Burum Phonology*

Soini Olkkonen
March 1982

Table of Contents

1. Introduction

1.1. Location of the Burum Language

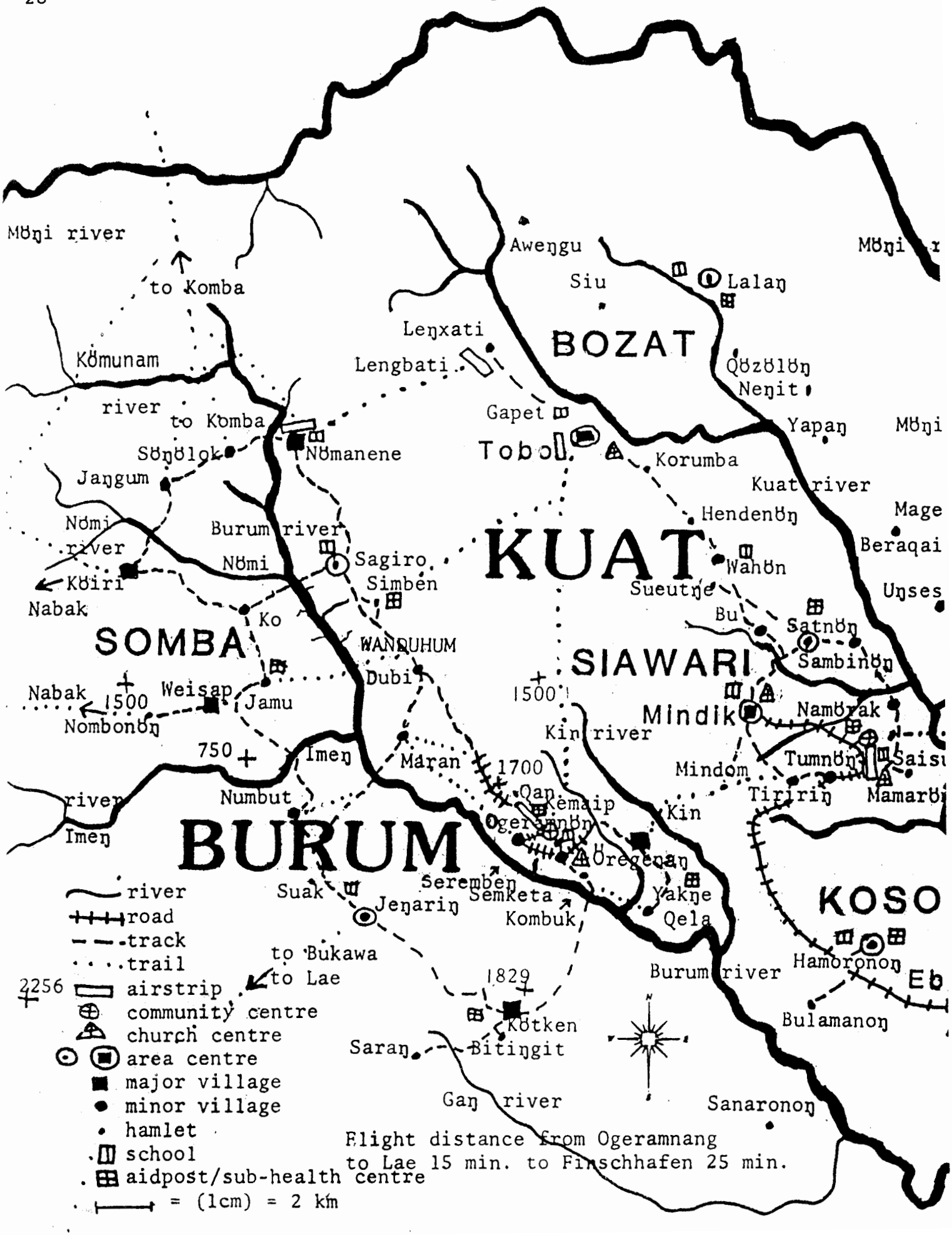
The Burum or Somba language is spoken by about 8700 people living in 30 villages in the Burum and Kuat River valleys in the Pindiu subdistrict of the Finschhafen District in the Morobe Province of Papua New Guinea. In addition, some hundreds of Burum speakers are found living in different cities such as Port Moresby, Lae, Rabaul, Madang, Goroka, Kieta and Hoskins. The people refer to themselves and their language by the name Somba and Siawari, but outsiders have referred to them as Burum and Kuat, using the names of the Burum and Kuat Rivers. Burum and its eastern neighbour river, Kuat, are tributaries of the Mongi (Möŋi) River. This main river flows through the Pindiu area and beside the Kosorong area south to the Pacific Ocean. The Burum valley is surrounded in the west by the Rawlinson Range mountain chain, in the north by the Cromwell Range, and farther in the northwest by the Saruwaged Range. The highest peak of the Saruwaged Range is Mt. Bangeta (Baŋeta), 13,473 feet (4,108 meters). It is the third highest mountain of Papua New Guinea. The Burum River valley is very rugged and mountainous. Its airstrip, Ogeramnang (Ogeramnöŋ), lies on a ridge 1677 meters above sea level. There is daily flight traffic between Lae and Ogeramnang.

1.2. The Dialects of Burum

The Burum language has three dialects: northern, southern, and eastern. They are called Wanduhum, Yaknge (Yakŋe), and Siawari. The main differences between these dialects are as follows.

---

*Our main language helper was Wiwiong Etmen, the church elder of Serembeng. Other helpers included Smeti and his wife Iji, Alusa and Ruge from Serembeng; pastors Mionjing and Apera and evangelist Raubing from Ogeramnang; Maran village leaders Masaung and Kiling and the Dubi village leader Buamu.


