

OROKAIVA PHONOLOGY AND ORTHOGRAPHY

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0 INTRODUCTION

This paper is a description of the phonemic structure of the Orokaiva language, which is spoken by almost 25,000 people in the Northern District of Papua and is one language of the Binandere family of the Non-Austronesian languages.

The dialect studied was that spoken by the people who live between Agenehambo and Wasida on the road from Popondetta to Kokoda.

The corpus of data consists of about 2000 words and phrases and about 70 pages of text. This was collected between May 1971, and July 1974, 21 months of which was spent in residence at Sui village and 7 months with Orokaiva speakers at the Summer Institute of Linguistic's base at Ukarumpa, Eastern Highlands district.

The Orokaiva materials were supplied mainly by Leonard Murray Gagari and Lot Vernon Sareki of Sui village. Alan Healey assisted in preparing this paper for publication.

1 INVENTORY OF PHONEMES

CHART OF CONSONANT PHONEMES

		Bilabial	Alveolar	Velar	Glottal
Stops	Vls	p	t	k	
	Vd	b	d	g	
Grooved Fricatives	Vls		s		h
	Vd		j		
Nasals	Vd	m	n	ŋ	

CHART OF VOWEL PHONEMES

	Front	Central	Back
High	i		u
Mid	e		o
Low		a	

1.3 DESCRIPTION OF CONTRASTIVE FEATURES

The consonants contrast in manner of articulation between stops, fricatives, and nasals. The stops and central fricatives both contrast between voiced and voiceless. In point of articulation the stops contrast between bilabial, alveolar, and velar positions. The fricatives contrast between alveolar and glottal and the nasals contrast between bilabial, alveolar, and velar points of articulation.

In manner of articulation, the vowels contrast between high, mid, and low tongue position and the high and mid vowels contrast between front and back points of articulation.

2 SYLLABLE PATTERNS AND INTERPRETATION

2.1 SYLLABLE PATTERNS

following syllable patterns occur:

V	a single vowel		
	/a.ja/		'mother'
	/be.u.je/		'hungry'
	/pam.ba.so.a/		'you will go'
VC	a vowel plus a nasal		
	/an.do/		'skin'
	/hu.in/		'conch'
CV	a consonant plus a vowel which is the most common syllable pattern		
	/ma.ma/		'father'
	/a.di.di.bo/		'picture'
CVC	a consonant plus a vowel plus a nasal		
	/don.da/		'things'
	/a.tun.gu/		'cup'

Of these four patterns, only V and CV are supported by non-suspect evidence.

V.CV	['a.bo]	/abo/	'seat'
V.CV.CV.CV	['a.řa.bo.řa^]	/adaboda/	'O.K.'
CV.V	['be^o]	/beo/	'forehead'
CV.V.CV	['po.e^ke^]	/poeke/	'break in two'

2.2 INTERPRETATION OF CONTOID SEQUENCES

The only word-initial contoid sequences are [mb], [nd], [dʒ], and [ŋg]. Since there are no non-suspect word-initial contoid clusters, these sequences have been interpreted as the single consonants /b/, /d/, /j/, and /g/ respectively.

The only word-medial contoid sequences noted so far are [mp], [mb], [nd], [ndʒ], [ŋk], and [ŋg]. Despite the lack of non-suspect contoid clusters in word-medial position, these sequences have been interpreted as clusters of two consonants /mp/, /mb/, /nd/, /nj/, /nk/, and /ng/ respectively for the sake of simplicity. This involves setting up the two syllable patterns VC and CVC without the support of non-suspect evidence.

CVC	[ṭa]	/tan/	'spatula'
CVC.CV	[ˈḥan.dʒaː]	/hanja/	'bed'
V.CVC.CV	[ˈa.ʃum.baː]	/adumba/	'chair'
VC	[o]	/on/	'lime'
VC.CV.CV	[ˈam.bo.taː]	/ambota/	'later'
CV.VC.CV	[ˈha.ʉŋ.keː]	/haunke/	'split'

(An alternative analysis retaining V and CV as the only syllable patterns would set up five extra nasalized vowel phonemes and would treat the medial contoid sequences as prenasalized allophones of the stop and affricate phonemes. It may be noted that whereas /b/, /d/, and /g/ already have prenasalized allophones, /p/, /j/, and /k/ do not.)

2.3 INTERPRETATION OF VOCOID SEQUENCES

The six non-suspect vocoid sequences [eː.o], [o.eː], [eː.a], [a.eː], [o.a], and [a.o] have all been observed and are regarded as two vowels constituting the nuclei of two syllables.

	[ˈbeː.o]	/beo/	'forehead'
CV.V	[ˈho.eː]	/hoe/	'come back'
V.VC.CV	[ˈeː.am.bo]	/eambo/	'small brother'
	[ˈa.eː]	/ae/	'wife'
CV.VC	[ˈko.a]	/koan/	'brain matter'
CV.V	[ˈdʒa.o]	/jao/	'sister-in-law'

On the basis of this pattern, the fourteen suspect vocoid sequences [i.eː], [i.a], [i.u], [i.o], [eː.i], [eː.u], [a.i], [a.u], [u.i], [u.eː], [u.a], [u.o], [o.i], and [o.u] have all been interpreted similarly as two vowels constituting the nuclei of two

syllables.

