

To: TSD

Language: Urubú

From: Jim Kakumasu

Re: Phonemic Statement

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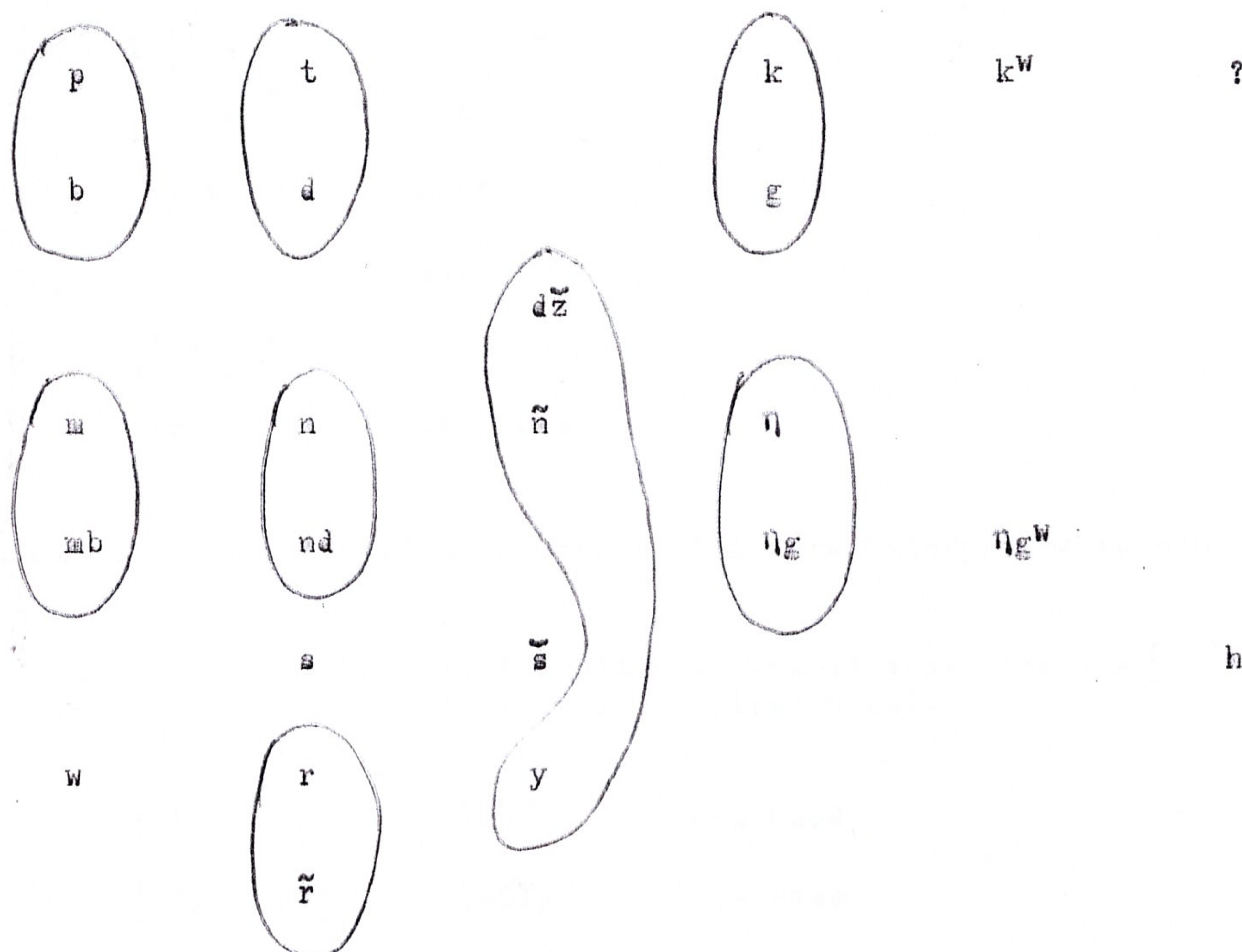
Date: March 24, 1964

Tupi Consultant

Kakumasu

## PHONEMIC STATEMENT

## 1. Chart of the phones.



i	ɛ	u	ɪ	ɛ̄	ʊ
ə	a	ɔ	ə̄	ɔ̄	

## 2. Interpretation procedure.

2.1. All vowels occurring utterance finally are released into voicelessness. These are interpreted as non-phonemic. The high vocoids i ɨ u have added friction approximating a velar fricative [χ].

[u'ʔiʃ]	Farinha
[Aa'kuʃ]	hot
[ya'ʃiʃ]	moon
[Aa'ʔiʃ]	seed
[i'EEɛ]	I
[mo'ndoʃ]	HE gives

## 2.2. Certain transitional sounds occur which are interpreted as non-phonemic.

2.2.1. There is a non-phonemic transitional vocoid approximating [y] between a high front or central vowel and a low central vowel.

[i'y̩a'ka]	/iãkã/	his head
[i'y̩a'mpuʃ]	/iãpúʃ/	his nose
[p̩i'y̩a'hu]	/p̩iáhu/	new
[p̩i'y̩a'mp̩e]	/p̩iáp̩e/	nail (finger, toe)

These contrast with full oral phoneme [y].

[a'ya]	/aya/	thus
[yɛ'tɛ]	/yete/	true
[ya'waʃ]	/yawar/	dog

2.2.2. There is a non-phonemic transitional vocoid approximating [w] between a high back vowel and low front or high front vowel.

[yaʃu <sup>w'</sup> aʃ̩]	/yaʃuer/	old
[u <sup>w'i</sup> ]	/ui/	continuative aspect

These contrast with full oral phoneme [w].