Möŋi river
to Komba
Kömunam
river
to Komba
Söŋölok
Jaŋgum
Nömanene
Nömi
river
Köiri
Nabak
Burum river
Nömi
Sagiro
Simben
Ko
SOMBA
WANDUHUM
Dubi
Nabak
1500
Weisap
Jamu
Nombonöŋ
750
Imeŋ
Maran
Numbut
river
Imeŋ
BURUM
Awengu
Siu
Lalaŋ
Möŋi r
Leŋxati
Lengbati
BOZAT
Qözölöŋ
Neŋit
Gapet
Tobol
Korumba
Yapaŋ
Möŋi
Kuat river
Hendenöŋ
KUAT
Mage
Beraqai
Wahön
Sueutŋe
Unses
Bu
Satnöŋ
Sambinöŋ
SIAWARI
1500
Mindik
Namörak
Kin river
Mindom
Tumnöŋ
Saisu
Tiririŋ
Mamarö
1700
Qan
Kemaip
Ogeramnöŋ
Kin
Öregenaŋ
Yakŋe
Qela
KOSO
Hamoronoŋ
Burum river
Bulamanoŋ
Eb
Seremben
Semketa
Kombuk
Suak
Jenariŋ
to Bukawa
to Lae
1829
Kötken
Saraŋ
Bitiŋgit
Gaŋ river
Sanaronoŋ
river
road
track
trail
2256 airstrip
community centre
church centre
area centre
major village
minor village
hamlet
school
aidpost/sub-health centre
= (1cm) = 2 km
Flight distance from Ogeramnang
to Lae 15 min. to Finschhafen 25 min.

1. The occurrence of double plosives [kp] and [gb] in Yaknge and Siawari instead of labialised plosives [kʷ] and [gʷ] in Wanduhum.

2. The occurrence of the glottal plosive [ʔ] in Yaknge and Siawari in a few morphemes.

3. In 11 items of the 156 on the elicited list the central vowel [ə] of Wanduhum is replaced by other vowels in Yaknge and Siawari: 4 times by /o/, 4 times by /i/, and 3 times by /ɑ/.

4. The verb suffix for the 2nd and 3rd person dual present tense is /-hot/ in Wanduhum and /-wət/ in Yaknge and Siawari.

Yaknge has many words and a couple of phonological features in common with the Kuat (Mindik, Siawari[1]) dialect. These features are discussed later in connection with the allophones of the phonemes /kʷ/, /gʷ/ and /h/. Yaknge is spoken only in three villages: Öregenang, Qela and Semketa. Some Yaknge words occur also in the neighbouring villages Serembeng, Maran, Kötken, Söraŋ, Jeŋaring, etc. Maran is said to be the oldest village and the origin of all Burum.

The Siawari-Kuat people number about 2500. They live in 8 villages in the Kuat River valley, around Mindik airstrip. The examples in this paper are Wanduhum dialect unless otherwise mentioned.

2. The Phoneme Level

The lowest level is the phoneme. It cannot be broken into smaller units. The phoneme is distributed within syllables. The phoneme is the basic emic sound unit. Every phoneme contrasts with every other phoneme.

2.1. The phones and their interpretation

	Labial	Alveolar	Velar	Labio-velar
Plosives	p [p pʰ pʾ] b	t [t tʰ tʾ] d	k [k kʰ ķ ķʰ kʾ] g [g ģ]	kʷ [kʷ ķʷ kp ķp ʔ] gʷ [gʷ ģʷ gb ģb]
Fricatives		s	h [ɣ ʂ h]	
Affricates		tˢ dᶻ		

---

[1] McElhanon (1978) refers to the Kuat language as Yaknge. In this paper Yaknge is the name of a dialect in Burum. Other names for Kuat (name of the river) are Mindik (name of the centre) and Siawari (the indigenous name).

Nasals	m	n	ŋ [nʸ ɲ ɳ]
Liquids		l [l ɭ ɭʸ]	r [ɾ̃]
Semivowels	w [w ɓ]	y	

	Front	Central	Back
High	i		u
Mid	e [e ɛ]	ə [ə ʌ]	o [o ɔ]
Low		a	

Interpretation

- The semivocoids [w] and [y] and high vowels [u] and [i] are interpreted as consonants when they occur in syallable onset and as vowels when they occur in syllable nucleus. When they follow a vocoid, they are interpreted as vowels constituting a double syllable nucleus with the preceding vowel.

- The vocoid glides, e.g. [nei] 'bird', [giu] 'a kind of tree', are interpreted as sequences of two vowels VV.

- The word medial contoid clusters, e.g. [seŋgʷe] 'kunai-grass', [muntʰa] 'color', are interpreted as two consonants CC belonging to separate syllables. There are no pre-nasalised consonants.

- The other consonant clusters - the syllable initial aspirated voiceless plosives: [pʰ], [tʰ], [kʰ]; the labio-velar plosives: [kʷ], [gʷ], [kp], [gb]; the affricates: [ts] and [dz]; the word medial palatalised lateral [ɭʸ] and nasal [nʸ]; are interpreted as single consonants C.

Non-suspect syllable patterns:			New syllable patterns:		
V	[i]	he/she	VV	[eu]	over there
VC	[ip']	tree	VVC	[aip']	nest
CV	[gi]	you	CVV	[sou]	knife
CVC	[seɭ]	fence	CVVC	[gaun]	sleep

Criteria The new syllable patterns are symmetric with the non-suspect syllable patterns.