2.4 INTERPRETATION OF NASALIZED VOCOIDS

Nasalized vocoids word finally or preceding [h] have been interpreted as Vn.

[^h dʒi.hu.he ^v]	/jinhunhen/	'tie'
[sa ^h]	/san/	'betel nut'
[o ^h]	/on/	'lime'
[ta ^h]	/tan/	'spatula'

Where nasalization occurs on a word with a [V.V] sequence, both vocoids are nasalized [^hV.V] and word finally it has been interpreted as V.Vn.

[^h a.i]	/ain/	'sediment on rocks'
[^h hu.i]	'huin'	'conch'
[^h pe ^v .u]	/peun/	'hole going through'
[^h ko.a]	/koan/	'brain matter'

All other nasalized vocoids are contiguous to a nasal consonant and have been interpreted as allophones of the ordinary vowels.

[^h hiŋ.gi]	/hingi/	'mustard'
[me ^v]	/me/	'shame'

3 WORD PATTERNS

3.1 WORDS OF ONE MORPHEME

One to four syllables have been observed in unaffixed words. One syllable words may be constructed in four ways:

V	/i/	'tree'
VC	/on/	'lime'
CV	/bo/	'bark cloth'
CVC	/san/	'betel nut'

Two syllable words have been observed with the following eight syllable combinations:

	/a.e/	'wife'
V.VC	/a.in/	'algae'
V.CV	/u.tu/	'foot'
VC.CV	/am.be/	'sago'
	/be.o/	'forehead'
CV.VC	/hu.in/	'conch'
CV.CV	/ko.do/	'rocks'
CVC.CV	/gam.ba/	'cane'

Three syllable words have been observed with the following fourteen syllable combinations:

V.V.V.	/i.a.e/	'daughter'
V.V.CV	/o.i.ne/	'play'
V.VC.CV	/e.am.bo/	'small brother'
V.CV.V	/i.da.e/	'finished'
V.CV.CV	/i.sa.pa/	'small'
V.CVC.CV	/e.tum.bu/	'tail'
VC.CV.CV	/in.ge.ni/	'arm'
CV.V.CV	/ti.u.ke/	'cut'
CV.VC.CV	/do.in.ge/	'how many'
CV.CV.V	/ba.da.i/	'throw'
CV.CV.CV	/ta.da.ma/	'star'
CV.CVC.CV	/to.hum.be/	'catch it'
CVC.CV.V	/pam.bu.a/	'they went'
CVC.CVC.CVC	/jin.hun.hen/	'tie'

The following four syllable combinations have been observed:

CV.CV.CV.CV	/pe.bi.ta.di/	'full'
V.CV.CV.CV	/o.be.di.ke/	'pour it out'
V.CV.CVC.CV	/e.ge.dem.be/	'turn'
CV.V.CV.CV	/de.i.ta.de/	'where'

3.2 WORDS OF TWO OR MORE MORPHEMES

Most occurrences of words four syllables or longer in the data are reduplication:

/ta.ta.ta.ta/	'shiver'
/tu.tu.tu.tu/	'shake with fright'
/ga.sa.ga.sa/	'to shake something'
/pi.pi.pi.pi/	'slip'
/ku.ku.ku.ku/	'noise of wings'
/so.gi.gi.gi/	'a call used just before throwing a spear'

or compounds of two words:

/a.he.di.ke/a.he.de i.ke/	'turn it over' (turn - put)
/du.be.di.ke/du.be.de i.ke/	'crumble' (crumple - put)
/pe.bi.ta.di/pe bi.ta.di/	'full' (mouth - come up)
/em.bo.me.ni/em.bo me.ni/	'people' (man - boy)

or affixed words:

/pam.ba.so.na/	'I will go'
/a.dum.be.jo/	'you sit (polite)'
/in.de.su.ja/	'he will eat'

Compound, reduplicated, and affixed words have been observed to contain up to ten syllables. Examples of five syllable words:

/je.ne.te.ba.te/	'uncertainty'
/su.bi.no.bi.no/	'darkness of setting sun'
/gi.di.di.di.di/	'rustling of leaves'
/ta.ta.ta.ta.te/	'begin to shiver'

six syllable words:

/i.de.dem.bi.ta.ja/	'become a lake'
/a.he.de.ka.so.na/	'I will turn it over'
/je.ne.ki.ho.ne.ki/	'not familiar with'
/du.bi.to.ha.i.to/	'crumple up'
/u.ji.ji.ba.ji.ji/	'shaken by something'

seven syllable words:

/ja.ja.du.ke.te.de.te/	'Did they all jump?'
/du.du.be.de.ka.so.na/	'I will crumple (pl. object)'

/sa.sa.pe.ka.sa.pe.da/

'many are ripe'

/ja.jan.di.de.ka.so.da/

'pl. subject turn pl. object

eight syllable words

/sa.sa.pe.ka.sa.pe.te.da/

'pl. subject became rotten'

/o.be.de.ki.ta.he.de.ki/

'look over each shoulder'

One ten syllable word has been observed:

/e.na.ba.ji.do.a.na.ba.ji.do/

'to turn around while looking
behind'

4 DISTRIBUTION OF PHONEMES

A syllable can begin with any vowel or any consonant and end with any vowel, but closed syllables may only be closed by /m/ or /n/. All possible CV, Vm, and Vn sequences have been observed to occur.

