

Bakairi Phonemics

Preliminary Version

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1. Introduction

The Bakairi Indians are of the Carib language family, and are located in the state of Mato Grosso in Brazil, approximately 125 miles northeast of Cuiabá. There are two main groups, those living on the Posto Simões Lopes and those who are at the Santa Ana settlement. This paper is based on material gathered at the Posto Simões Lopes. There are about 250 speakers of the language. Approximately 90% of the Indians are considered bilingual in Bakairi and Portuguese, the other 10% being monolingual in Bakairi. A large number of informants were used, mostly young men, but women and older men were used also. The data was gathered in two sessions from November 1962 to November 1963.

2. Chart of Phones**

Consonants

	pw	tw	kw	
	(p mp)	(t nt)	(k ŋk)	h
	(b mb)	(d nd)	gw	
			(g ŋg)	
			ɣ	
	(ɸ)	s	(š)	
			(č)	
		(z)	(ž)	
	m	n	(ñ)	
		l		
		ř		
	(w)		(y)	

Vowels

i	ĩ	i•		u	ũ
ɨ	ĩ		ɨ̃	ĩ̃	
e	ẽ	e•	ə	ã	o
			a	ã	ɔ
					õ

** Sounds recorded which do not constitute part of the over-all phonemic structure:

- ? - ? replaces h in Santa Ana dialect. [lə?widɨli]
- p - [əpə] an act of blessing
- ə - ə corresponds to /t/ in the speech impediment of two people of the same family. [əɔguřumi]

3. Interpretation Procedures

3.1. Segments which may function as consonant or vowel

High back and high front vocoids occur:

1) Initially before vowels and between vowels. They are interpreted as consonants for the following reasons:

a) This interpretation conforms to the predominant syllable pattern, CV:

[wasɪ]	/wasi/	'niece'
[iwɪdi]	/iwidi/	'my wife'
[əwəʃə]	/əwəʃə/	'that'
[yedi]	/yedi/	'my hammock'
[yɔku]	/yɔku/	'my drink'
[akəyedə]	/akəyedə/	'do not do that'

If these were interpreted as vowels, it would introduce excessively long vowel clusters.

b) These vocoids are non-syllabic in this position.

c) It facilitates stress statement.

['əwə] /əwə/ 'not true' 'VCV'

As long as /w/ is a consonant, the rule can be retained that stress falls on the penultimate vowel.

2) Immediately preceding or following a consonant, they are interpreted as vowels.

Examples:

uC ...	[udəli]	/udəli/	'I am going'
CəuC ...	[yəundu]	/yəundu/	'your older sister'
CaiC ...	[kaikə]	/kaikə/	'poor thing'

There are no non-suspect consonant clusters.

3) Word finally after a vowel, these are interpreted as a vowel. There are no final consonants.

[satai]	/satai/	'I took'
[kau]	/kau/	'sky'

3.2. Segments which may be one or two units

Labalized stops pw, tw, kw, and gw are interpreted as CV.

1) They are not interpreted as C and w because there are no C clusters.

2) They are not interpreted as unit phonemes because of economy of phonemes.

3) Interpreting these segments C and V results in V clusters which are in keeping with the general pattern of vowel sequences.

Examples:	[kwikumə]	/kuikumə/	'name of snake'
	[əzɪnətwiŋgə]	/əsinətuŋgə/	'lift up your head'
	[aləpwilə]	/aləpuilə/	'also'
	[tuɔgwɪmpə]	/tuɔguipə/	'do not cry'

4. Chart of Phonemes

Consonants		<u>Bilabial</u>	<u>Alveolar</u>	<u>Alveo-palatal</u>	<u>Velar</u>	<u>Glottal</u>
<u>Stops</u>	VI.	p	t		k	
	Vd.	b	d		g	
<u>Fricatives</u>	VI.		s	ʃ		h
	Vd.		z			
<u>Nasals</u>		m	n			
<u>Lateral</u>			l			
<u>Flap</u>			ɾ			
<u>Semi-vowels</u>		w		y		
Vowels						
		<u>Front</u>	<u>Central</u>	<u>Back</u>		
High		i	ɨ	u		
Mid		e	ə	o		
Low			a			