[wɛ'we]	/wewe/	fly
[waru'wa]	/waruwa/	glass, óculos

2.2.3. There is a non-phonemic transitional homorganic nasal between a nasalized vowel and voiceless stops.

[hə̃'n̄tū] /hə̃tū/ he smells

[yū̄'m̄p̄s̄] /yū̄p̄s̄/ he breaks

[ī̄'m̄p̄ú̄ī] /ī̄p̄ú̄ī/ his nose

2.3. Problem: Are voiceless vocoid initial or between voiced vowels interpreted as consonant [h] or vowel?

[Aa'ku] hot

[Aə̄r̄] his name

[fi'kī] he sucks

[Aa'po] root

[pi'Ee] smell

2.3.1. Solution: They are to be interpreted as consonant /h/.

2.3.2. Evidence: The /h/ fits the consonant slot in the consonant and vowel sequence of the language.

2.3.2.1. Non-suspect CV patterns.

[ta'pæ] flat

['ka] bee

[ta'ta] fire

[ɛ'ha] eye

[mə'wok] he splits

The predominant patterns of the language are CV and CVC.

2.3.2.2. The vocoid quality of /h/ is predictable. It is the same as the voiced vowel that follows.

2.3.3. Thus we have:

[Aa'ku] /haKu/ hot

[Aə̄r̄] /her/ his name

[fi'kī] /fīkī/ he sucks

[Aa'po] /hapo/ root

[pi'Ee] /pīhe/ smell

2.4. Non-syllabic [u] is interpreted as consonant /w/ to avoid unique sequences of vowels.

- [a'ua]	/awa/	someone, gente
[i'u̯i]	/iwi/	earth
[para'ua]	/parawa/	parrot
[ue'ra]	/wera/	light, day
[ue'u̯e]	/wewe/	fly

2.5. Stops in stress syllables occur as long consonants. These are interpreted as one unit since there is no non-suspect consonant clusters within a word.

[ha'kku]	/haku/	hot
[ku'ttuk]	/kutuk/	she washes
[i'ppo]	/ipo/	his hand
[yu'kkw̯a]	/yukw̯a/	he kills

2.6. Problem: Are vowel glides one complex unit or sequences of two vowels?

[h̯ai]	teeth
[yu'h̯ei]	hungry
[p̯e'tui]	it's there
[ni'so̯i]	there is none
[u'kw̯ai]	it burns
[hai]	sour

2.6.1. They are interpreted as one complex unit to fit the CV pattern of the language. There is no non-suspect vowel clusters within a word.

2.6.1.1. They pattern as a single phoneme since the syllables containing them occur with unitary stress and they occur in contrast with two units across syllable boundaries.

[was'a'i]	asai	[hai]	sour
[kara'i]	white man	[h̯ai]	teeth
[p̯ete'i]	one	[yu'h̯ei]	hungry
[papa'i]	foreigner	[p̯e'tui]	it's there

2.6.1.2. To avoid establishing a long series of glide phonemes, both oral and nasal, they are considered as two separate phonemes and the difference is indicated by the stress placement.

/hái/	sour	/wasai/	asai
/yuhei/	hungry	/petei/	one
/petui/	it's there	/papai/	foreigner
/nisoi/	there is none		

## 2.7. Labialization.

2.7.1. Problem: Is labialization after k and ng to be interpreted as  
 {1} unit phoneme  
 {2} two consonant, or  
 {3} part of the succeeding vowel.

[a'kua]	I know
[yu'kua]	he kills
[tu'kua]	he hits
[kuε'ra]	living, alive
[ma'ngua]	frog
[ka'ngueř]	bone

2.7.2. Solution: It is interpreted as a unit phoneme.

/kw/      /ngw/

2.7.3. Evidence: This conforms to the syllable pattern of the language. See 2.3.2.1.

[a'kua]	/akwa/	I know
[yu'kua]	/yukwa/	he kills
[tu'kua]	/tukwa/	he hits
[kuε'ra]	/kwera/	living, alive
[ma'ngua]	/mangwa/	frog
[ka'ngueř]	/kangwer/	bone

2.7.3.1. To interpret them as two consonant would give a unique consonant cluster.

/akwa/	I know	/mangwa/	frog
/ukwai/	it burns	/kangwer/	bone

2.7.3.2. To interpret them as part of the succeeding vowel would give unique vowel sequences.

/ukuái/ it burns

/hákuái/ penis

2.8. Non-syllabic [i] is interpreted as consonant /y/ to avoid unique sequences of vowels.

[ia'ší] /yaší/ turtle (jabute)

[ia'i̥í] /yahí/ moon

[a'ia] /aya/ thus

2.9. Homorganic nasals [mb] [nd] [ŋg] are interpreted as unit phonemes. They function as allophones of the respective nasal counterpart and therefore cannot be sequences.

[mboí] /móí/ snake

[nde] /ne/ you

[ŋga] /ŋga/ everyone

2.10. Palatalization on consonants [t̪] and [h] is interpreted as non-phonemic. It is a modification of these consonants due to the vowel [i] preceding it.

[it̪yá'wa] /itawa/ it is yellow

[i'hyé] /ihé/ I

[i'hyó] /ihó/ it went away

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<sup>§</sup> [ŋ] has very limited distribution. /ng/ has been chosen as the norm. In the practical orthography, /g/ is used.