A word can begin with any vowel or consonant, and can end with any vowel or /n/.

All 20 possible sequences of two diverse vowels occur, but no geminate clusters have been observed.

The only consonant clusters which have been observed to occur are medial /mp/, /mb/, /nd/, /nj/, /nk/, /ng/, and /nh/.

5 ALLOPHONES AND CONTRASTS

5.1 STRESS

Stress is non-phonemic. The primary stress is always on the first syllable of each word. If the first two syllables involve the sequence Va, then the second syllable sometimes seems to be nearly as prominent as the first one.

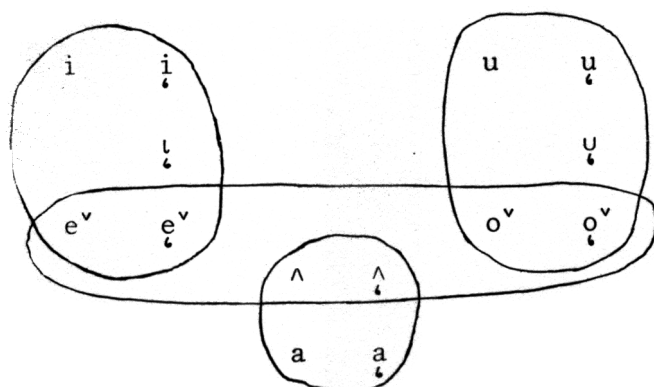
In reduplicated and compound words a secondary stress occurs on the first syllable of the second root. In simple words a secondary stress tends to occur on the third syllable, but it is not easily heard if that syllable does not contain a stop or /a/.

5.2 VOWELS

Vowels in monosyllables and stressed syllables tend to be lengthened.

All five vowel phonemes have nasalized allophones when contiguous to a nasal consonant.

5.2.1 Phonetic Work Chart



5.2.2 Front Vowels

There are two front vowels that occur in all vowel positions.

/i/ [ɪ] voiced, high, open, front unrounded vocoid. Occurs word initially in closed syllables.

[ɪ̥n.da.ʁi] /indadi/ 'food'

/i/ [i] voiced, high, close, front unrounded vocoid. Occurs in all other positions.

[i.taʌ] /ita/ 'up there'

[hi.hi] /hihi/ 'story'

[si] /si/ 'cry'

[t̪im.ba.ʁi] /timbadi/ 'dip'

/e/ [e̞] voiced, lowered, mid, close, front unrounded vocoid.

[e̞̥.pe̞̥] /epe/ 'uncle-grandfather'

[e̞̥] /e/ 'mother'

[e̞̥.ʁe̞̥.bi] /edebi/ 'here'

Examples of contrast of /i/ and /e/:

/e/	'mother'	/inda/	'eat'
/i/	'fire'	/enda/	'land'
/ide/	'dance'	/ai/	'there'
/ede/	'stand'	/ae/	'wife'

5.2.3 Mid Vowel

There is one mid vowel that occurs in all vowel positions

/a/ [a[^]] voiced, raised, low, open, central unrounded vocoid. Occurs word finally in multi-syllabic words.

/a/ [a] voiced, low, open, central unrounded vocoid. Occurs elsewhere.

['a.pa [^]]	/apa/	'big brother-sister'
['a.řa.bo.řa [^]]	/adaboda/	'O.K.'

5.2.4 Back Vowels

There are two back vowels that occur in all vowel positions

/u/ [u[^]] voiced, high, open, back rounded vocoid. Occurs word initially in closed syllables.

['umba [^]]	/umba/	'take'
-----------------------	--------	--------

/u/ [u] voiced, high, close, back rounded vocoid.

['u.tu]	/utu/	'foot'
[u]	/u/	'coconut'

/o/ [o] voiced, mid, close, back rounded vocoid.