5. Evidence for Phonemic Decisions

5.1. Consonants

5.1.1. Contrasts

<u>p</u>			<u>b</u>		
[pamə]	/pamə/	'my cousin'	-----		
[paɾu]	/paɾu/	'water'	-----		
[paɪtə]	/paɪtə/	'blanket'	-----		
[pakə]	/pakə/	'dish of food'	-----		
[pekɔdɔ]	/pekɔdɔ/	'women'	-----		
[pogu]	/pogu/	'corn drink'	-----		
[pulu]	/pulu/	'leaves of a tree'	-----		
[udəpə]	/udəpə/	'I am not going'	[sahube]	/sahube/	'weeds'
[ipeɾi]	/ipeɾi/	'my leg'	[papabilu]	/papabilu/	'red river'
[kɔnɔpiɔ]	/kɔnɔpiɔ/	'bird'	[imɛbɨɾi]	/imɛbɨɾi/	'little'
[ipa]	/ipa/	'do not have'	[iladɨbɨ]	/iladɨbɨ/	'dry'
[ipɨmugu]	/ipɨmugu/	'relative'	[sakabegə]	/sakabegə/	'step on it'

<u>m</u>			<u>w</u>		
[məkə]	/məkə/	'that one'	[wasɿ]	/wasɿ/	'niece'
[māi]	/mai/	'tapir'	[wařə]	/wařə/	'thus'
[mēinšu]	/meišu/	'kind of animal'	[wǎũřǝi]	/wǎũřǝi/	'in front'
[makuə]	/makuə/	'fish name'	[wakɿři]	/wakɿři/	'past'
[megu]	/megu/	'monkey'	[bɛlu bɛlu]	/wɛlu wɛlu/	'bird name'
[mǝži]	/mǝzi/	'spider'	[wǝku]	/wǝku/	'my drink'
[mugutu]	/mugutu/	'owl'	[wǝhudu]	/wǝhudu/	'my mustache'
[mamə]	/mamə/	'you took'	[əwə]	/əwə/	'not true'
[imɿři]	/imɿři/	'my son'	[iɛlɔ]	/iwɛlɔ/	'new'
[imembɿři]	/imɛbɿři/	'little'	[iweři]	/iweři/	'breast'
[imǝǝ]	/imeɔ/	'child'	[witai]	/witai/	'I bathed'
[imɔli]	/imɔli/	'he is letting go'	[ǎwī]	/ǎwī/	'medicine'

<u>t</u>			<u>d</u>		
[tižiurǝi]	/tiziurǝi/	'violet color'	-----		
[tahɔ]	/tahɔ/	'knife'	-----		
[tāinzǝi]	/tāinzǝi/	'manioc'	-----		
[təsɿ]	/təsɿ/	'he eats meat'	-----		
[tǝhu]	/tǝhu/	'squash'	-----		
[tuhu]	/tuhu/	'rock'	-----		
[tətɪɔdai]	/tətɪɔdai/	'in the house'	[ədikebə]	/ədikebə/	'it is nothing'
[šigatibɿ]	/šigatibɿ/	'made of'	[widɿli]	/widɿli/	'I am bathing'
[ətɪ]	/ətɪ/	'party'	[ədi]	/ədi/	'what'
[yɔtai]	/yɔtai/	'you met me'	[setɔdai]	/setɔdai/	'I planted'
[idatǝi]	/idatǝi/	'for him to hear'	[udɔdɔ]	/udɔdɔ/	'jaguar'
[tutuzɿ]	/tutuzɿ/	'he knows'	[nudupə]	/nudupə/	'he does not give'