## 3. Evidence for phonemic decision.

## 3.1. Labials.

/p/		/m/	
<b>[p]</b>	<b>[b]</b>	<b>[m]</b>	
<u>[pe'yu]</u> /peyu/	he blows	<u>[me'yu]</u> [mbε'yu] /meyu/	bread
<u>[pi'ta]</u> /pita/	he remains	<u>[mi'ta]</u> /mita/	jirau
<u>[ia'puī]</u> /iapui/	his nose	<u>[ha'mūi]</u> /hamui/	his grandfather
<u>'para'wa</u> /parawa/	parrot	<u>[mara'?</u> ar]	hungry
<u>[nu'pa]</u> /nupa/	he hits	<u>[mara'?</u> ar]	
<u>[para'hi]</u> /parahi/	anger	<u>[mira]</u> /mira/	wood
<u>[pe're]</u> /pere/	boil	<u>[me'?</u> ɛ] /me?ɛ/	he gives
<u>[pi'?</u> a]	liver	<u>[kubi'?</u> a]	roça
		/kupisa/	
		<u>[he'ta de di be wan]</u> /heta te ti pe wan/	lots
		<u>[sabu'kai]</u> /sapukai/	chicken
		<u>[ihε bi'si'?</u> a] /ihε pis'i?a/	my chest

[mb]

/w/

[w]

[wə'ra'hi] sun  
/warahi/

[pu'wa̤] twist  
/puwa/

[wə'ra'hi] sun  
/warahi/

[wə'ra] light  
/wera/

[ma?e wi'ra] birds  
/ma?e wira/

[wə'ʔεn] he vomits  
/wə?en/

[im'bi] his ear  
/imi/

[im'bi] breast, milk  
/imi/

[im'bek] it's soft  
/imek/

/t/

[t]

[t̪<sup>i</sup>pa]  
/t̪ipa/ shallow

[d]

[ita'wa]  
/itawa/ it's yellow

[tap̪u'ru]  
/tapuru/ worm

[tu't̪ir]  
/tut̪ir/ uncle

[tu'p̪a]  
/tupa/ god

[te]  
/te/ true

[ta'm̪ui]  
/tamui/ grandfather

[ta'?ir]  
/ta?ir/ small little

[ta'?i]  
/ta?i/ child

/s/

[s]

[s̪i'po]  
/s̪ipo/ cipo

[sawa'?e]  
/sawa?e/ man

[sapu'kai]  
/sapukai/ chicken

[ta's̪ir]  
/tasir/ ferro do cova

[nu'p̪a]  
/nupa/ he hits

[pi'nu]  
/pinu/ flatus

[ina'mbi]  
/inambi/ his ear

[ni'soi]  
/nisoi/ there is none

[he'ta de di be wan]  
/heta te ti pe wan/ lots

[am̪ō d̪i]  
/amō ti/ another, also

Urubú phonemics

/n/

[nd]

/r/

[r]

[ɾ]

hits

[ndε]  
[nɛ]  
/ne/

you, your

[ra'mū̄]      grandfather  
/ramui/      (possessed)

[ih̄e' ra'̄?ī]    my child  
/ih̄e' ra?ir/

[ma'̄?e' ra'̄?ī]    some seed  
/ma?e' ra?i/

[pi'rū̄]      step on  
/pirū/

[ih̄e' ra'mū̄]    my grandfather  
/ih̄e' ramui/

[ri'sā̄]      cold  
/risā/

[yandi'̄?a]    type of  
/yani?a/      fish

[mandi'yu]    cotton  
/maniyu/

[tu'w̄īr]      white  
/tuw̄ir/

[u'k̄w̄ēr̄]      he sleeps  
/uk̄w̄er/

[po'w̄īr̄]      he loosens  
/pow̄ir/

[ka'nd̄ēī]    pitch (of a tree)  
[ka'n̄ēī]  
/kanei/

[he'nd̄u]      he hears  
[he'nu]       
/henu/

## 3. Alveo-palatals.

/š/		/y/		/dž/		[ñ]
[š]		[y]				
[i'ša] /isa/	it is fat	[a'ya] /aya/	thus			
[šu'ru] /suru/	rough	[yu'ru] /yuru/	or	[džu'ru] /yuru/	mouth	
[u'se] /use/	he enters	[ki'yε] /kiye/	or	[ki'džε] /kiye/	fear	
[šu'pe] /supe/	back	[yu'pi] /yupi/	or	[džu'pi] /yupi/	bee sting	
		[yo'čok] /yočok/	or	[džo'čok] /yočok/	he takes out	
		[ya'čam] /yačam/	or		[ña'čam] /yačam/	we were
					[mu'ña] /muya/	he makes
					[u'ña] /uya/	he runs

## 3.4. Fricatives

/s/

/ʃ/

/h/

[s]

[ʃ]

[h]

[sru'ru]  
/sururu/[mu'se]  
/muse/[ki'se]  
/kise/[su'ru]  
/suru/[u'ʃe]  
/use/[su'pe]  
/supe/

rough

he enters

back

[hu'ri]  
/huri/[kWe'he]  
/kWehe/[hu'pir]  
/hupir/

happy

yesterday

smell

he jumps

## 3.5. Velars and glottals.

/k/                                    /ng/

[k]                                    [ŋ]

[ka]                               bee  
/ka/

[pu'ka]                       he laughs  
/puka/

[ha'ka]                       igarape  
/haka/

[ra'ke]                       behind  
/rake/

[so'ko]                       monkey  
(soko)

[ha'ku]                       hot  
/haku/

[ka'ka]                       canca (bird)  
/kaka/

[n]

[ara'ná]                       Arangá  
/aranga/                       (name)

[u'hígo"ho]                       he arrived  
/uhik oho/

[he'ta ri gi]                       lots  
/heta ri ki/

[pe ri gi]                       then  
/pe ri ki/

[u'sago"ho]                       he went to see  
/usak oho/

ə/

[ŋ]

[ɛ̄ga]  
/ŋga/

[pu'ŋga]  
/punga/

/ʔ/

[?]