[o]	/o/	'meat'
['o.řo.ho]	/odoho/	

Examples contrasting of /e/, /a/, and /o/:

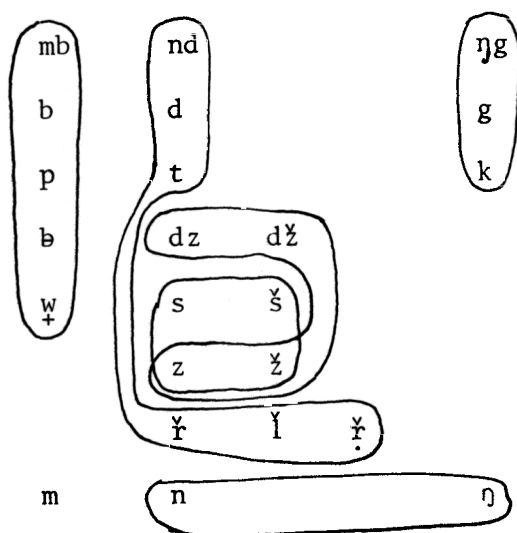
/emo/	'this'	/be/	'true'
/amo/	'that'	/ba/	'taro'
/omo/	'that over there'	/bo/	'bark cloth'
/en/	'yes'	/ore/	'Goodbye!'
/an/	'Here, Fido!'	/ora/	'spider'
/on/	'lime'	/oro/	'Hello!'

Examples contrasting /u/ and /o/:

	'coconut'	/usasa/	'light'
/o/	'meat'	/osa/	'love'
/umo/	'you'	/uje/	'choice'
/omo/	'that one'	/oje/	'cloud'
/ungo/	'you pl.'	/ibu/	'husband'
/ongo/	'pencil'	/ibo/	'strong'

5.3 CONSONANTS

5.3.1 Phonetic Work Chart



5.3.2 Stops

There are voiced and voiceless stops. The voiceless stops are all lightly aspirated in normal speech.

/b/ [b] voiced bilabial stop. Occurs initially and medially after /m/.

[mb] voiced bilabial prenasalized stop. Occurs word initially in free fluctuation with [b] in the middle of an utterance.

['b̥an.d̥ɛ] ~ ['mb̥an.d̥ɛ] /bande/ 'house'

[b] voiced bilabial fricative. Occurs intervocalically except before /a/.

['a.bo]	/abo/	'seat'
['i.bu]	/ibu/	'husband'
['a.to.bo]	/atobo/	'father-in-law'
['e [˘] .be [˘]]	/ebe/	'sleep'

[w₊] voiced bilabial rounded fricative. Occurs intervocalically before /a/.

['e [˘] .w ₊ a [˘]]	/eba/	'sea'
['ki.ki.w ₊ a [˘]]	/kikiba/	'drawn decorations'
['bo.w ₊ a [˘]]	/boba/	'soup'
['so.ko.w ₊ a [˘]]	/sokoba/	'lie'

/p/ [p] voiceless slightly aspirated bilabial stop. Occurs syllable initially .

/p/ and /b/ contrast in the following identical environment:

/be/	'fruit'	/ebe/	'sleep'
/pe/	'space'	/epe/	'uncle'

and in the following analogous environments:

/bisa/	'beans'
/pisada/	'wind'
/adumba/	'chair'
/ahumpa/	'nearby'

/d/ [d] voiced alveolar stop. Occurs initially and medially after /n/.

[da]	/da/	'village'
['a _˘ n.do]	/ando/	'skin'
['e [˘] n.da [˘]]	/enda/	'ground'

[nd] voiced alveolar prenasalized stop. Occurs word initially in free fluctuation with [d] in the middle of an utterance.

[ndu] ~ [du]	/du/	'sister - brother'
[nda] ~ [da]	/da/	'village'
[ndi] ~ [di]	/di/	'bird'

[ɣ̥] voiced alveolar flap

[ɣ̥] voiced retroflexed alveopalatal flap

[ɣ̥] voiced lateral flap.

These occur in free fluctuation with each other in word medial positions except after a nasal. [ɣ̥] occurs most frequently.

[ˈa.ɣ̥a.ɓo.ɣ̥aː] ~ [ˈa.ɣ̥a.ɓo.ɣ̥aː] /adaboda/ 'O.K.'

[ˈeː.ɣ̥eː.bi.ɣ̥aː] ~ [ˈeː.ɣ̥eː.bi.ɣ̥aː] /edebida/ 'here'

/t/ [t] voiceless, slightly aspirated alveolar stop. Occurs syllable initially.

The stops /t/ and /d/ contrast in the following examples:

/hute/ 'shell of nut' /ti/ 'tooth'

/hude/ 'Come (pl.)!' /di/ 'bird'

/ete/ 'Did you do it?' /tado/ 'hit'

/ede/ 'Stand up!' /dado/ 'dance song'

/g/ [g] voiced velar stop. Occurs initially and medially

[ˈgu.ɓeː] /gube/ 'carve out'

[ˈeː.geː] /ege/ 'wash'

[ˈeːŋ.gi.ti] /engiti/ 'next to'

[ŋg] voiced velar prenasalized stop. Occurs word initially in free fluctuation with [g] in the middle of an utterance.

[ga] ~ [ŋga] /ga/ 'rain'

[ˈgi.si] ~ [ˈŋgi.si] /gisi/ 'pineapple club'

[ˈgɔm.ɓeː] ~ [ˈŋgɔm.ɓeː] /gombe/ 'to set on eggs'

/k/ [k] voiceless velar stop. Occurs syllable initially.