<u>s</u>			<u>z</u>		
[setai]	/setai/	'I saw'	-----		
[səsɿ]	/səsɿ/	'to bite'	-----		
[sadigu]	/sadigu/	'fat'	-----		
[sekɔ]	/sekɔ/	'aunt'	-----		
[sɛɔ]	/sɛɔ/	'river'	-----		
[se·]	/se/	'wood'	-----		
[isɿ]	/isɿ/	'his mother'	[izɿ]	/izɿ/	'he wants'
[isenli]	/isɛli/	'it is lowering'	[yɔzɿpə]	/yɔzɿpə/	'not right'
[isɔ]	/isɔ/	'her husband'	[izedi]	/izedi/	'name'

	<u>s</u>			<u>z</u>	
[təsanigēi]	/təsanigēi/	'deep'	[sahɔzebɪ]	/sahɔzebɪ/	'tame'
[iməsədɔ]	/iməsədɔ/	'big'	tɔĩnzɪ]	/tɔĩnzɪ/	'few'
[təgasɪ]	/təgasɪ/	'fast'	[təbɪzēi]	/təwɪzēi/	'half moon'

	<u>l</u>			<u>ř</u>	
[ləʔ]	/ləʔ/	'turn'	-----		
[ləwənɪ]	/ləwənɪ/	'still'	-----		
[idəli]	/idəli/	'he is going'	[ařipi]	/ařipi/	'old woman'
[iladɪbɪ]	/iladɪbɪ/	'dry'	[yeřeři]	/yeřeři/	'my liver'
[idələtɔĩ]	/idələtɔĩ/	'for to go'	[təřə]	/təřə/	'there'
[əũnlɔkebə]	/əũnlɔkebə/	'many'	[uřăi]	/uřăi/	'for me'
[ilu]	/ilu/	'his tongue'	[yɔřu]	/yɔřu/	'your uncle'
[alə]	/alə/	'done'	[uřə]	/uřə/	'I'
			[ařə]	/ařə/	'like this'

	<u>n</u>	
[nigɔ]	/nigɔ/	'grandmother'
[netai]	/netai/	'he saw'
[nahɔdɔ]	/nahɔdɔ/	'potato'
[nədə]	/nədə/	'he came'
[nɔku]	/nɔku/	'his drink'
[kɔgɔnɪkə]	/kɔgɔnɪkə/	'afternoon'
[yenaři]	/yenaři/	'my nose'
[təwanēi]	/təwanēi/	'worker'
[yenu]	/yenu/	'my eye'
[une]	/une/	'story'

	<u>k</u>			<u>g</u>	
[kɔpə]	/kɔpə/	'rain'	-----		
[kadɔ]	/kadɔ/	'Bacururu'	-----		
[yakue]	/yakue/	'fish name'	[igadi]	/igadi/	'fat'
[ikagə]	/ikagə/	'sit'	[egɔ]	/egɔ/	'mortar'
[yekə]	/yekə/	'do it'	[agipə]	/agipə/	'he did not say'
[takə]	/takə/	'grandfather'	[bɪgiuɔ]	/bɪgiuɔ/	'after'
[ikili]	/ikili/	'I am sleeping'	[iwagɪnu]	/iwagɪnu/	'long'

	<u>h</u>	
[təhəřə]	/təhəřə/	'way over there'
[tuhu]	/tuhu/	'rock'
[tahɔ]	/tahɔ/	'knife'

h

[uhɔhu]	/uhɔhu/	'chest'
[uhuřu]	/uhuřu/	'my foot'
[ihugɛ̃li]	/ihugɛ̃li/	'I am falling'

s

[sɛsɪ]	/sɛsɛ̃/	'he eats'
[sadigu]	/sadigu/	'fat'
[sɔdɔ]	/sɔdɔ/	'river'
[isɪ]	/isɛ̃/	'his mother'
[isenli]	/isɛ̃li/	'it is lowering'
[isiambɛ̃]	/isiambɛ̃/	'my cousin'