/h/

[h]

everyone

he

meat

drunk

[hə'kə] igarape  
/həkə/

dirty

[kɪ'ha] hammock  
/kɪha/

seed

[pə'hi] it is there  
/pehi/

tired

[i'hə] to go  
/ihə/

[a?ɛ̄ŋgi] then  
/a?engi/

## 3.6. Labialized velars.

/kʷ/

/ngʷ/

[kʷ]

[ŋgʷ]

[tu'kʷa]  
/tukʷa/

he hits

[ku'ŋgʷa]  
/kungʷa/Kungʷa  
(name)[a'kʷa]  
/akʷa/

I know

[ma'ŋgʷa]  
/mangʷa/

frog

[ta'kʷar̚]  
/takʷar/steel headed  
arrow[ta'ŋgʷa]  
/tangʷa/Tangʷa  
(name)[ho'kʷer̚]  
/hokʷer/

meat

[sa'ŋgʷer̚]  
/sangʷer/

bone

[hu'kʷer̚]  
/hukʷer/

piece

[amu'ŋgʷer̚]  
/amungʷer/

I put to sleep

## 3.7. Velars and labialized velars.

/k/	/kʷ/	/ng/			
[k]	[kʷ]	[ng]			
[h̄'ka] /h̄ka/	igarape	'h̄a'kʷā̄̄ /h̄akʷai/	penis		
['ka] /ka/	bee	[l̄kʷa] /kʷa/	interjection of surprise	[l̄ga] /nga/	everyone
[pu'kai] /pukai/	he calls	[u'kʷai] /ukʷai/	it burns	[mu'l̄ga] /mungai/	he cuts
[pu'ka] /puka/	he laughs	[tu'kʷa] /tukʷa/	he hits	[pu'l̄ga] /punga/	swollen
		[a'kʷa] /akʷa/	I know	[ma'l̄ga] /manga/	he experiments
				[taka'l̄gir] /takangir/	tecadira ant
[ta'kʷar] /takʷar/	steel-headed arrow	[ka'l̄ga] /kanga/	he defecates		
[kʷe'ra] /kʷera/	living	[l̄i'l̄ga] /l̄inga/			
[a'kʷa] /akʷa/	I know				
[siru'kʷa] /sirukʷa/	throat				

Urubú phonemics

/ng<sup>w</sup>/

/w/

[ŋg<sup>w</sup>]

[w]

[hu'wi] tail  
/huwai/

[ku'ŋwa] Kung<sup>w</sup>a  
/kung<sup>w</sup>a/ (name)

[ma'ŋwa] frog  
/mang<sup>w</sup>a/

[ita'ŋwi] Itang<sup>w</sup>i  
/itang<sup>w</sup>i/ (name)

[ta'ŋwa] Tang<sup>w</sup>a  
/tang<sup>w</sup>a/ (name)

[yaŋwa'te] onça  
/yang<sup>w</sup>ate/

[ita'wa] it is yellow  
/itawa/

[iwa'te] it is high  
/iwate/

[we'ra] light  
/wera/

[a'wa] man, someone  
/awa/

[waru'wa] glass, mirror  
/waruwa/

## 7.8. Oral vowels.

/i/	/e/	/a/	/ɨ/
[i]	[ɛ]	[a]	[ɨ]
[wε'i_wi] /weiwi/	light (weight)	[wɛ'i_wɛ] /weewɛ/	to fly
[himi'ʔu] /himiʔu/	his food	[mɛ'ʔu] /meʔu/	to speak
[ki] /ki/	particle	[ke] /ke/	particle
			[ka] /ka/
			bee
		[ka'ʔa] /kaʔa/	forest
			[kɪ'ʔa] /kiʔa/
[ku'ʔi] /kuʔi/	dust	[ku'ʔa] /kuʔa/	middle
[u'ʔi] /uʔi/	farinha		[u'ʔɨ] /uʔɨ/
[pi'ʔa] /piʔa/	egg		[pi'ʔa] /piʔa/
[inə'mbi] /inani/	his ear		[ka'mbi] /kambi/
		[iwa'te] /iwater/	it's high
		[wa'ta] /wata/	he walks
		[pi'rər] /pirer/	skin
		[pi'rər] /pirar/	he opens
		[hər] /her/	his name
		[haɾ] /har/	living together
		[ta'te] /tate/	almost
		[ta'ta] /tata/	fire
		[hə'te] /hete/	body
		[hə'ta] /heta/	lots
		[wə'ra] /wera/	light
			[ma'ʔɛ_wi'ra] /maʔɛ_wira/
		[mɛ'mbɛk] /memek/	soft
			[hɛ'mbik] /hemik/
		[i'ham] /iham/	rope
			[i'him] /ihim/
			smooth

## 3.8. Oral vowels (continued)

/a/	/o/	/u/	/ɨ/	
[a]	[ɔ]	[u]	[ɪ]	
[t̪i'pa] /tipa/	shallow	[s̪i'po] /s̪ipo/	cipo	
[ka] /ka/	bee	[ko] /ke/	here	
[pi'nda] /pina/	fish-hook	[pi'ndo] /pino/	palha	
[ha] /ha/	hair	[ho] /ho/	leaf	
[ya'pi] /yapi/	to shoot (and hit)		[yu'pi] /yupi/	bee sting
[ə'i?i] /ə?i/	old woman		[u'i?i] /u?i/	farinha
[ita'wa] /itawa/	it is yellow		[tu'wa] /tuwa/	face
[ka'ʔa] /ka?a/	forest		[ku'ʔa] /ku?a/	middle
[ka'ta] /kata/	move		[ka'tu] /katu/	good
<i>↳ katuk</i>		[ho'wi] /howi/	blue	
		[ya'po] /yapo/	<i>muru</i> he makes	
		[i'po] /ipo/	his hand	
		[ha'po] /hapo/	root	
'i				
		[ina'mbu] /inamu/	inambu (bird)	
		[he'ndu] /henu/	she bears	
		[tani'mbuk] /tanimuk/	coals	
			[i'pi] /ipi/	his foot
			[ha'pi] /hapi/	to light (a fire)
			[ka'mbi] /kambi/	milk, breast
			[he'ndi] /hendi/	noise
			[tata'mbi] /tatambi/	straight