/g/ and /k/ contrast in the following identical environments:

/ga/ 'rain' /ka/ 'girl'

/godo/ 'type of medicine' /kodo/ 'rock'

/ege/ 'wash' /eke/ 'hang'

and in the following analogous environments

/gamba/	'cane'	/kambu/	'bite'
/gagaha/	'big noise'	/kakane/	'mark'
/ganda/	'face decoration'	/kando/	'lizard'
/paunge/	'knee'	/haunke/	'split'

5.3.3 Fricatives

/j/ [dz] voiced alveolar grooved affricate.

[dʒ] voiced alveopalatal grooved affricate.

voiced alveolar grooved fricative.

[ʒ] voiced alveopalatal grooved fricative.

These are all freely fluctuating allophones of the same phoneme /j/ of which [dʒ] occurs most frequently.

Occurs syllable initially.

['a.dʒa^]	~ ['a.dza^]	~ ['a.za^]	/aja/	'mother'
['dʒa.o]	~ ['dza.o]	~ ['ʒa.o]	['za.o]	/jao/ 'sister'
['han.dʒa^]	~ ['han.dzâ]	~ [han.ʒâ]	/hanja/	'bed'

/s/ [s] voiceless alveolar grooved fricative

voiceless alveopalatal grooved fricative. These two sounds are freely fluctuating allophones of /s/ which occurs syllable initially.

['sa.sa.ha^]	/sasaha/	'kunai grass'
['sa.sa.ři]	/sasadi/	'wet'
['iŋ.go.se^]	/ingose/	'leaves'
[su] ~ [šu]	/su/	'juice'

/j/ and /s/ contrast in the following words:

/sape/	'rotten'	/susu/	'urine'
/jape/	'grandchild'	/jujumi/	'bee'
/sido/	'hair'	/asa/	'its place'
/jido/	'swing'	/aja/	'mother'

/h/ [h] voiceless glottal fricative. Occurs syllable initially.

['hi.hi]	/hihi/	'story'
['ha.e ^v]	/hae/	'come'
['o.ho.ɾu]	/ohodu/	'chicken'
['o.ɾo.ho]	/odoho/	'now'

5.3.4 Nasals

/m/ [m] voiced bilabial nasal. Occurs in all consonant positions except word final or before an alveolar or velar stop.

[m̥]	/mu/	'milk'
['m̥u.n̥ə]	/munə/	'smell'
['m̥a.m̥a [^]]	/mama/	'father'
['am.be ^v]	/ambe/	'sago'
['um.ba [^]]	/umba/	'take it'

/n/ [n] voiced alveolar nasal. Occurs initially and medially except preceding a bilabial or velar stop.

[n̥]	/no/	'your'
['sa.n̥a.n̥a]	/sanana/	'spear'
['an.do]	/ando/	'skin'
['on.de ^v]	/onde/	'ear'

[ŋ] voiced velar nasal. Occurs before a velar stop.

['h̥a.ŋ.ke ^v]	/haunke/	'split'
['aŋ.ga [^]]	/anga/	'left'
['hiŋ.gi]	/hingi/	'spice eaten with betel nut'
['dʒaŋ.gu]	/jangu/	'breath'

[V̥] nasalization of the preceding vowel or vowel cluster. Occurs word finally and preceding /h/.

[sḁ]	/san/	'betel nut'
[o̥]	/on/	'lime'
[se̥.i]	/sein/	'disappear'
['dʒi.h̥u.h̥ɛ]	/jinhunhen/	'tie'

/ŋ/ [ŋ] voiced velar nasal. This phoneme has been observed in only three words. It is in initial position in free fluctuation with the prenasalized voiced velar stop [ŋg].

[ŋa]	~ [ŋga]	/ŋa/	'nest', 'canoe', 'truck'
['ŋa.to.ʔo]	~ ['ŋga.to.ʔo]	/ŋatodo/	'wooden bowl'
['ŋa.hi.a^]	~ ['ŋga.hi.a^]	/ŋahia/	'hard'

(Note: The medial [ŋ] preceding [k] and [g] has been treated as an allophone of /n/ rather than as a highly frequent occurrence of an /ŋ/ phoneme that is rare or non-existent in other positions.)

Examples contrasting /n/ and /ŋ/ are:

/na/	'I'	/ŋa/	'nest'
/natedadi/	'carved post'	/ŋatodo/	'wooden bowl'
/nainge/	'where?'	/ŋahia/	'hard'

6 EXISTING ORTHOGRAPHY

The Anglican Church has been writing hymns and liturgy in Orokaiva for 50 years. The Gospels of Mark and John are also translated into Orokaiva and published. In most previously written material, the orthography shown below was used.