ʃ

[šɛgɐ]	/šɛgɐ/	'kick it'
[šařɐ]	/šařɐ/	'here'
[šɔgɔ]	/šɔgɔ/	'father'
[šinɐ]	/šinɐ/	'we'
[išiři]	/išiři/	'my daughter'
[kəšiɛ̃nli]	/kəšiɛ̃li/	'I am staying'

y

[yɛundu]	/yɛ̃udu/	'your older sister'
[yařãřõ]	/yařãřõ/	'like him'
[yɔřu]	/yɔřu/	'your uncle'
[yenaři]	/yenaři/	'my nose'
[akɛyedɐ]	/akɛyedɐ/	'do not do it'
[ayedɛ̃li]	/ayedɛ̃li/	'he is making it'

5.1.2. Non-Contrastive

Plain stops after oral vowels, prenasalized stops after nasalized vowels.

[yɛtai]	/yɛtai/	'You see me'	[ñɛ̃ntai]	/yɛ̃tai/	'I see you'
[ɛgudɔ]	/ɛgudɔ/	'boa constrictor'	[ɔ̃ngi]	/ɔ̃gi/	'who'
[pažikɐ]	/pažikɐ/	'anteater'	[ã̃ŋzi]	/ã̃zi/	'corn'
[kɛedɐ]	/kɛedɐ/	'I came'	[kɔ̃ĩndɐ]	/kɔ̃ĩdɐ/	'good'

Voiced velar stop tends to become a fricative before low back vowels.

[tiegɛ̃]	/tiegɛ̃/	'sharp'	[kɔ̃gɔ̃nɪkɐ]	/kɔ̃gɔ̃nɪkɐ/	'late afternoon'
[ugeli]	/ugeli/	'I say'	[egɛ̃ki] ~ [eɣ̃ɛ̃ki]	/egɛ̃ki/	'music'
[ɛgɛu]	/ɛgɛu/	'snake'	[egɔ̃] ~ [eɣ̃ɔ̃]	/egɔ̃/	'mortar'
[šudugɐ]	/šudugɐ/	'give it'	[kɔ̃gɐ]	/kɔ̃gɐ/	'basket'

/z/ [ž] occurs only before high front vowel.

[ižidi]	/izidi/	'place'
[ã̃ŋzi]	/ã̃zi/	'corn'
[pažikɐ]	/pažikɐ/	'anteater'

[z] occurs elsewhere.

[izedi] /izedi/ 'your name'
[yɔzɪ] /yɔzɪ/ 'straight'

/y/ [ɲ] occurs only before nasalized vowels

[ɲãŋgahu] /yãgahu/ 'my head'
[ɲɛnli] /yɛli/ 'he kills'
[ɛmãĩnikɪli] /ɛmãĩyikɪli/ 'you are doing'
[ɲɛntai] /yɛtai/ 'I see you'

[y] occurs elsewhere.

[yetai] /yetai/ 'you see me'
[akayedə] /akayedə/ 'do not do that'