## 3.9. Nasalized vowels.

/i̞/

/e̞/

/a̞/

[i̞]

[e̞]

[a̞]

[ha'i̞i] /ha?i/ seed

[me'i̞e] /me?e/ he gives

[ma'i̞a] /ma?a/ he looks

[pe'h̞i] /pehi/ it is there

[pe'h̞e] /pehe/ you (pl.)

[i̞h̞e] /ih̞e/ I

[pi̞ap̞e] /piap̞e/ nail (finger)

[pu'r̞a] /pur̞a/ pretty

[ma'r̞a] /mara/ how

## 3.10. See section 5.1.1. for contrast between oral vowels and nasalized vowels.

<sup>§</sup>Nasalized high central vowel [i̞] have not been found in non-suspect position. It occurs contiguous to nasals.

[i̞m] /im/ not

[i'h̞im] /ih̞im/ smooth

[pi't̞im] /pit̞im/ tobacco

## Urubú phonemics

phonetic chart

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/ə/

/ü/

/ɛ/

[ɔ̄]

[ʊ̄]

[ɛ̄]

[ēɪ̄ɔ̄] /hēɪ̄ɔ̄/

tired

[ɛ̄ɪ̄ɔ̄]

angry

[ɛ̄ɪ̄ɔ̄]

long

[ɛ̄ɪ̄ɔ̄]

[īɪ̄ɔ̄] /ih̄ɔ̄/

it went away

[īɪ̄ɔ̄]

[īɪ̄ɔ̄] /īɪ̄ɔ̄/

narrow

[īɪ̄ɔ̄] /īɪ̄ɔ̄/

full stomach

[īɪ̄ɔ̄]

[ēɪ̄ɔ̄] /ēɪ̄ɔ̄/

he waits

[ēɪ̄ɔ̄] /ēɪ̄ɔ̄/

blue parrot

[ēɪ̄ɔ̄]

## 4. Chart of the phonemes.

## 4.1. Consonants.

	bilabial	alveolar	post- alveolar	velar	glottal
Stops	p	t	k	kʷ	?
Nasals	m	n	ng	ngʷ	
Fricatives	s	š			h
Vibrant	r				
Semivowels	w		y		

## 4.2. Oral vowels.

	Front	Central	Back
High	i	ɨ	u
Low	e	a	o

## 4.3. Nasalized vowels.

	Front	Central	Back
High	ĩ		ũ
Low	ẽ	ã	õ

## 5. Formational statements.

/p/ [b] voiced bilabial stop occurs medially in an utterance.

[sabu'kaɪ]	/sapukái/	chicken
[tabi'ʔiř]	/tapi?ir/	anta
[arabu'ha]	/arapuha/	deer
[ih̩ biši'ʔa]	/ih̩ piši?a/	my chest
[kubi'ʔša]	/kupiša/	reçá
[he'ta də di bə w̩]	/heta te ti pe w̩/	lots

[p] voiceless bilabial stop occurs elsewhere.

[i'po]	/ipo/	his hand
[u'pa]	/upa/	end, finish
[šu'pe]	/šupe/	back
[pe]	/pe/	trail
[pi'hə]	/pihə/	smell
[pa'ndu]	/panu/	speak
[piž'pə]	/pižpə/	nail (finger, toe)
[yaru'pa]	/yarupa/	port

/t/ [d] voiced alveolar stop occurs medially in an utterance.

[a'ya d̩i]	/aya t̩i/	thus
[he'ta də di bə w̩]	/heta te ti pe w̩/	lots

[t] voiceless alveolar stop occurs elsewhere.

[ta'ta]	/tata/	fire
[pa'i'te]	/paite/	far away
[he'ta]	/heta/	lots
[tu'w̩iř]	/tuw̩iř/	white
[ta'mūř]	/tamūř/	grandfather

/k/ [g] voiced velar stop occurs at word boundaries in unstressed syllables.

[u'kʷaga'tu]	/ukʷa katu/	he knows well
[pe ri gi]	/pe ri ki/	then
[e sageho]	/esak eho/	Go see!
[yiwagatu]	/yiwa katu/	right hand

[k] voiceless velar stop occurs elsewhere.

[ka]	/ka/	bee
[ha'ku]	/haku/	hot
[u'sak]	/usak/	he sees
[ku'tuk]	/kutuk/	she washes, pierces
[kurumí]	/kurumi/	young man

/kʷ/ [kʷ] voiceless labialized velar stop.

[u'kʷa]	/ukʷa/	he knows
[kʷe'hε]	/kʷehe/	time elapsed, yesterday
[ha'i'kʷεř]	/haikʷer/	after
[kʷa'si]	/kʷasi/	raccoon
[yu'kʷa]	/yukʷa/	he kills

/s/ [s] voiceless alveolar grooved fricative.

