in the descriptive statement of phonemes. (Then add sentence in parentheses.)

p. 13, footnote at bottom of page. Delete: "in every case" and after end of sentence which terminates "ending in a vowel." insert: I have not done this, however, where the phonetic realizations of /r/ are specifically being discussed, nor in the descriptive statement of phonemes. (Then add sentence in parentheses.)

p. 29, fourth line from bottom of page, replace example [pti:˥] "ring" with example [mti:˥] "hearts"

p. 33, after vowel charts start a new paragraph with the sentence: The reasons why I have chosen to consider the lengthened vocoids as a series of long vowel phonemes are given in the chapter on the syllable (section 3.5). Evidence for the contrast between long and short vowels is given on the chart on....etc.

p. 27, last line, add page number to Grimes reference. Should read: (e.g. Grimes [1969:76-77]) and delete: "that where there is such a choice".

p. 34, 9th line from top of page, add page number: 52, in the sentence "as shown on the chart on page 52 and also changes..."

p. 40, chart of examples in middle of page, under column labeled:

South
Central

Palatal add r to beginning of word [tʃiŋ] (should be:

[rtʃiŋ]

p. 40, last word of paragraph labeled f) ...word /a¹/ "subject", should read ...word /a¹/ "they".

p. 54, top of page, second example under [b] [p] place a sign showing varying realization between the two examples meaning "to be tall". Should be:

[sa³bɔ²] "to be tall" ~ [sap³] "to be tall"

p. 58, fifth line from bottom, three variants of "which (rel.pron); prog. action", should be /tʃe²/ /ʃe²/ /he²/. (The middle one is missing.)

p. 59, Two occurrences of ? on the page (one on each of the first two diagrams) should be changed to ʔ

p. 59, last line of text, change "types are shown below:" to: types are as follows:"

p. 76, second example at top of page, meaning "bees", insert ŋ in phonemic writing of example. Should be: /ŋi:²/ "bees".

p. 90, second column, he, she there should be two words in Limbum [e¹] (subj) [ye²] (other)

They (human) should read: [wi:²wi³⁻⁴] ([a¹]) = /wi:²wi³⁻⁴/ (/a¹/)

you (sg) should read: [wɛ³⁻⁴] ([a³]) = /wɛ³⁻⁴/ (/a³/)

p. 91, bibliography. Entry under "Pike, Eunice V." should be changed to read:

Pike, Eunice V., Tagmemic Phonology, (To appear in) Tagmemics, by Ruth M. Brend and Kenneth L. Pike, The Hague: Mouton & Co.

p. 4, lines 9 and 10, change Eunice Pike who did the analysis of...

to: Eunice Pike, who helped with the analysis of... (she wants it this way)

p. 82, replace old page with new one.

More additions and corrections to A Phonology of Limbum - manuscript for checking:

(These are corrections which will help in the understanding of the paper and do not include stylistic and other corrections, that I will make.)

p. 11, list of noun class prefixes: elliminate second B- prefix class and put "my nights" example under first B- prefix class. (A corrected noun class list is included with this paper.) (Also note tone changes on wa' p-to^{2} and n-du:^{2}-wa^{3}

12,
p. 13, phonetic realisations of /r/. See attached "Comments on Limbum Phonology" (Also for pp. 6, 21, 22, 70, 58)

p. 15, 2nd line from bottom and p. 16, 2nd line from top: substitute [m-bɛŋ$^{2-4}$] "type of calabash" on bottom of 15 for [m-bvɨ] "goat" and [m:bɛŋ$^{3-4}$] "(calabashes)" on top of 16 for "goats".

p. 16, last line of 2nd to last paragraph: remove example [m-na?] "cows" and insert instead [m-naŋ^{2}] "(animal traps)"

p. 18, 6th line from bottom: after "occur preceded by a homorganic nasal" add: (See chart p. 30)

p. 20, 5th line from top: substitute the word unambiguous for word univalent.

p. 20, 5th line from bottom: substitute [m-naŋ^{2}] "(traps)" for [m-na?] "cows".

p. 22, third line from the top: With regard to phonetic realisation of /i/ see "Comments on Limbum Phonology"

p. 24, 6th line from top: again substitute unambiguous for un-ambivalent.

p. 25, heading, section 3.3: change heading "Labiodental Affricates" to "Consonants with Labiodental Release".

p. 26, 6th line from top of text on top of page, example [ntša:] "fish" should have a short "a" instead of a long one: [ntša^{2}]

p. 29, 5th line of examples in middle of page: syllable structure of m-ŋ-kwa?š$^{\forall}$i should by CCVC.CV

p. 29, last line on bottom right hand side of page: [ar^{1}ŋgš:$^{3-4}$] should have as meaning: "it is women's pride"

p. 36, after last sentence: add (e.g. /ɛ/ is nasalized after /ŋ$^{\forall}$/.

p. 39, 5th line from the top of page: Sentence should read: The /k$^{\forall}$/ is also realised as a palatal: /tš/, but...

p. 40, middle of page, under column of examples labeled "Northern

More additions and corrections to A Phonology of Limbum - con'd.