5.2. Vowels

5.2.1. Contrasts

Oral Vowels

<u>i</u>			<u>ɪ</u>		
[ipi]	/ipi/	'my garden'	[ipɪ]	/ipɪ/	'fruit'
[midə]	/midə/	'you bathed'	[mɪdə]	/mɪdə/	'you want'
[iwidi]	/iwidi/	'my wife'	[samɪ]	/samɪ/	'I threw'
[ilu]	/ilu/	'his tongue'	[iwɪdi]	/iwɪdi/	'her younger sister'
			[isɪ]	/isɪ/	'his mother'
			[izɪpə]	/izɪpə/	'I do not want'
<u>e</u>			<u>ɛ</u>		
[medə]	/medə/	'you saw'	[ipɛ]	/ipɛ/	'do not have'
[iwedi]	/iwedi/	'his thigh'	[samɛ]	/samɛ/	'I took'
[yelu]	/yelu/	'he laughs'	[mɛdə]	/mɛdə/	'you ate'
[yetai]	/yetai/	'you see me'	[nɛtə]	/nɛtə/	'he went'
[izedi]	/izedi/	'his name'	[yɛtai]	/yɛtai/	'it bit me'
			[padɛ]	/padɛ/	'fish name'
<u>a</u>			<u>ɔ</u>		
[ipa]	/ipa/	'my arrow'	[isɔ]	/isɔ/	'her husband'
[madə]	/madə/	'you took'	[mɔdə]	/mɔdə/	'all'
[natə]	/natə/	'he took'	[nɔku]	/nɔku/	'fish'
[kapə]	/kapə/	'stative'	[kɔpə]	/kɔpə/	'rain'
[yatai]	/yatai/	'he took me'	[kadɔ]	/kadɔ/	'bacururu'
			[idɛhɔ]	/idɛhɔ/	'way'

	<u>u</u>	
[mudu]	/mudu/	'you gave'
[samu]	/samu/	'tapioca'
[ulu]	/ulu/	'tongue'
[tuhu]	/tuhu/	'rock'
[idəhu]	/idəhu/	'my stomach'

Nasalized vowels

	<u>i</u>			<u>ĩ</u>	
[iwĩndi]	/iwĩdi/	'hungry'	[Edupĩĩ]	/Edupĩĩ/	'girl's name'
[agaitĩo]	/agaitĩo/	'old man'	[Edukapĩ]	/Edukapĩ/	'girl's name'
[sašiũ]	/sašiũ/	'dirty'	[sawĩwõ]	/sawĩwõ/	'I caught'
[tagãřĩ]	/tagãřĩ/	'hunter'			

	<u>ẽ</u>			<u>ã</u>	
[ñãntai]	/yãtai/	'bit you'	[ñãntai]	/yãtai/	'took you'
[ãwã]	/ãwã/	'not true'	[izãra]	/izãra/	'alligator'
[ãngi]	/ãgi/	'who'	[yãũ]	/yãũ/	'group'
[əpãřã]	/əpãřã/	'swan'	[kãwãniki]	/kãwãniki/	
[tagãřĩ]	/tagãřĩ/	'hunter'	[piãntə]	/piãntə/	'doorway'
[igawãkə]	/igawãkə/	'come in'	[wãũřđĩ]	/wãũřđĩ/	'in front'

	<u>ẽ</u>			<u>ĩ</u>	
[ñẽntai]	/yẽtai/	'I see you'	[ñĩntai]	/yĩtai/	
[iwĩndi]	/iwĩdi/	'forehead'	[ĩřĩ]	/ĩřĩ/	'earth'
[ñẽzẽřũ]	/yẽzẽřũ/	'knee'	[đĩyđ]	/đĩyđ/	'lizard'
[imẽđ]	/imẽđ/	'small'	[agaitĩđ]	/agaitĩđ/	'old man'
[agẽĩ]	/agẽĩ/	'says'	[šiđnki]	/šiđki/	
[tegasẽĩ]	/tegasẽĩ/	'vertical'	[yařãřđ]	/yařãřđ/	'like him'
			[tđĩnzĩpə]	/tđĩnzĩpə/	'many'

	<u>ũ</u>	
[ñũnwĩ]	/yũwĩ/	'his father'
[kidugũřẽ]	/kidugũřẽ/	'start'
[yãũ]	/yãũ/	'group'
[itãũ]	/itãũ/	'easy'
[sapigũ]	/sapigũ/	'wet'
[ñẽzẽřũ]	/yẽzẽřũ/	'knee'
[sašiũ]	/sašiũ/	'dirty'