[wasá'ká]	/wasáká/	paneiro
[ri'sá]	/risáká/	cold
[pu'su]	/pusu/	stomach
[so'sok]	/sosok/	he pounds
[sí'po]	/sípo/	cipó
[sawí'ya]	/sawíya/	mouse

/š/ [š] voiceless alveopalatal grooved fricative.

[yeši'u]	/yeši'u/	he cries
[i'sá]	/iša/	it's fat
[šu'reř]	/šurer/	ground (farinha etc.)
[awa'si]	/awasi/	corn
[šu'ru]	/šuru/	rough

/m/ [mb] voiced bilabial stop preceded by an homorganic nasal fluctuates with [m] before oral voiceoids or non-voiceoids and never occurs before nasalized voiceoids or nasals.

[o'mboř]	/omor/	he throws
[mbɔ̄i]	/möi/	snake
[ha'mbae]	/heme/	tongue
[ambu'ʔa]	/amuʔa/	centipede
[ka'mbi]	/kambi/	milk, breast
[ina'mbi]	/inami/	his ear
[imɛ'mbiř]	/imemir/	child (of a woman)

[m] voiced bilabial nasal occurs elsewhere.

[ma'ŋgʷa]	/mangʷa/	frog
[ta'mūř]	/tamūř/	grandfather
[mo'wok]	/mowok/	he splits
[ame'ʔɛ]	/ameʔɛ/	I give
[himi'ʔu]	/himiʔu/	his food
[ka'nim]	/kanim/	he loses
[ma'kim]	/makim/	wet
[pi'am]	/piam/	he fetches

/n/ [nd] voiced alveolar stop preceded by an homorganic nasal fluctuates with [n] before oral voiceoids or non-voiceoids and never occurs before nasalized voiceoids or nasals.

[ya'nde]	/yane/	we, our
[ya'ndař]	/yanar/	mid-day
[he'nda]	/hena/	place
[he'ndi]	/heni/	noise
[nde]	/ne/	you, your

[n] voiced alveolar nasal occurs elsewhere.

[pa'naem]	/panem/	unlucky
[ni'no]	/nino/	he lays down
[ma'no]	/mano/	he dies
[pi'hun]	/pihun/	black
[ə'man]	/aman/	rain

/ng/ [ŋg]: voiced velar stop preceded by an homorganic nasal.

[ŋga]	/ŋga/	everyone
[takaŋgiru'hu]	/takəŋgiruhu/	tocandira
[yiŋgar̩]	/yŋgar/	he sings
[a?ɛ'ŋgi]	/a?engi/	after that, then
[ka'ŋge]	/kanga/	he defecates
[ma'ŋga]	/manga/	he experiments
[ya'ŋgaɪ]	/yŋgai/	skinny
[pu'ŋga]	/punga/	swollen
[mu'ŋgaɪ]	/mungai/	he cuts

/ngʷ/ [ŋgʷ]: voiced labialized velar stop preceded by an homorganic nasal.

[yaŋgʷa'te]	/yangʷate/	onça (woman's speech)
[kaŋgʷaru'hu]	/kangʷaruhu/	paca
[maŋgʷa'ri]	/mangʷari/	swan or stork
[ma'ŋgʷa]	/mangʷa/	frog
[amungʷer̩]	/amungʷer/	I put to sleep
[saŋgʷer̩]	/ſangʷer/	bone

/?/ [?] glottal stop.

[pi'?a]	/pi?a/	egg
[pi'?a]	/pi?a/	liver
[himi'?u]	/himi?u/	his food
[ma'?e]	/ma?e/	what
[mara'?ar̩]	/mara?ar/	hungry
[ti'?ai̩]	/ti?ai̩/	adam's apple
[he'?ɔ̩]	/he?ɔ̩/	tired

/h/ [h] voiceless glottal fricative.

[he'mbi̩k]	/hembi̩k/	delicious
[he'nɔ̩i̩]	/henɔ̩i̩/	to give a name
[hɛ'tu̩]	/hɛ'tu̩/	to smell
[ha'rəi̩]	/harai̩/	he forgets
[makah̩i]	/makahi/	caititu

/r/ [r̚] voiced alveolar trilled vibrant occurs utterance finally.

[pi'rər̚]	/pirar/	he opens
[ya'wař]	/yawar/	dog
[tu'wiř]	/tuwir/	white
[yuru'kʷař]	/yurukʷar/	throat (inside)

[r̚] voiced alveolar flapped vibrant occurs elsewhere.

[re'ko]	/reko/	he has
[yu'ru]	/yuru/	mouth
[yaka're]	/yakare/	jacare
[ka'rāř]	/karāř/	rake, scratch
[širu'kʷa]	/širukʷa/	throat
[ih̚ ra'yir̚]	/ih̚ rayir/	daughter (of a man)

/w/ [w] non-syllabic [u] high back vowel.

[we'ra]	/wera/	light, day
[we'we]	/wewe/	he flies, slowly
[ma'ʔe wi'ra]	/maʔe wira/	birds
[a'wa]	/awa/	someone
[ita'wa]	/itawa/	it is yellow
[sawi'ya]	/sawiya/	mouse

/y/ [y] non-syllabic [i] high front vowel fluctuates with [ñ] voiced alveo-palatal nasal and [dž] voiced alveopalatal two segment affricated stop.

[ña'ʔam]	/yaʔam/	we were
[ya'ʔam]		
[mū'ña]	/mūya/	he makes
[kū'ña]	/kūya/	women
[ki'ye]	/kiye/	he fears
[ki'dže]		
[yε'tε]	/yete/	true
[yu'piř]	/yupir/	he climbs
[džu'piř]		
[kiyu'wi]	/kiyuwi/	jacu
[kídžu'wi]		

/i/ [i] high front vocoid.