Phoneme	Allophone	Existing Orthography	Suggested Orthography
/b/	[b] [mb]	b, w	b
	[b]	v, w	v
	[w]	w	v
/p/	[p]	p	p
/d/	[d] [nd]	d	d
	[ɟ] [ɟ] [ɟ]	r or l (rarely)	r
/t/	[t]	t	t
/g/	[g] [ŋg]	g	g
/k/	[k]	k	k
/j/	[dʒ] [dz] [z] [ʒ]	j or z (rarely)	j
/s/	[s] [ʃ]	s	s
/h/	[h]	h	h
/m/	[m]	m	m
/n/	[n] [ŋ] [ɲ]	n	n
	[ŋ] [ŋg]	ng	ng
/i/	[i] [ɪ]	i	i
/e/	[e ^v]	e	e
/a/	[a] [a [^]]	a	a
/o/	[o]	o	o
/u/	[u] [ʊ]	u	u

A good percentage of men who are now between ages 15 and 30 were taught to read in the vernacular with this previous orthography during their first years of school. During the last ten years, most schools have taught the first years in English. Yet there are a good number of people who correspond with Orokaiva people working away from the villages and samples of their letters reveal that most people make the non-phonemic distinctions made in this orthography for /b/ and /d/.

But in the two cases where the letters represent non-predictable fluctuation - l and r [ř, ř, ě] and j and z [dž, dz, z, ž] - there is great variation in usage.

7 WRITING TESTS

It was decided to run some formal writing tests to determine which symbols are preferred by Orokaiva people who can write their own language. At the same time, it was hoped that these tests would demonstrate the degree of literacy in the vernacular among various groups in the Orokaiva area.

(a) The testing was to determine what the majority of people who already write Orokaiva prefer to write for the

intervocalic /b/:

'v' for all occurrences or

'w' for all occurrences or

'w' preceding /a/ and 'v' preceding other vowels

intervocalic /d/:

'r' or

'l'

and for /j/:

'j' or

'z'

(b) As a literacy test we wanted to find out how well those students presently attending standard 5 and 6 and those attending high school could write their language and compare these with the people who studied the vernacular in the first three grades in mission school between about 10 and 30 years ago.

7.1 GROUPS TESTED

The first group tested was a class of 23 standard 6 students at Awala Primary school a mile from Sui village. The second group tested was a group of 33 standard 5 students from Agenehambo Primary School about 5 miles from Sui village. The third group tested was a group of 18 form 2, 3, and 4 high school boys from the Martyrs' Memorial School about 5 miles from Sui village. The fourth group tested was a group of 10 volunteers from Sui village. Six of them were students of mission school that taught Orokaiva in standards 1, 2, and 3. Four of them were standard five and six leavers of government schools where English was taught in all standards.

7.2 FORM OF THE TEST

The test was in two parts. The first part was to write three

stories as dictated in Orokaiva and the second part was to write 30 words in Orokaiva as dictated in English.

The first story contains 24 occurrences of the intervocalic /b/ 8 of which are before /a/.

/Embo na amita iadidi ta degi ke einge ena, "Ke sokoba tobu Ungota kaba adi tapa abojo. Ebuto ungo na bouba tabeto indesoba, adaboda, date heba edemite obu odomite umbuto jebibi na gajukebujo. Heba amo be kibujo, na abo eha kikiba etena. Pude idae au ungo i undukabo ebekau ebadi hanja ta sedeketo ebubujo." Ainge enu eba ta bena./

The second story contains 28 occurrences of intervocalic /d/.

/Oio nau kakada. Na ahadi edebi no degi ta ede kaitena. Odoho singapoda tapa edeto edidi ede kogoda, idae ududou odo odoobi ta ehako todesoda. Adaboda eto abo pededa, ke idae pededa, odedede./

The third story contains 28 occurrences of the phoneme /j/

/Nau jape ta jao iji tapa jujune asi uje uija. Iji bahai amina ke einge ibu ta degi ijija, "Embo, jaede umbuto da gajikejo. Na pambuto i jasona. Ainge ijioi amita tunga jamo adi ibu na tumo asi uje ae itiketo da gajikitaja. Pamone na sebahe ta pambuto i jetei boboi jujumi na beto kahaja, aboembo nau jape ta jao embo ta pude asi uje ae toto da jo ta idiuja./

The second part of the test consisted of 30 words in English. The first 10 of which when translated into Orokaiva contain the intervocalic /b/, the second 10 contain the intervocalic /d/, and the third 10 contain the phoneme /j/.

- | | | | |
|----------------|----------|-------------|--------------|
| 1. 'pot' | /obu/ | 6. 'seat' | /abo/ |
| 2. 'sea' | /eba/ | 7. 'good' | /jabotoho/ |
| 3. 'sleep' | /ebadi/ | 8. 'hot' | /bebede/ |
| 4. 'tongue' | /ibibi/ | 9. 'run' | /tutube/ |
| 5. 'sandpaper' | /jebibi/ | 10. 'dance' | /ide tibadi/ |

Ten words containing intervocalic /d/.