Oral versus nasalized Vowels

[iwidi]	<u>i</u>	/iwidi/	'her younger sister'	[iwĩndi]	<u>ĩ</u>	/iwĩdi/	'hungry'
[widɿli]		/widɿli/	'I am bathing'	[ɐwĩ]		/ɐwĩ/	'medicine'
[idu]		/idu/	'jungle'	[ĩñɔ̃]		/ĩyɔ̃/	'to me'
[iwɿdi]	<u>ɿ</u>	/iwɿdi/	'wife'	[ñũwɿ̃]	<u>ɿ̃</u>	/yũwɿ̃/	'his father'
[iwɿ]		/iwɿ/	'hill'	[Edukapɿ̃]		/Edukapɿ̃/	'girl's name'
[iwedi]	<u>e</u>	/iwedi/	'thigh'	[iwēndi]	<u>ē</u>	/iwēdi/	'forehead'
[kæedə]		/kæedə/	'I came'	[kǎēndǎĩnkuli]		/kǎēdǎĩkuli/	'I am greeting'
[izedi]		/izedi/	'name'	[ñězēnřũ]		/yězēřũ/	'knee'
[yaduli]	<u>a</u>	/yaduli/	'it is burning'	[ñānduli]	<u>ā̃</u>	/yāduli/	'he is eating (meat)'
[taikuře]		/taikuře/	'sweet'	[tāĩnzēĩ]		/tāĩzēĩ/	'manioc'
[naitai]		/naitai/	'he came'	[nāĩtai]		/nāĩtai/	'he arrived'
[ɐwə]	<u>ə</u>	/ɐwə/	'not true'	[ǎwǎ]	<u>ǎ</u>	/ǎwǎ/	'path'
[yətəi]		/yətəi/	'it bit me'	[ñǎntai]		/yǎtai/	'took you'
[ɔdɔpədɿli]	<u>ɔ</u>	/ɔdɔpədɿli/	'returning'	[ǎřǎ]	<u>ǎ̃</u>	/ǎřǎ/	'earth'
[idəhɔ]		/idəhɔ/	'way'	[idəhǎĩ]		/idəhǎĩ/	'for to go'
[yudu]	<u>u</u>	/yudu/	'gave me'	[ñũndu]	<u>ũ</u>	/yũdu/	
[kəu]		/kəu/	'sky'	[yaũ]		/yaũ/	'group'

5.2.2. Non-contrastive

Short and long vowels

Long vowels occur only in one syllable words.

i	-	[witai]	<u>short</u>	/witai/	'I bathed'	[wi·]	<u>long</u>	/wi/	'my brother'
		[nawi]		/nawi/	'sweet potato'				
e	-	[seli]		/seli/	'a bird'	[se·]		/se/	'wood'
		[sekɔ]		/sekɔ/	'my aunt'				

The low back open unrounded vowel [ɔ] tends to become [ə] after /p/ and before a high vowel in the following syllable.

[pəgu] ~ [pɔgu]	/pɔgu/	'corn drink'
[nəmidəni] ~ [nɔmidəni]	/nɔmidəni/	'teacher'
[pəži] ~ [pɔži]	/pɔzi/	'grass'

The high central vowel tends to be between [ɪ] and [i]. It never seems to be as fronted as the [ɪ]. The [i] tends to occur following bilabials.

[izɪpə]	/izɪpə/	'I do not want'	[apɪ]	/apɪ/	'sieve'
[agɪpə]	/agɪpə/	'he did not say'	[samɪ]	/samɪ/	'I threw'
[isɪ]	/isɪ/	'his mother'	[isiãmbɪ]	/isiãbɪ/	'my cousin'

Non-phonemic nasalization occurs following nasals.