- Word initial vowel glides are extremely rare. The ones found in polysyllabic uninflected words all start with the central vowel [a]. It means they are off-glides from [a]. Therefore the suspect semivocoids in syllable onset are interpreted as consonants [w] and [y] respectively.
- There are no non-suspect CCC-clusters. The CC-clusters occur only across syllable boundaries, e.g. /somba/ 'name of the language'. No CC-cluster occurs word-finally.
- Most vocoid sequences occur also in reverse order, e.g. /ai/ - /ia/, and /ei/ - /ie/. Most syllables have a simple nucleus. The double nucleus is rare.

- Only seven contoids occur syllable finally in the non-suspect syllables. These are the voiceless plosives /p t k/, the nasals /n m ŋ/ and the lateral /l/.

2.2. Description of consonant phonemes

All consonants are produced with egressive lung air.

Backed Velars and Labio-velars

All velar and labio-velar consonants have backed allophones before back and central vowels, and before velar consonants; and nonbacked allophones before front vowels, and bilabial and alveolar consonants, and word-finally.

Plosives

/p t k/ The voiceless plosives occur word initially, medially and finally. They have three sets of allophones:
[pʰ tʰ kʰ k̟ʰ] The voiceless aspirated plosives occur syllable initially.
[p t k k̟] The voiceless unaspirated plosives occur as C_1 in word medial C_1C_2 clusters, i.e. syllable finally preceding a consonant.
[pˀ tˀ kˀ] The voiceless unreleased plosives occur word finally.

['pʰindzitˀ]	/pindzit/	trouble
['esɑpk̟ʰəm]	/esɑpkəm/	temptation
['kʰitipˀ]	/kitip/	part
['tʰərəpŋi]	/tərəpŋi/	short
['kʷetni]	/kwetni/	my name
['k̟ʰəlkʰəmitˀ]	/kəlkəmit/	agriculture
['kʰekmɑkˀ]	/kekmɑk/	kind of arrow
['kʰetɑuŋi]	/ketɑuŋi/	big
['ləkʰepˀ]	/ləkep/	side

/k̟w/ The voiceless labialized backed velar plosive occurs word initially, medially and finally. In the Wanduhum dialect it has the allophones [kʷ k̟ʷ], while in the Yaknge and Siawari dialects it has the allophones [kp k̟p ʔ]. However there is some fluctuation between the two kinds of allophones. One reason contributing to the fluctuation is the influence of the Kâte and other neighbouring languages to the east of Burum which have only the [kp] allophone.

['k̟ʷɑtə]	/kwɑtə/	death adder (Wanduhum)
['k̟pɑtə]	/kpɑtə/	death adder (Yaknge)
['kʷekʷetʰɑl]	/kwekwetɑl/	disobedience (Wanduhum)
['kpekpetʰɑl]	/kpekpetɑl/	disobedience (Yaknge)
['sek̟ʷɑno]	/sekwɑno/	Thursday (Wanduhum)
['sek̟pɑno]	/sekpɑno/	Thursday (Yaknge)

['tʰeleḳʷak']	/telekwak/	bella donna tree (Wanduhum)
['tʰeleḳpak']	/telekpak/	bella donna tree (Yaknge)

The glottal plosive [ʔ] occurs in the Yaknge dialect only as the word final phone of the third person, present and future tense verb forms /-aʔ/, the emphatic clitic /-aʔ/, and the particle /mənəʔ/ 'just'. The corresponding phone in the other dialects is the bilabial plosive /p/.[2]

['ḳʰatsaʔ]	/katsakw/	he comes (Yaknge)
['ḳʰatsap']	/katsap/	he comes (Wanduhum)
['netsaʔ]	/netsakw/	he eats (Yaknge)
['netsap']	/netsap/	he eats (Wanduhum)

/b d g gw/ The voiced plosives occur at bilabial, alveolar, backed velar and labio-velar points of articulation syllable initially. The labio-velar plosive has both the labialized allophones [gʷ ɡʷ] and the double plosive allophones [gb ɡb]. Here as with their voiceless counterparts, [gb ɡb] mainly occurs in the Yaknge and Siawari dialects and [gʷ ɡʷ] in the Wanduhum dialect.

['bim]	/bim/	war
[tʰimbi]	/timbi/	gun, bow
['dat'ni]	/datni/	my older brother
['diŋdiŋi]	/diŋdiŋi/	straight, upright
['gaun]	/gaun/	sleep
['geŋgelauk']	/geŋgelauk/	kind of bird
['ɡʷani]	/gwani/	pitpit
['gbani]	/gbani/	pitpit (Yaknge)
['seŋgʷe]	/seŋgwe/	kunai-grass
['seŋgbe]	/seŋgbe/	kunai-grass (Yaknge)

Fricatives

/s/ The voiceless alveolar grooved fricative occurs word initially and medially. It does not have allophonic variation.

['sep']	/sep/	blood
['busuŋi]	/busuŋi/	flesh

/h/ The voiced backed velar fricative has two allophones in Burum and three in Kuat:

[ɡ ɡ] The voiced velar fricatives occur word medially.

[h] The voiced glottal fricative occurs word initially preceding vowels in Kuat and sometimes even in Burum due to loan words.

---

[2] For further discussion, see appendix 3.

['moɻot']	/mohot/	one
['waɻattsap']	/wahattsap/	he stood up
['sigim]	/sihim/	pain
['segip']	/sehip/	increase
['haŋ]	/haŋ/	kind of bird (Kuat/Yaknge)
['aŋ]	/aŋ/	kind of bird (Wanduhum)
['heta 'kpeyak]	/heta kweyak/	he fell down (Kuat)
['eta 'kʷeyak]	/eta kweyak/	he fell down (Burum)
['handat']	/handat/	hundred

/f/ The voiceless labiodental fricative was not natural to the Burum language originally. However due to the influence of Kâte and Pidgin languages it now occurs in many names and loan words. It occurs word initially and medially.