[i'ta]	/ita/	stone
[ya'i̪si]	/yasi/	jabute
[u'i̪i]	/u'i/	farinha
[pi'ra]	/pira/	fish
[pi'i̪a]	/pi?a/	egg

/e/ [ɛ] mid front vocoid ranges to a low front vocoid [æ].

[ye'ite]	/yetə/	true
[we'ra]	/wera/	light, day
[e'ha]	/eha/	eye
[ya'nde]	/yane/	we, our
[a'i̪e]	/a?e/	he, yes
[ki'se]	/kise/	knife

[æ] low front vocoid.

[pi'rær̩]	/pirer/	skin
[hæ'mbae]	/heme/	tongue
[hæ'i̪?e]	/he?e/	sweet
[pa'næm]	/panem/	unlucky

/a/ [a] low central vocoid.

[ara'ra]	/arara/	arara
[ta'ta]	/tata/	fire
[iwa'te]	/iwate/	it is high
[ta'pa̩]	/tape/	flat

/o/ [ɔ] low back vocoid.

[pa'ko]	/pako/	banana
[so'sok]	/sosok/	he pounds
[pi'po]	/pi?o/	feather
[ho'wi]	/howi/	blue
[kote'te]	/kotete/	nearby
[kome'i̪e]	/kome?e/	this one

/u/ [u] high back vowel

[u'pi]	/u?i/	farinha
[uru'paε]	/urupe/	purse
[u'pa]	/upa/	end, finish
[u'pak]	/upak/	he awakes
[hu'wi]	/huwí/	blood
[ku'tuk]	/kutuk/	he washes, pierces
[ku'ya]	/kuya/	like this

/i/ [i] high central vowel.

[u'i?i]	/u?i/	arrow
[pi'i?a]	/pi?i/a/	liver
[ya'wi]	/yawí/	he misses
[u'hík]	/uhík/	he arrives
[ki'ha]	/kiha/	hammock
[ki'tík]	/kitík/	he rubs

/i/ [i] high front nasalized vowel.

[ha'i?i]	/ha?i/	seed
[pete'i]	/peteí/	one
[ko'hi]	/kohí/	it is here

/e/ [ɛ] low front nasalized vowel.

[ye'i?e]	/ye?e/	he talks
[pehɛ̃]	/pehɛ/	you (pl.)

/ə/ [ã] low central nasalized vowel.

[hã'ka]	/hãkã/	igarape
[sira'hã]	/sirahã/	heart

/e/ [ɛ] low back nasalized vowel.

[i'pɔ̃]	/ipɔ̃/	narrow
[he?ɔ̃]	/he?ɔ̃/	tired

/u/ [ʊ] high back nasalized vowel.

[iã'pũ]	/iãpũ/	his stomach is full
[pana'kũ]	/panakũ/	yamaxi
[ara'rũ]	/ararũ/	blue parrot

### 5.1. Nasalization

5.1.1. Nasalized vowels contrast with oral vowels in identical environments.

[i'põ]	/ipõ/	his hand
[i'pɔ̃]	/ipɔ̃/	narrow
[pi'ra]	/pira/	fish
[pi'rã]	/pirã/	red
[ha'ī]	/ha'ī/	sour
[ha'ī̄]	/ha'ī̄/	teeth
[i'ʔa]	/iʔa/	it's fruit
[i'ʔã]	/iʔã/	his spirit

5.1.2. It has been observed that a nasalized vowel occurring syllable finally tends to nasalized vowels preceding it.

[he?ɔ̃̄̄]	/he?ɔ̃̄̄/	tired
[ri'sã̄]	/risã̄/	cold

5.1.3. Nasal consonants tend to nasalize vowels contiguous to it.

[mã'nȭ̄]	/manō/	he died
[ã'mã̄n]	/aman/	rain
[i'hã̄m]	/ihã̄m/	it is smooth
[mã'ŋȭ]	/manga/	he experiments

## 6. Syllables.

## 6.1. Syllable patterns.

<u>V</u>	<u>uruma</u>	duck (domesticated)
	<u>akʷa</u>	I know
	<u>pete̯i</u>	one
	<u>ahi</u>	hurt
	<u>p̪i̯ape̯</u>	nail (finger, toe)
<u>VC</u>	<u>ok</u>	house
	<u>in</u>	not (negative)
	<u>pian</u>	to fetch
	<u>peir</u>	basket
<u>CV</u>	<u>yi</u>	ax
	<u>ne</u>	you, your
	<u>ha</u>	hair
	<u>ka?sa</u>	forest
	<u>kʷehe</u>	time elapsed, yesterday
	<u>yuru</u>	mouth
<u>CVV</u>	<u>hai</u>	sour
	<u>hai̯me</u>	sharp
	<u>paite</u>	far away
	<u>harai</u>	to forget
	<u>sapukai</u>	chicken
<u>CVC</u>	<u>kar</u>	to hunt
	<u>petek</u>	he pushes
	<u>mapir</u>	three
	<u>usak</u>	he sees
	<u>kutuk</u>	she washes, pierces

### 6.2. Distribution of vowels in the syllable patterns.

V<sub>1</sub> The following vowels occur in V<sub>1</sub> pattern.

All oral vowels.

Nasalized vowels ã, ë, & ù.

C<sub>2</sub>V<sub>1</sub> The following vowels occur in V<sub>2</sub>.

i, e, o, u, & ë.

C<sub>2</sub>V<sub>3</sub> All vowels, oral and nasalized, occur in V<sub>3</sub>.

C<sub>3</sub>V<sub>4</sub>V<sub>5</sub> The following vowels occur in V<sub>4</sub>.

e, a, o, u, ã, ë, & ù.