[mãi]	/mæi/	'tapir'
[mãɾi]	/mæɾi/	'that'
[nũnã]	/nunə/	'moon'

6. Formational Statement of the Phonemes

Consonants

- /p/ [mp] Prenasalized voiceless bilabial unaspirated stop occurring after nasal vowels.
- [p] Voiceless bilabial unaspirated stop occurring elsewhere.
- /b/ [mb] Prenasalized voiced bilabial stop occurring after nasal vowels.
- [b] Voiced bilabial stop occurring elsewhere.
- /t/ [nt] Prenasalized voiceless post-dental unaspirated stop occurring after nasal vowels.
- [t] Voiceless post-dental unaspirated stop occurring elsewhere.
- /d/ [nd] Prenasalized voiced post-dental stop occurring after nasal vowels.
- [d] Voiced post-dental stop occurring elsewhere.
- /k/ [ŋk] Prenasalized voiceless velar unaspirated stop occurring after nasal vowels.
- [k] Voiceless post-dental unaspirated stop. The point of articulation varies according to following vowel. Before front vowels, it tends to be fronted. Before back vowels, it tends to be backed.
- /g/ [ŋg] Prenasalized voiced velar stop occurring after nasal vowels.
- [ç] Voiced velar fricative occurring before low back vowels.
- [g] Voiced velar stop occurring elsewhere.
- /h/ [h] Voiceless glottal fricative.
- /s/ [s] Voiceless alveolar fricative (generally before low vowels).

/š/	[š]	Voiceless alveo-palatal fricative.
	[šč]	Voiceless alveo-palatal affricate occurring as a free variant word initial before low vowels.
/z/	[ž]	Voiced alveo-palatal fricative occurring before high front vowels.
	[z]	Voiced alveolar fricative occurring elsewhere.
/y/	[ň]	Voiced alveo-palatal nasal occurring before nasal vowels.
	[ȳ]	Voiced high close front unrounded semi-vowel, occurring elsewhere.
/w/	[w]	Voiced high close back unrounded semi-vowel.
/m/	[m]	Bilabial nasal.
/n/	[n]	Alveolar nasal.
/l/	[l]	Lateral.
/ř/	[ř]	Flap.

Vowels

Oral

/i/	[i]	Voiced high close front unrounded vowel.
/e/	[e]	Voiced mid close front unrounded vowel.
/ɛ̃/	[ɛ̃]	Voiced high open central unrounded vowel, occurring after bilabials.
	[ɛ̄]	Voiced high open front unrounded vowel, occurring elsewhere.
/ə/	[ə]	Voiced mid close central unrounded vowel.
/a/	[a]	Voiced low close central unrounded vowel.
/u/	[u]	Voiced high close back unrounded vowel.
/ɔ/	[ɔ]	Voiced low close back unrounded vowel, occurring after p and before high vowels in the following syllable.
	[ɔ̄]	Voiced low open back unrounded vowel, occurring elsewhere.

Nasalized

A phonemic nasalized vowel is consistently nasalized. A vowel next to a nasal consonant may have non-phonemic nasalization.

/ĩ/	[ĩ]	Voiced high close front unrounded nasalized vowel.
/ẽ/	[ẽ]	Voiced mid close front unrounded nasalized vowel.
/ɛ̃̄/	[ɛ̃̄]	Voiced high open central unrounded nasalized vowel, occurring after bilabials.
	[ɛ̄̄]	Voiced high open front unrounded nasalized vowel, occurring elsewhere.
/ã/	[ã]	Voiced mid close central unrounded nasalized vowel.

/ã/	[ã]	Voiced low close central unrounded nasalized vowel.
/ũ/	[ũ]	Voiced high close back unrounded nasalized vowel.
/õ/	[õ]	Voiced low open back unrounded nasalized vowel.

7. Hyperphonemics

7.1. Stress

Stress generally occurs on the penultimate vowel.