[dz, ?] is supposed to be under the column headed: Southern, alveolar.

p. 44, top, right hand of chart (top left of page): should be a bracket over [v] and [w] showing that they are allophones.

p. 46, last example under [g] column should be: [góp^{1}] "truly"

p. 56, parentheses around a phoneme mean that it is rare.

p. [illegible] 47, third example from bottom under [m] column: [mo?^{3}], should be tone 3 instead of 2.

p. 49, last example on chart: [mbvɨ] "goat" and [m:bvɨ] "goats" should again be substituted with [mbɛŋ$^{3-4}$] "(calabash)" and [m:bɛŋ$^{3-4}$] "(calabashes)".

p. 58, middle of page, rule about /r/ ⟶ /l/ before /l/, should be /r/ ⟶ /r/~/l/ before /l/, with examples changed to add /rlo:^{2}/ "prayer" and /rla:$^{1-2}$/ "passion fruit", [illegible] and /rlɨ^{3}ši$^{3-4}$/ "a rest" (See p. 2 "Comments on Limbum Phonology")

p. 60, line 3, "Further restrictions as to...." should read: "For details as to which vowels occur after which consonants, see chart on following page." Perhaps list of vowels under V column on p. 60 should be elliminated?

p 66 8th line of actual type (from top of page), should be [ŋfɨp$^{3-4}$] / nfib$^{3-4}$/ "cheating"

p. 70, phonetic realizations of /r/: see "Comments on Limbum Phonology".

p. 68 4th and 5th line of actual type from bottom, should be: [ŋfe?^{3}] [ŋfɨ^{3} ŋfɨ^{1}] (insert [ŋ]'s)

p. 71, middle of page: elliminate portion concerning [Ø] deleted, since this has to do with alternation of phonemes.

p. 72, 2nd line from top of page should read: [v^{y}i^{1}] /wi^{1}/ "his, hers" (not /vi^{1}/.)

p. 73, phonetic realizations of /i/ and /i:/: see "Comments on Limbum Phonology"

p. 73, examples under /e:/, phonemic rewrite should be: /be:$^{3-4}$/ "people" and /se:^{1}/ "we (incl...)"

p. 78, last example in right hand column: should be [ŋfò:r$^{3-2}$] "crysop fly" (Other words in same column: [b^{y}i:r] and [k^{y}i:r] should also have lines under the r's.

p. 79, middle of page, after example [mɛ dò] "I go.": Add a statement below this saying that glides never occur on syllables which terminate with [?].

p. 81, second to last line on page: example "to swallow" should have an in middle: [m^{y}i^{3}ʃ^{y}i^{2}]

p. 82: replace with new page which is included with these sheets

More additions and corrections to A Phonology of Limbum - con'd.

writing with [r] (and /r/). Examples should be: [rɬd^{y}iɾ^{2}] and /rlir^{2}/ ~~xxx~~ for "eye" and [rli:^{2}] and /rle:^{2}/ for "tongue".

p. 88, 6th example from bottom of page in left hand column: change l's to r's. Should be:

"compound" [rla?^{2}]

/rlak^{2}/

p. 89, 2nd example from top in right hand column: should have meaning ~~xxxx~~ "rodent" instead of "rat"

p. 90, 6th example from top on right hand side of page. "medicine"

the sg. noun class prefix marker which is indicated to the right should be r- . Should read: (pl) sg: r-

p. 96, between Grimes and Mohrlang in Bibliography add:

Hyman, Larry M., A Phonological Study of ~~xxxxxxxxxxxx~~ Fe'Fe'-Bamileke, Studies in African Linguistics, Supplement 4, University of California, Los Angeles, 1972.