['fini]	/fini/	a man's name
['ɻʰafe]	/kafe/	coffee (loan word from Kâte)
['ɻʰofi]	/kofi/	coffee (loan word from Pidgin)

but

['yosepʰe]	/yosepe/	Joseph

Affricates

/tˢ dᶻ/ The voiceless and voiced alveolar affricatives occur word initially and medially without allophonic variation.

['tsetseŋɻok']	/tsetseŋgok/	kind of bird
['keu 'butsup']	/keu butsup/	brief message
['atsi]	/atsi/	man
['dzutsu]	/dzutsu/	milk
['dzeŋdzeŋ]	/dzeŋdzeŋ/	bracelet
['madzuaŋ]	/madzuaŋ/	taipan

Nasals

/m/ [m] The voiced bilabial nasal occurs word initially, medially and finally.

/n/ [n] The voiced alveolar nasal occurs word initially, medially and finally.

/ŋ/ The voiced velar nasal has three allophones:
[nʸ] The voiced palatal nasal occurs following the alveolar nasal /n/.
[ŋ ɳ] The voiced velar nasal allophones occur following phones other than /n/.

['munini]	/munini/	our little brother
['sombom]	/sombom/	open square
['silim]	/silim/	day
['nei]	/nei/	bird
['nengi]	/nengi/	your sister
['uran]	/uran/	tomorrow, yesterday
[nennʸi]	/nenŋi/	his sister, her brother

['ŋakŋakˈ]	/ŋakŋak/	clicking of certain bird
['saŋan]	/saŋan/	morning
['kˌoŋaeŋ]	/koŋaeŋ/	kind of bird
['tseŋtsoŋ]	/tseŋtsoŋ/	kind of bird of paradise

Liquids

/l/ The voiced alveolar lateral. It has three allophones.
[l] The voiced alveolar lateral occurs syllable initially.
[lʸ] The voiced palatalised flapped alveolar lateral occurs word medially preceding the voiced velar nasal /ŋ/ and the voiced velar plosive /g/.
[ɭ] The voiced flapped alveolar lateral occurs and medially preceding other consonants than the voiced velar nasal /ŋ/, the voiced velar plosive /g/, and word finally.

['lilikˈlilikˈ]	/liliklilik/	round
['kˌʰulem]	/kulem/	writing
['tʰattsaɭ]	/tattsal/	I sit
['aɭʸŋapˈ]	/alŋap/	It is true
['kˌʰʌɭkˌʰʌɭ]	/kalkal/	ache
['maɭmaɭ]	/malmal/	living
['ʌɭʸgi]	/algi/	your right hand

/r/ [r̃] The voiced alveolar vibrant or trill. It is rolled and occurs word initially and medially.

['r̃ar̃aman]	/rarəman/	thinking (Yaknge)
['or̃onŋi]	/oronŋi/	dry

Semivowels

The semivowels occur word initially and medially.

/w/ The voiced bilabial semivowel has two allophones:
[w] The voiced bilabial semivowel occurs preceding central and back vowels.
[ɓ] The voiced bilabial fricative occurs preceding front vowels.

['ɓem]	/wem/	axe
['tʰaɓeŋ]	/taweŋ/	Chinese taro
['waɭʸŋi]	/walŋi/	old
['mewə]	/mewə/	like that
['daɓikˈ]	/dawik/	how many

/y/ The voiced alveolar semivowel. It has no allophonic variation.

['yakˌʰa]	/yaka/	sweet potato
['meyəkˈ]	/meyək/	he has taken

2.3. Description of vocalic phonemes

All vowels occur word initially, medially, and finally. The range of the mid-vowels include both the mid-high and the mid-low tongue height

positions [e] and [ɛ], [ə] and [ʌ], [o] and [ɔ], occurring in free variation. The other vowels do not have allophonic variation.

/i/ [i] The voiced high close front unrounded vocoid.

['ilikŋi]	/ilikŋi/	its horns
['dzitŋi]	/dzitŋi/	its teeth
['guli]	/guli/	kind of valuable

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

['ulisitˈ]	/ulisit/	kind of bird
['uɾ̃uwoŋ]	/uruwoŋ/	beans
['gɑmu]	/gɑmu/	shame

/e/ [e] The voiced close mid-high front unrounded vocoid.
[ɛ] The voiced open mid-low front unrounded vocoid.

['sepˈ]	/sep/	blood
['ewəɾ̃əm]	/ewərəm/	kind of water bird
['gəlme]	/gəlme/	ground

/ə/ [ə] The voiced close mid-high central rounded vocoid.
[ʌ] The voiced open mid-low front unrounded vocoid.

['kʰətˈ]	/kət/	stone
['bəɾ̃ə]	/bərə/	work
['ʌne]	/ʌne/	for nothing

/o/ [o] The voiced close mid-high back rounded vocoid.
[ɔ] The voiced open mid-low back rounded vocoid.

['ɔnom]	/onom/	kind of bird
['ɸɔɸɔtŋi]	/gohotŋi/	yellow
['ɔɸɔɸɔ]	/ohoho/	writing

/ɑ/ [ɑ] The voiced open low central unrounded vocoid.

[ɑlɑni]	/ɑlɑni/	my friend
['mɑl̃dzɑpˈ]	/mɑldzɑp/	he lives
['kʰɑtʰɑ]	/kɑtɑ/	mountain spirit

3. Syllable Level

3.1. Syllable structure

The syllable is defined as a single mora of length consisting of a nucleus of one or two vowels with optional onset and/or coda of a single consonant. The syllable is distributed within the word.