['paʁu]	/paʁu/	'water'
[u 'gõndõ]	/ugõdõ/	'man'
['təsɪ]	/təsɪ/	'he eats'
[kadakõbɛ 'dɪli]	/kadakõbɛdɪli/	'I am taking a walk'
[wi 'tai]	/witai/	'I bathed'
[ɛdai 'tuɔ]	/ɛdaituɔ/	'for what'
[wi 'tõĩ]	/witõĩ/	'for to bathe'
[udɛʒi 'wau]	/udɛziwau/	'I am going now'

If only one nasalized vowel occurs word final, the stress occurs on that vowel.

[sapi 'gũ]	/sapigũ/	'wet'
[Eduka 'pɛ]	/Edukapɛ/	'girl's name'

If the penultimate vowel is the second of a glide sequence (a sequence of two vowels in which the first vowel is lower than the second), the accent occurs on the antipenultimate rather than the penultimate vowel.

['kæedə]	/kæedə/	'I came'
['kõĩndə]	/kõĩndə/	'good'
['paite]	/paite/	'blanket'
['ñõũndu]	/yõũdu/	'his sister'

7.2. Laryngealization

This signifies disgust or anger.

[ɛwɛ]	/ɛwɛ/	'not true'
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8. Distribution

8.1. Syllable patterns

V	<u>u</u> nə	'story'
VV	pi <u>ə</u> u	'dear'
CV	<u>n</u> unə	'moon'
CVV	s <u>a</u> tai	'I took'

Syllable sequence limitations

All possible sequences of syllables occur except that syllables of the pattern CVV and VV are never immediately followed by syllables of the pattern VV or V.

V-CVV-CV-V	/ədaituə/	'for what'
CV-VV	/piəu/	'dear'
CV-CVV	/mitai/	'you bathed'
CV-CV-V-CV	/samiagi/	'I made a mistake'
CV-CV	/sɔdɔ/	'river'
V-CVV-CV-V	/agaitiĩɔ/	'old man'
VV-CV	/əakə/	'come'
CV	/se/	'weed'
V-CV-CV	/ugɔdɔ/	'man'
CVV-CVV	/nəetai/	'he came'
V-CV	/əwə/	'not true'
CVV-CV	/kuãbi/	'chief dancer'
V-CVV	/əgəu/	'snake'
CV-CV-V	/saʃiũ/	'dirty'
V-V	/ie/	'my older sister'
CVV	/kau/	'sky'

8.2. Specific distribution

8.2.1. Phonemes within words

All consonants may occur in word-medial positions. In initial positions h, ʃ, l, z, b, d, and ɣ are lacking, except in certain loan words such as banana and Bakairi. The only restriction on the occurrence of specific vowels in the various positions within the word is that of e, which does not occur word final.

8.2.2. Phoneme sequences

Any vowel may follow any consonant with the following exceptions:

/y/ is never followed by /i/.

/w/ is never followed by /u/.

/h/ is never followed by /i/, /e/, or /a/.

/s/ is never followed by /i/.

/t/ and /d/ are never followed by /e/.

There are no consonant clusters.

Vowel sequences are of the following types:

	i	e	ɛ	ə	a	ɔ	u
i	----	mietai 'you did'	----	šie 'deer'	nətiagi 'he went'	šiotai 'I set'	sašũ 'dirty'
e	yeilu 'lightning'	----	----	----	----	imeɔ 'tiny'	eunu 'smoke'
i	p̣ii 'ax'	----	----	----	samiagi 'I made an error'	----	piu 'wild pig'
e	əikə 'dance'	əekə 'come'	----	----	----	----	p̣iřəu 'arrow'
a	agaitĩõ 'old man'	----	----	----	----	----	kau 'sky'
ɔ	kõide 'good'	----	----	----	----	----	kəu 'man's' sister'
u	kuikumə 'kind of snake'	kuetəzi 'midnight'	----	əgəu 'snake'	kuãbi 'dance chief'	tuɔguĩpə 'do not cry'	----

Sequences of two vowels in which the second of the two is higher than the first - ai, ae, ei, are phonetically glides and function as single syllable nuclei. The other sequences consist of vowels which function as separate syllable nuclei.