C<sub>3</sub>V<sub>4</sub>V<sub>5</sub> The following vowels occur in V<sub>5</sub>.

i & ë.

C<sub>2</sub>V<sub>6</sub>C<sub>4</sub> The following vowels occur in V<sub>6</sub>.

All oral vowels.

Nasalized vowels ã, ë, & ù.

### 6.3. Distribution of consonants in the syllable patterns.

V<sub>2</sub>C<sub>1</sub> The following consonants occur in C<sub>1</sub>.

m, k, & r.

C<sub>2</sub>V<sub>3</sub> All consonants occur in C<sub>2</sub>. There are two syllable patterns.

C<sub>2</sub>V<sub>6</sub>C<sub>4</sub>

C<sub>3</sub>V<sub>4</sub>V<sub>5</sub> All consonants except s & y occur in C<sub>3</sub>.

C<sub>2</sub>V<sub>6</sub>C<sub>4</sub> The following consonants occur in C<sub>4</sub>.

p, k, m, n, & r.

### 6.4. Combinations of syllable patterns in a word.

#### 6.4.1. Two syllables.

V.CV	a.hí	pain, hurt
V.CVC	a.man	rain
	u.kír	it rains

V.CVV	u.kʷái	it burns
CVV.CV	paite	far away
	hai.me	sharp
CVV.CVC	hai.kʷer	after
CV.CVV	hu.wái	tail
	ka.nei	pitch (of a tree), brea
CV.CV	yi.ra	he unties
	he.ta	lots
CV.CVC	ke.nim	to lese
	ku.tuk	she washes, pierces
CV.VC	pe.ir	basket
	pi.am	to fetch

## 6.4.2. Words of three syllables.

V.V.CV	i.ã.ká	his head
V,V.CVV	i.ã.púi	his nose
V.CV.CV	a.ka.yu	caju
	a.ku.ší	cotia
CV.CV.CV	ya.ka.re	jacare
CV.CV.CVV	sa.pu.kái	chicken
	pi.na.ráí	knee
CV.CV.V	pe.te.í	one
	ka.ra.i	white man
CV.V.CV	ti.a.pu	to make a noise
	pi.ã.pé	nail (tee, finger)
CV.CV.CVC	yi.me.nar	to marry
CV.CV.VC	ya.šu.er	worthless

## 6.4.3. Words of four syllables.

V.CV.CV.CV	a.ra.pu.ha	deer
V.CV.CV.CVC	i.ta.ta.mor	plate
CV.CV.CV.CV	ya.wa.re.te	onça (woman's speech)

CV.CV.CV.CVV	ma.ra.ka.tái	ginger
CV.CV.CV.CVC	ka.?a.pi.har	Guaja (wood-dweller)
	ki.se.ra.?ír	pocket knife (little knife)

## 6.4.4. Five syllables.

V.CV.CV.CV.CV	a.wa.śi.ra.ri	corn cob
V.CV.CV.CV.CVV	i.ra.pe.ru.wái	on the other side of the igarsape
CV.CV.CV.CV.CVC	wa.ru.wa.ra.?ír	little glass, eyeglasses
	yu.mu.pu.ru.ruk	looking over the shoulder

6.5. Stress placement correlates in part with morpheme divisions. Stress is not indicated directly in the phonemic transcription except by acute accent mark on glides, but morpheme boundaries crucial to stress placement are indicated. There are two stresses: primary marked " and secondary marked ' .

6.5.1. Primary stress syllable is characterized by greater intensity and relatively shorter duration.

6.5.1.1. Primary stress occurs on the final syllable of a word except where a clitic occurs.

[ha"ku]	/haku/	hot
[ta"ta]	/tata/	fire
[yaka"re]	/yakare/	jaeare
[pete"í]	/petei/	ene
[kara"i]	/karai/	white man
[arapu"ha]	/arapuha/	deer

6.5.1.2. Glide is indicated by a stress mark on the first of the two vowels, when they occur with primary stress.

[hu"waí]	/húwái/	tail
[u"kwáí]	/ukwái/	it burns
[pu"kúí]	/pukúí/	he digs

6.5.1.3. With clitics, primary stress falls on the syllable preceding the clitic.<sup>1</sup>

[tapu"rupé]	/tapuru-pe/	to the worm
[há"karupi]	/háká-rupi/	through the igarsape
[í"hérehe]	/ihé-rehe/	for me

<sup>1</sup>A clitic is a post-pended particle that occurs without primary stress.

5.2. Secondary stress is characterized by less intensity than primary stress, but more than unstressed syllables and by shorter duration than unstressed syllables.

[a'rapu"ha]	/arapuha/	deer
[ha'wakɛ"hař]	/hawakehar/	his wife

5.2.1. Secondary stress occurs on the antepenult syllable of one morpheme words of more than three syllables.

['taka"ñgir̩]	/takangir/	tecadira
['aku"ši]	/akuši/	cetia
['pete"i]	/petei/	one

5.2.2. In words of more than one morpheme, secondary stress also occurs on the last syllable of the first morpheme. Morpheme break is indicated by = .

[ki'sera"?iř]	/kise=ra?iř/	pocket knife (small knife)
[taka'ñgiru"hu]	/takangir=uahu/	tesandira ant
[ya'ware"te]	/yawar=ete/	ença (woman's speech)

5.3. Clitics of two syllables take a secondary stress on the final syllable.

[ka"?aru'pi]	/ka?a-rupi/	through the weeds
[i"?tare'hɛ]	/ita-rehe/	with a reek

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Note: A phrasal stress and other phenomena have been noted and will be described in a later paper when other higher level structures are described.