A

Primary Concords

	example:		"my"	example:	
Ø	tɔ́^{2}	"head"	ya^{1}-	ya^{1}-tɔ́^{2}	"my head"
B- (wi^{2}-)	p-tɔ́^{2}	"heads"	wa^{1}-	wa^{1}-p-tɔ́^{2}	"my heads"
	m-n-ti:^{2}	"hearts"		wa^{1}-m-n-ti:^{2}	"my hearts"
				wa^{1}-p-tfɨ?^{2}	"my nights"
Ø	tfɨ?^{2}	"night"	ya^{3}-	ya^{3}-tfɨ?^{2}	"my night"
N-	n-ti:^{2}	"heart"	ya^{1}-	ya^{1}-n-ti:^{2}	"my heart"
N-	ŋ-gwɔ́^{2}	"dog"	ya^{3}-	ya^{3}-ŋ-gwɔ́^{2}	"my dog"
N-	n-dɔ̀r^{1}	"brother" (fem.speaker)	-ya^{3}	n-dɔ̀r^{1}-ya^{3}	"my brother"
N-	ŋ-fɔr^{2}	"sib. same sex as spkr"	-a^{3}	ŋ-fɔr^{2}-a^{3}	"my brother; sister"
N-	n-du:^{2}	"husband"	-wa^{3}	n-du:^{2}-wa^{3}	"my husband"
B- (wi^{2}-)	b-du:^{2}	"husbands"	-wa^{1}	b-du:^{2}-wa^{1}	"my husbands"
	p-fɔr^{2}	"(sibs.)"		p-fɔr^{2}-wa^{1}	"my bros, sis"
ǰ- (li^{2}-)	r-soŋ^{3}	"tooth"	la^{1}-	la^{1}-r-soŋ^{3}	"my tooth"
m- (mi^{2}-)	m-n-soŋ^{3}	"teeth"	ma^{1}-	ma^{1}-m-n-soŋ^{3}	"my teeth"
*(ki^{3}-	kʸi^{3}-bɔ̀?^{3}	"court-room"	ya^{1}-	ya^{1}-kʸi^{3}-bɔ̀?^{3}	"my court-room")

B

Secondary Concords

Comments on Limbum Phonology - Manuscript for checking

Phonetic realizations of /r/: (pp. 21, 22, 6, 13, 70)

This is a little problematic, and I'll probably rewrite it a little. I have said in the paper that when /r/ is followed by a consonant (i.e. the case of the noun class prefix r-) that it is heard only after a vowel, and not after a consonant or utterance initially. At first I said it was "silent" in these last two environments, but linguistically I guess you can't really say that, so on someone's advice I said it was "deleted". This is often not really the case, because what happens is that the /r/ is sometimes partially articulated or slightly articulated so that the sound does not come out. As I said on page 22, you can sometimes see the tongue moving to articulate the /r/, but it is not heard or barely heard. To the native speaker (my language helpers) it is always there, whether or not it is heard.

I checked further on the realization of /r/ when I was in Cameroun recently, though it is hard to know how natural the speech is when the guy is pronouncing the phrases just for you to hear them. (Though I told him to say them at regular speed, etc. as in normal speech.) From what I ellicited, and what I would call careful speech, the /r/ can be heard (voiced or voiceless depending on the following consonant) not just utterance initially as I said on page 22, but also after [ʔ] and [ŋ], but not [p]. (The only other consonant which occurs syllable finally is /r/, in which case the two /r/'s seem to merge, and I could only hear one.) According to what I ellicited when I was just there, one could make the following rules for ~~mxx~~ what I would call more careful speech, though there are various exceptions, e.g. sometimes the /r/ is voiced before /z/, voiceless before /b/, /d/, and /m/, deleted before /s/ in some words, such as rəəŋ "tooth", deleted before /ə/ when the /r/ is preceded by [ʔ] etc.

Rules: (next page)

/r/ ⟶ [řv] / ___ /ɨ/

⟶ [ř^y] / ___ /i/

⟶ [ř̥] [ř] / V___vl C

⟶ [ř̥] / {n, ʔ} ___vl C

⟶ ∅ (or incompl. articulated) / /b/___

⟶ [ř] / {V, n, ʔ} ___vd C

or:

/r/___

or:

___V

Also, with regard to /r/, it does not have to change to /l/, as noted on pp. 6, 13, 58. It can remain /r/. This varies with different speakers. I had usually heard it as /r/, but then later I thought I must have been wrong, because it seemed to be /l/ in some places, so I wrote the rule, but it can be either way, so I will change the rule to include the variation. In the word list at the end, I will just write the form with the /r/, as it's less confusing, and I think the more common form.

<u>Phonetic realization of /i/</u>: (pp. 23, 50, 51, 73)

I have symbolized the vowel /i/ with [i] and then symbolized the palatalization that it causes with a [^{y}] between the consonant and the vowel and treated it as part of the consonant, analogous to the [f] release of consonants before the high back or central vowel /ɨ/. Hearing this slight [^{y}] before the vowel was the way I could hear the difference between the vowels /i/ and /e/ when I was transcribing data, and that is the way I symbolized it. This was also convenient because the [^{y}] is replaced by a clear [s] or [z] in the southern dialect. Actually, though,

realized [i].) The close articulation of /i/ contributes to the impression of palatalization. One is hearing more than a palatalization, [illegible] It is also the friction of the higher vowel. I had a problem knowing how to symbolise this, especially on the typewriter, and finally kept the [i] preceded by [ʲ], which is perhaps an abstraction, considering what I say below. Also, I symbolized /e/ as as [ê], which further distinguished the two. But for the long vowel /e:/, I used [i:], which is what it sounds like, since it is more close than its short counterpart. So in the case of /e:/ and /i:/ I relied soly on the [ʲ] to mark the difference between the two, which is phonetically quite close to the actual situation. This creates a bit of a problem, however, in the symbolization of the two [i:]'s on pp. 50 and 73.