There are eight (8) contrastive syllable types:

V	/o/	water
	/i/	he, she

VC	/ip/	tree
	/oŋ/	yes
CV	/gi/	you
	/ke/	rain
CVC	/sel/	fence
	/tup/	taro
VV	/eu/	up there
	/au/	interjection
VVC	/aip/	nest
	/auk.ŋe/	in open place
CVV	/keu/	language
	/sou/	knife
CVVC	/suep/	heaven
	/gaun/	sleep

The contrastive features are:

- simple versus double nucleus, and the
- absence or presence of the onset and/or the coda.

There are a few words that may have syllables with double consonant onset or coda. Either /r/ or /s/ occurs in these clusters. It seems that a vowel is sometimes deleted between certain consonants. The neighbouring languages except Nabak have a vowel in these words.

/bratni/ ~ /baratni/	my daughter
(In neighbouring languages: /baratni/)	
/bran/ ~ /baran/	bundle
/kestni/ ~ /kesatni/	my finger
/mostmost/ ~ /mosatmosat/	forgiveness

This occurs also in some loan words:

/orins/ orange
/traus/ trousers

3.2. Syllable distribution within the word

The above examples show that all syllable types may occur as a monosyllabic phonological word. In polysyllabic words all syllable types except V and VVC have been found to occur in word initial, medial and final positions. The syllable types V and VVC have been found only in word initial position.

	Word Initial	Word Medial	Word Final
V	/arakŋi/ forest	--	--
VC	/aldᶻap/ he puts	/lapuamŋi/ wide	/meal/ I have taken
CV	/dᶻeni/ my eye	/maluku/ dress	/kana/ road
CVC	/tambaŋi/ his sole	/taptapŋi/ his chest	/welbatŋi/ his lever
VV	/eume/ there	/niaunini/ kinship term	/asuai/ hair of tree
VVC	/aipŋi/ its nest	--	--
CVV	/gaulu/ flood	/maŋaimap/ he will turn	/seŋgelau/ star
CVVC	/tuatŋi/ white	/kahaikŋi/ strong	/saŋaup/ darkness

4. Distribution of Phonemes

4.1. Distribution of consonants

The consonants are divided into two classes on the basis of their occurrence in the syllables and clusters:

Class 1 consists of all consonants. All consonants occur syllable initially.

Class 2 consists of eight (8) consonants: the voiceless plosives /p t k/ and in Yaknge and Siawari dialects even /kw/ [ʔ], the nasals /m n ŋ/, and the lateral /l/.

The class 2 consonants occur both syllable initially and finally.

Consonant clusters occur only word medially across syllable boundaries; also within compound words and reduplicated words.

Class 2 consonants occur as C_1 in these clusters.
Class 1 consonants occur as C_2 in these clusters.

/seŋgwe/	kunai grass
/kekkwek/	criminal
/kəlkəmit/	agriculture
/nenmungi/	your brothers and sisters
/mətmət/	thinking, knowledge
/nimnim/	kind of bird

The geminates of class 2 consonants are fused into one consonant. For examples see the external sandhi in section 5.2.1.2.[3]

4.2. Distribution of vowels

All six vowels occur in the nucleus of all syllable types. All six vowels occur also in the vowel sequences within the same syllable. The following vowel sequences have been found:

---

[3] An exception to this is that the tendency of vowel deletion in a few words creates some exceptional types of consonant clusters. In these the fricative /s/ and the vibrant /r/ are found occuring as C_1.
/neslam/ is used as alternative form of /nesilam/ or /nesalam/ "tongue".
/erme/ is used as alternative form of /erime/ "they will shoot". For more examples see section 3.1.

V_1 \ V_2	-i	-e	-ə	-ɑ	-o	-u
i-		ie		iɑ	io	iu
e-	ei			eɑ	eo	eu
ə-	əi			əɑ		əu
ɑ-	ɑi	ɑe			ɑo	ɑu
o-	oi	oe		oɑ		ou
u-	ui	ue		uɑ	uo	

A selection of 161 different words with vowel sequences were studied. Among them were some names and loan words. Different VV-types occurred as follows. The number indicates how many times the sequence occurred.

	Short Up-glides		Long Down-glides					
V_1 \ V_2	-i	-u	-o	-e	-ə	-ɑ		
i-		2	3	3	--	18	26	16.2%
u-	2		1	3	--	21	27	16.8%
o-	6	14		1	--	4	25	15.5%
e-	8	4	2		--	2	16	9.9%
ə-	7	1			--	2	10	6.2%
ɑ-	32	20	1	4			57	35.4%
	55	41	7	11	--	47	161	
%	34.2	25.5	4.3	6.8		29.2	100%	

There were	93 up-glides	57.8%
	61 down-glides	37.9%
	7 level glides	4.3%
Total:	161	100%

The up-glides and level-glides are short, 8-15 centiseconds, called diphthongs. The down-glides are long, 16-26 centiseconds, called sequences of two vowels. They belong to separate syllables. Also in the three-vowel sequences the first high vowel belongs to a different syllable than the second vowel. The seven level-glides include four high vowel glides /iu/ or /ui/ and three mid-vowel glides /oe/ or /eo/. All glides except the three mid-vowel glides /oe/ and /eo/ have a glide from or to a high or low vowel. There are no on-glides on the central vowel schwa /ə/. As the back vowel /o/ is the rarest vowel, so it is the rarest one also in the vowel glides.