1. 'rainbow'	/edidi/	6. 'moon'	/hadiga/
2. 'head'	/sido/	7. 'single boy'	/singapoda/
3. 'stand'	/ede/	8. 'afternoon'	/tude/
4. 'picture'	/adidibo/	9. 'centre'	/odohuta/
5. 'you stay'	/idijo/	10. 'two'	/hediso/

Ten words containing /j/.

'peace'	/jamo/	6. 'big'	/pajide/
2. 'want'	/uje/	7. 'hold it'	/jige/
3. 'cloud'	/oje/ or /johi/	8. 'banana'	/pije/
4. 'sun'	/iji/	9. 'yawn'	/kija/
5. 'liver'	/jo/ or /jenge/	10. 'louse'	/jigi/

7.3 RESULTS OF THE TEST

For the purpose of sorting out the most reliable data for checking test results, we divided the test papers into three groups. The first group was comprised of the two standard 5 and 6 classes, the second group was of the high school students, and the third group was the people from Sui village.

The group of elementary student papers sub-divided into the three following groups:

(a) Those who apparently had no idea of how to write their own language and wrote a mixture of English and nonsense words. There were 32 papers in this group. Three students in all were excused for being from a different language group.

(b) Those that adapted the English alphabet and tried to write their language with it. E.g. /e/ or /ei/ becomes 'a', /ai/ becomes 'i', /i/ becomes 'e', /j/ becomes 'g', etc. There were 17 papers in this group.

(c) Those that wrote fairly well with the existing Orokaiva orthography. The 4 papers in this group were the preferred ones for determining test results.

The group of 18 high school boys subdivided into two groups.

(a) Those 9 that were too embarrassed to hand in their papers because they couldn't write their own language.

(b) Those 9 that felt fairly sure of their ability to handle the

existing orthography

The group of volunteers from Sui village subdivided into the following two groups:

(a) Those who had fairly recently left elementary school and wrote their language with the adaptation of the English alphabet described above. These four papers weren't included in the test results.

(b) Those who had studied Orokaiva in the first three standards in mission schools and used the orthography quite adequately. These 6 papers were considered to be the most reliable for test results.

The results of the writing test for the 19 people who handed in satisfactory papers are presented in Table 1.

7.4 CONCLUSIONS

(a) The majority of people who are fairly able to write with the existing Orokaiva orthography prefer to write:

'v' for the intervocalic /b/ in all environments,

'r' for the intervocalic /d/, and

'j' for all occurrences of /j/.

The frequent use of 'g' for /j/ is only because of the influence of calling the letter 'g' a /ji/ in the English alphabet; 'g' is not being considered as a possible representation of /j/.

(b) The majority of standard 5 and 6 students and school leavers who have learned to write in English are not able to transfer this knowledge in order to write Orokaiva adequately. Therefore there is a great need to do literacy work in the vernacular among this group.

The group with the greatest facility in using the existing orthography was found to be those who were taught in the vernacular first in the first few years of primary school.

8 ORTHOGRAPHY RECOMMENDATIONS

We propose three changes in the existing orthography:

that only 'r' be used to represent intervocalic /d/ = [ř], [ṛ̌], and [ḷ];

that only 'j' be used to represent /j/ = [dž], [dz], [ž], and [z];

and that only 'v' be used to represent intervocalic /b/ = [b] and [ẉ]

In recommending a change from 'w' to 'v' for symbolizing intervocalic /b/ = [b] and [ẉ], we recognize that this will give difficulty to older people who learned to read through the existing orthography. If they object strongly to this change it may prove necessary to

TABLE 1: RESULTS OF WRITING TESTS

Testee	intervocalic /b/		intervocalic /d/		/j/	
	story	words	story	words	story	words
Std. 5 & 6	v & 3w(a), 2w	v & lw(i)	r	r	j	j & 2g
	v	v	r	r	j	j
	v	v	r	r	j & 3s	j & lg
	v & 6w(a), 2w(o)	v & 2w(a), lw(o)	r & 3 l	r	j & 2s	j & 2z
High school	v	-	r	-	j & 4g	-
	v	v	r	r	j & 3g	j & 2g
	v	v	r	r	j	j
	v	v	r	r	j	j
	v	v	r & 3 l	r	j	j
	v	v	r	r	j & 3g	j
	v	v	r	r	j & 12g	j & 5g
	v	v	r	r	j & 2g	j & lg
	v	v	r	r	j	j
	v & lw(a)	v	r	r	j	j
Sui village	v & 3w(a)	v	r	r	j	j
	v	v	r	r	j	j
	v	v	r	r	j	j
	v	v	r	r	j	j
	v & 2w(a), 2w(o)	v & lw(o)	r	r	j	j
Totals	142 v(a)	52 v(a)	526 r	216 r	503 j	167 j
	15 w(a)	2 w(a)	6 l		24 g	11 g
	308 v(V)	177 v(V)			5 s	2 z
	6 w(V)	3 w(V)				

* Testee D showed considerable English bias. V = vowel other than /a/

retain the 'w' spelling for a few years in a few common words such as ewa /eba/ 'sea'.