With some consonants it is difficult to say whether there is really a phonetic [ʲ] present before the vowel, especially with /tš/, /dž/, /š/, [š], /j/, which are palatal anyway. (the phonetic difference between [tšʲi] and [tši], for example.) Also, when the /i/ changes /w/ to [v] and /y/ to [š] and /l/ to [ld] it is hard to say whether you can still really hear the [ʲ] or not. There you still know that it is the high vowel, whether you hear the [ʲ] or not, because of the change in the consonant. Also, after /m/ it is difficult to say whether what one is hearing is palatalization or just a more close vowel. There's not that much difference between the two here. It's kind of flou. (As I say, I always thought of the difference as being a [ʲ] sound.) In discussing [illegible] the symbolization of this vowel with Mona, it seemed better to mark the difference on the vowel itself and then leave out the [ʲ] on the few consonants where it is difficult to tell if one is really hearing it or not. I would symbolise the /i/ phonetically something like [i], which is analogous to the [ê], only it doesn't turn out well on the typewriter, so I'd have to find something else. In the end, with the symbolization, the /i/ and the /e/ will look quite different phonetically, whereas in reality they are very close.

/m:/:

As you can see, having a phoneme /m:/ seems a little clumsy, but that was the best thing I could come up with when I was

(but maybe that was because she didn't have a chance to read the paper well.)

Anyway, I checked the realisation of the nasal + consonant when I was in Cameroun and from what I could see from the impressions of our language helper, who is more knowledgeable about these things now than he was before, and from what he said about the length of these sequences, it seems that actually the nasals + homorganic stop are phonetically prenasalized consonants. He perceived a nasal plus homorganic stop as one consonant, whereas the heterorganic nasals + consonant he perceived as two consonants. In the case of words like [mbe:] "leopard", he thought of there being one consonant initially, whereas in the plural [m:be:] "leopards", he said there were two. (The m^2- of the numbers which are multiples of ten is still longer and different--a separate syllable having a tone of its own. p. 18)

Examples:

Singular 1 consonant		Plural 2 consonants			
[^{n}dap]	"house"	[m^{n}dap]	or	[mdap]	"houses"
[$^{\eta}$fi:]	"leg"	[m$^{\eta}$fi:]	or	[mfi:]	"legs"
[nan]	"(trap)"	[nnan]			"(traps)"
[^{m}bɛŋ]	"(calabash)"	[m^{m}bɛŋ]	or	[mbɛŋ]	"(calabashes)"

I never could tell phonetically before whether the heterorganic nasal plus stop was longer than the homorganic nasal plus stop, and when I was writing the paper I didn't want to analyze the nasal + stop as prenasalized stops because that would make twice as many consonants, and also there would be a morpheme boundary in the middle. But if, in fact, they are phonetically prenasalized stops, then I could make some kind of rule about a sequence of homorganic nasal plus stop merging to become a prenasalized stop. Then the heterorganic nasals + stop and the plurals of nouns beginning with [mb] would be sequences of two consonants. I guess I'll try this. I'm not sure how it will work out formally in the model the paper is in. I don't really want to do much more work on this paper, but I guess I should make these changes before it's published.

Having the prenasalized stops would be a help in the case that I use the more careful pronunciation of the /r/ as the norm (e.g. /r/ is heard utterance initially, etc.), because the only two examples where that interpretation of /r/ would cause a problem, [rnsu:] "men's pride" and [rngo:] "women's pride", because of the extra consonant on the beginning not fitting into the basic (C)CV(C) syllable structure, would no longer be problematic since the [ns] and the [ng] would be collapsed into one consonant.

Noun Classes:

Perhaps the noun class prefix $-a^3$ ([ŋfer^2-a^3] "my brother" [ŋ-ker^2-a^3] "my friend") should be considered as a phonological variant of the class marker $-wa^3$ ([n-du:^{2}-wa^3] "my husband", [illegible] and the two noun classes combined into one, since the $-a^3$ only occurs after consonants and the $-wa^3$ occurs only after vowels. (There are hardly any examples.) I kept them separate because I wasn't sure, since in the plurals there is no phonological variation depending on whether the stem ends in a vowel or consonant. Both take $-we^1$ in the plural possessive, but I think the high tone could cause the difference here, so perhaps the two classes should be combined.