Only one vowel is found lengthened. It is the high front vowel /i/. It occurs as lengthened only in one position, and that is across morpheme boundaries. It is considered as the reflex of a geminate cluster. That means that two high vowels come together through the deletion of the semivowel /y/ between them or the semivowel /y/ is considered to be fused together with the high vowel /i/. Phonetically it sounds like one long vowel. It is analysed as two vowels.

/dzi.it/	we two said
/dzit/	tooth, representative

When other geminate vowels come next to each other across morpheme boundary, the semivowel /y/ occurs between them. Compare:

/kɑ.yɑl/	I have come	/me.ɑl/	I have taken
/ɑreŋgə.yək/	he has appointed	/kor.ək/	he has gone up

5. The Phonological Word

The phonological word is defined as a stress group within which syllables are distributed and it is itself distributed within the breath group.

5.1. The stress within the phonological word

The word is composed of an obligatory nucleus. It is a syllable with primary stress ['] . This nucleus is optionally followed by 1 - 5 margins. The margins are either unstressed syllables or syllables with secondary stress [ˋ]. The stress is predictable. The primary stress ['] always occurs on the first syllable of the word. The secondary stress [ˋ] occurs on following alternate syllables, that is on the third and fifth syllables (also in reduplicated forms). The word final secondary stress is optional. A pause occurs preceding each syllable with primary stress. This pause marks the border of any two words. Words of one to six syllables have been found.

One syllable words:	/'nei/	bird
	/'kəiŋ/	moon
Two syllable words:	/'kə.nɑ/	road
	/'ke.lək/	grease
Three syllable words:	/'un.du.ˋtsɑp/	he danced
Four syllable words:	/'ɑi.toŋ.ˋgo.tsɑp/	she meets (somebody)
Five syllable words:	/'so.lɑ.ˋni.tsɑ.ˋhot/	the two make plain
Six syllable words:	/'ɑi.we.ˋwe.ri.ˋtsɑ.hot/	the two are proud

5.2. Morphophonemics

5.2.1. External sandhi

There are two types of external sandhi: 1. spirantisation of voiceless plosives /p t k/ into /w r h/, and 2. fusion of the geminates into one consonant.

5.2.1.1. Spirantisation

At morpheme boundaries in intervocalic positions the voiceless plosives /p t k/ become continuants /w r h/ respectively.

/ələp/	good	/ələwɑkzɑp/	it becomes good
/kotzɑl/	I come up	/korɑl/	I have come up
/ekzɑl/	I see	/ehɑl/	I have seen

5.2.1.2 Fusion of the geminates

The possible geminates are /pp tt kk mm nn ŋŋ ll/, the seven consonants of the class 2. When a geminate is about to arise because two

morphemes come adjacent due to the inflection, derivation, or reduplication, the underlying geminate is reduced or fused into one consonant. Thus the rule for writing is: whenever two identical consonants come adjacent to each other within a word, the resulting geminate is written with just one consonant.

anbapukörap	that he would not go (</an-bap-puk-kərap/)
nepuk	with the two of us (</nit-puk/)
tatat	sitting (</tat-tat/)
eta	come down and... (</et-da/)
eka	see and... (</ek-ba/)
korakorak	tree type (</korak-korak/)
bauki	your help (</bauk-ki/)
köma	ash (loan - </kʰəmᵂa/)
neni	my sister (</nen-ni/)
koŋi	his yam (</koŋ-ŋi/)

Examples of the reduction of /ll/ into /l/ have not been found so far.

5.2.2. Variation in the voicing of the plosives

Verb inflection and noun suffixation have some morphemes that have phonologically conditioned allomorphs. The variation occurs between the voicelessness and the voicedness of the plosives /p/ - /b/, /t/ - /d/, /k/ - /g/. There are two types according to which variant occurs after vowels.

Type 1 The allomorph with initial voiced plosive occurs after vowels and voiced consonants. The allomorph with initial voiceless plosive occurs after voiceless consonants.

Type 2 The allomorph with initial voiceless plosive occurs after vowels and voiceless consonants. The allomorph with initial voiced plosive occurs after voiced consonants.

Examples of Type 1:

/-gi/ 'your' the second person singular possessive suffix
[-gi] occurs after vowels and voiced consonants
[-ki] occurs after voiceless consonants

/silegi/	['silegi]	your body
/nengi/	['nengi]	your sister
/imutki/	['imutkʰi]	your soul

/-ga/ 'and' the medial verb suffix
[-ga] occurs after vowels and voiced consonants
[-ka] occurs after voiceless consonants

/dzibiga/	['dzibiga]	I said and she ...
/alinga/	['alinga]	we put and she...
/mətketka/	['mətkʰetkʰa]	they heard and she...

/-puk/ (/-kuk/ in Siawari) 'with' the comitative clitic
[-puk] ([-kuk]) occurs after voiceless consonants. The two consonants may be reduced into one. (See 5.2.1.)
[-buk] ([-guk]) occurs after vowels and voiced consonants

/kwetpuk/	['kʷetpʰuk']	famous, with name
/nembuk/	['embuk']	with us
/kimbibuk/	['kʰimbibuk']	with the letter
/anbapuk/	['anbapʰuk']	that he would not go
/nepuk/	['nepʰuk']	with us two

Examples of Type 2:

/-ts-/ 'he made' the verb suffix for the third person singular present tense. The whole set for this tense has the same variation.

	Singular	Dual	Plural
1. person	/-tsal/	/-tsit/	/-tsin/
2. person	/-tsan/	/-tsahot/	/-tsahot/
3. person	/-tsap/	/-tsahot/	/-tsahot/

[-ts-] occurs after vowels and voiceless consonants
[-dz-] occurs after voiced consonants, including /l/ in Yaknge and Siawari

/ohotsap/	['oɸotsap']	he cooked
/aktsap/	['aktsap']	he made
/maldzap/	['maɭdzap']	he was

5.2.3 Deletion of /m/

The verb stems ending in /m/ drop this final /m/ when inflected except when it occurs preceding /b/ or word finally.