In the printed hymn book and gospels currently in circulation and in a primer used about 15 years ago, certain words with initial /b/ = [b] are written with 'w'. This apparently is the result of the early language work and the primer being in another dialect. We recommend that in new publications as many of these words as possible be re-spelled with initial 'b' to match the way they are pronounced in the dialect now being used for literature. The old spelling with 'w' need only be retained in a few common words such as wahai /bahai/ 'one' where older literates object strongly to the change.

9 SAMPLE TEXT

Phonetic transcription: [di 'ndi.pe^ˈ.ʃe^ˈ n̩ə 'a̩m.bu.ʃe^ˈ.si 'u.e^ˈ

Phonemic representation: /di dipede na ambudesi ue

Proposed orthography: Di dipere na amburesi ue

'a̩.mi.ta^ˈ 'ʃi̩m.bo 'i.dʒi ta 'de^ˈ.gi ke^ˈ 'e̩^ˈ.i̩ŋ.ge^ˈ 'e̩^ˈ.na^ˈ n̩ə
amita simbo iji ta degi ke einge ena na
amita simbo iji ta degi ke einge ena "Na

'a̩m.bu.ʃe^ˈ.si 'e̩^ˈ.ʃe^ˈ 'o̩n̩ə^ˈ te^ˈ 'na̩.u 'ʃi̩m.bo 'a̩.bo n̩ə 'pu̩.bu.to
ambudesi ede ona te nau simbo abo na
amburesi ere ona te nau simbo avo na puvuto

'ki̩.o.u 'a̩m.bu.ʃo̩.no̩ 'a̩.i̩ŋ.ge^ˈ 'e̩^ˈ.nu 'e̩^ˈ.to 'i.dʒi n̩ə 'e̩^ˈ.i̩ŋ.ge^ˈ
kiou ambudono ainge enu eto iji na einge
kiou amburono, "ainge enu, eto iji na einge,

'na̩.u 'ʃi̩m.bo 'a̩.ʃa̩.bo̩.ʃa̩^ˈ 'a̩m.bu.ʃo̩.i 'e̩^ˈ.ʒo n̩ə 'pu̩.ʃe^ˈ n̩ə 'e̩^ˈ.ʃi̩.a^ˈ
nau simbo adaboda ambudoi ejo na pude na edia
"Nau simbo, aravora, amburoi ejo na pure na eria

'a̩.mi.ta^ˈ 'mi̩.te^ˈ.na^ˈ 'a̩.i̩ŋ.ge^ˈ 'e̩^ˈ.nu 'e̩^ˈ.to 'ʃi̩m.bo 'ndi.pe^ˈ.ʃe^ˈ n̩ə
amita mitena ainge enu eto simbo dipede na
amita mitena," ainge enu eto simbo dipere na

'ě̞.ĩŋ.gě̞ 'ě̞.nǎ̞ 'a.řa.bo.řǎ̞ 'nǎ̞.ǔ̞ 'šĩm.bǒ̞ 'pu.bu.tǒ̞ nǎ̞ 'ki.o.ǔ̞
 einge ena adaboda nau simbo pubuto na kiou
 einge ena, "Aravora, nau simbo puvuto na kiou

'sa.řǐ̞ 'a.sǐ̞ 'u.ě̞ 'ě̞.tě̞.nǎ̞ 'a.bǒ̞ 'u.mǒ̞ 'pu.bu.tǒ̞ nǎ̞ 'ki.a.řǐ̞
 sadi asi ue etena abo umo pubuto na kiadi
 sari asi ue etena avo umo puvuto na kiari

'u.džě̞ 'a.ě̞ 'ě̞.ti.dzǎ̞ 'a.řa.bo.řǎ̞ nǎ̞ mbě̞ 'sĩm.bǒ̞ 'mǎ̞.ně̞
 uje ae etija adaboda na be simbo mane
 uje ae etija aravora na be simbo mane

'kě̞.sə̞̌.nǎ̞ 'a.ĩŋ.gě̞ 'ě̞.tǒ̞ ǐ̞ 'ha.tǔ̞ tǎ̞ 'ě̞.kě̞.tǒ̞ 'ti.tǐ̞ 'tu.tǎ̞
 kesona ainge eto i hatu ta eketo titi tuta
 kesona, "Ainge eto i hatu ta eketo titi tuta

'ě̞.tǒ̞ 'i.džǐ̞ 'ki.a.ě̞ 'i.řǐ̞.u.žǎ̞ 'ki.bu.žǒ̞
 eto iji kiae idiuja kibujo/
 eto iji kiae iriuja, kivujo.

'Flying fox, while he was dying said about his cousin, the sun, "I am dying and my cousin has come to see me die." Then the sun said, "My cousin, it's OK, go ahead and die. I'm just here doing my work." The cousin flying fox said, "OK, my cousin, you have come to see me rot, but I don't like that you've come to look at me." So the flying fox decided not to look at his cousin the sun, and he hung himself on a branch with his eyes looking down and as you know, that's how he has remained, not looking at the sun.'