/memba/	take and...
/mezap/	he takes
/meal/	I took
/mem/	to take

6. The Levels Above the Phonological Word

There are three levels above the phonological word in Burum language. They are the breath group, intonation group and the phonological paragraph. We will start from the highest level and proceed toward the lower levels.

6.1. The phonological paragraph

This is the highest phonological level. Therefore it is not distributed on any higher level. It consists of one or more intonation groups. There is pause between paragraphs. It is usually longer than the pause between intonation groups. The longer pause is to gather thoughts for the next part-theme.

The first editorial article of the Burum newspaper, which was first presented orally, contains three phonological paragraphs or pause groups. The first paragraph has nine (9) intonation groups, the second has three (3), and the third has five (5) intonation groups.

6.2. The intonation group

This unit is distributed within the phonological paragraph, and consists of one or more breath groups. The intonation group is marked by an intonation contour and by occurrence of pause between intonation groups.

The tone on the lower levels is not contrastive, but the intonation contours are contrastive. The contrastive feature is the pitch of the last syllable of the intonation group. It is the nucleus of this unit. The preceding part is optional and is called the periphery of the intonation group. There are two contrastive intonation contours:

I. The level contour: It occurs in statements, imperatives, and question word questions.

II The rising contour: It occurs in polar questions.

The intonation group consists of 1 - 13 breath groups. The mentioned editorial article has 17 intonation groups. They are made up of breath groups as follows:

2 intonation groups consist of 1 breath group
7 intonation groups consist of 2 breath groups
3 intonation groups consist of 3 breath groups
2 intonation groups consist of 4 breath groups
1 intonation group consists of 7 breath groups
1 intonation group consists of 8 breath groups
1 intonation group consists of 13 breath groups

This shows that most intonation groups are short. The long ones are very rare. The average is 3.5 breath groups per intonation group.

7. Orthography

	Allophones	Proposed Orthography	English	Kâte
/a/	[a]	a	a	a
/b/	[b]	b	b	b
/kw/	[ʔ]	c	-	c
/d/	[d]	d	d	d
/e/	[e ɛ]	e	e	e
---	---	(f)	f	f
/g/	[g ɡ]	g	g	g
/h/	[ɡ ɡ̣ h]	h	h	h
/i/	[i]	i	i	i
/dᶻ/	[dᶻ]	j	j	ʒ
/k/	[k̟ʰ kʰ k̟ k kˀ]	k	k	k
/l/	[l ɭ ɭʸ]	l	l	l
/m/	[m]	m	m	m

	Allophones	Proposed Orthography	English	Kâte
/n/	[n]	n	n	n
/ŋ/	[nʸ ŋ ɲ]	ŋ	ng	ŋ
/o/	[o ɔ]	o	o	o
/p/	[pʰ p pˀ]	p	p	p
/kw/	[kʷ ḳʷ kp ḳp]	q	qu	q
/r/	[r̃]	r	r	l
/s/	[s]	s	s	s
/t/	[tʰ t tˀ]	t	t	t
/u/	[u]	u	u	u
/w/	[w ɓ]	w	w,v	w
/gw/	[gʷ ɠʷ gb ɠb]	x	gw	q̧
/y/	[y]	y	y	j
/tˢ/	[tˢ]	z	(ch)	z
/ə/	[ə ʌ]	ö	(er/ir/ur)	-

Two letters of the English alphabet, v and f, do not occur in the Burum alphabet except in loan words.

7.1. Initial writing problems

There has not been any previous Burum orthography. Several phonemes have been hard for people to symbolize. These suggested symbols were considered and agreed on in a meeting of about 10 leaders of Central and South Burum representing Wanduhum and Yaknge dialects. This meeting was held at Ogeramnang School on the 15th of November 1981. Thereafter this orthography has been tested in the initial transfer literacy work and while transcribing many texts about the Burum history, etc. Thereby this orthography has proved to be workable. Initially every Somba (Burum) needs to get some explanation of the letters and some practice with them.

Most people in Burum have learned to read and write Kâte. Many have had access to Tok Pisin language. The first English school was started in Ogeramnang about 1975. Thus very few people know English.

The most common writing problem is the differentiation between /l/ and /r/, because Kâte has only one phoneme /l/ which combines [l] and [r]. One expression of this confusion is that in the maps Burum River is written Bulum or Bulung River.

People adopt easily the English and Tok Pisin pronunciation of y and j, although j in Kâte is different. Here Burum follows Tok Pisin rather than Kâte.

There is some confusion between j and z, although Kâte unnecessarily differentiates between these phonemes with the letters ʒ and z. Yet j is immediately accepted, because ʒ does not occur in ordinary typewriters. The use of ʒ and z seems to be inconsistent in village names, etc.: z is used instead of ʒ because the letter ʒ does not occur in English. Examples:

Jeŋarin is falsely written Zengaren
Jaŋgum is falsely written Zangum
Jewizan is falsely written Zewitzan

A new letter to learn is ö. Initially many leave it out in writing. The Burum leaders meeting did not want to use the Kâte letter â, because it represents another sound in Kâte than the central vowel in Burum.

The letter h has not caused any writing problems.

The symbolization of the phonemes /kw/ and /gw/ caused most discussion in the orthography meeting in Ogeramnang. The meeting made alternative suggestions as follows:

I	II	III
kw	q	q
gw	gw	q-

The nearness of the Eastern Huon family of languages complicates the choice of symbols. Those languages have phonemes /kp/ and /gb/ without allophones [k^w] and [g^w]. In Kâte these two phonemes are written q and q̈. All three alternative sets of letters have advantages and disadvantages.

Why kw is better than q

- It occurs in Tok Pisin, Komba and Nabak
- It is phonetic for the majority of Burums
- kw is symmetric with gw

Disadvantages of kw

- It is a double symbol and thus longer than q. More ink and paper needed.
- It does not match with the [kp] allophone of the Yaknge dialect.
- It causes a bit more work while learning English.

Why q is better than kw

- It is shorter than kw and thus saves ink and paper.
- It occurs in Kâte and Ono.
- It covers both allophones [k^w] and [kp]
- Similarity to the English qu helps while learning English

Disadvantages of q

- It may be harder to learn for children and other non-Kâte speakers.
- Non-symmetricity with gw may cause confusion and be harder to learn. To gain symmetricity another kind of q should be created to symbolize gw.
- Similarity of q and the English qu could cause confusion: qela would be written sometimes quela incorrectly.

It would be helpful and convenient to have one and the same letter or set of letters in the whole Hube and Kâte area.

The Burum Community Government decided on the 20th of April 1982 to change two letters: kw became q and gw became x. Some reasons:

1. Yaknge people said in a writers session that the [kp] of their dialect

cannot be written with kw, as their leader had said before. It is not good to have different letters for different dialects.

2. The letter q is established in Burum because of the Kâte language.

3. The double letters cause reading problems. For an example many tend to read kwet 'name' as köwet 'sea'. The same is true with gw. The letter x does not occur in Kâte, so it needs to be learned.

4. In English x stands for double sounds [ks] or [gz], so the deviation to the Burum [g^w] or [gb] is not very big. In both languages x is a very rare letter.

Appendix 1

List of Some New Guinea Pidgin Words as Pronounced in Burum

Tok Pisin Orthography	Burum Pronunciation	English Gloss
ambrela	amplala, anpalala	umbrella
kukamba	kokomba	cucumber
kerasin	karasing	kerosine
Inglis	Inklis	English
evanselis	ewanjelis	evangelist
brumim	burunim	sweep
ka	kal, kare	car
pasto	pastol	pastor
tudak	tukdak	darkness
Siaman	Jiaman	German
Japan	Jiapan	Japan
prut	prut, fulut, purut, furut	fruit
palaua	palawa, plaua	flower
Ostreliya	Austraria, Australia	Australia
plang	palang	plank
plantesin	palangtesing	plantation
stesin	tesing	station
plastik	palastik	plastic
plak	pilak, flak	flag
plua	poloa	floor
poisin	posing	poison
Hoskin	hosking	Hoskins
pren	pren, fren	friend
pulimapim	pulumapim	fill up
salat	salak	nettle
sanguma	sangguma	secret murder
sanpepa	sampepa	sandpaper
savol	sawol	shovel
Jisas	Jitsas	Jesus
Yurop	Yurop, Yulop	Europe
yia	yial, yal	year
sta	stal	star
sekanim	skanim, siganim	shake hands

Tok Pisin Orthography	Burum Pronunciation	English Gloss
sikau	sikau, skau	wallaby
slip	silip, slip	sleep
siot	siot	shirt
sios	tsiots	church
sisel	sisel, sisil	chisel
skru	sukuru	screw
sukruim	sukurim, skurim	join, continue
skulim	sukulim	teach
sikrap	sigirap	scratch
slekim	silekim	loosen
skwea	sukia	square
snek	sinek, sneik	snake
soim	sowim	saw
soim	soim, sowim	show
spia	spia	spear
spia	sipia, spia	arrow
stov	stop	stove
surikim	surukim	move back
swim	suwim	swim
swisim	suwitsim	switch
tamiok	tamyok, tamiok	axe
taun	taon	town
taul	taul, tauel	towel
tebol	tebo, tebol	table
tin	ting	tin
tisa	tiksa, titsa	teacher
trabel	trobel, trabel	trouble
tromoi	toromoi, toromai	throw
waia	waya	wire
Janueri	Janori, Januari	January
baiim	baim	buy
siaman	siaman	chairman
sayor	sayol	vegetables
singaut	si.ngaut	call

Appendix 2

Contrasts of Suspect Consonants

Segments sharing features in common and thus considered suspect phonemically are contrasted in the list below.

/p/ and /b/	['pʰilikˈ]	/pilik/	mirror
	['bilikˈ]	/bilik/	lightning
	['giphi]	/gipi/	ginger
	['ɡəbun]	/gəbun/	kind of tree
/t/ and /d/	['tʰɑtˈnəŋ]	/tɑtnəŋ/	sit please
	['dɑtˈni]	/dɑtni/	my older brother

	['tʰoŋi]	/toŋi/	its owner
	['doŋ]	/doŋ/	kind of bird
/k/ and /g/	['ɻʰulem]	/kulem/	writing
	['ɣulem]	/gulem/	an ant-like insect
	['kʰinkʰin]	/kinkin/	standing
	['gingin]	/gingin/	wing
	['aɻʰa]	/aka/	and (same subject)
	['aiɣa]	/aiga/	and (another subject)
/kw/ and /gw/	['kʷetˈpukˈ]	/kwetpuk/	excellent
	['ɣʷatˈpukˈ]	/gwatpuk/	many
	['ɻʷani]	/kwani/	left hand
	['ɣʷani]	/gwani/	pitpit
/kp kw/ and /p/			
	['ɻpasikˈ]	/kpasik/	tree kangaroo
	['ɻʷalʲba]	/kwalba/	ficus tree
	['pʰalakˈpʰalakˈ]	/palakpalak/	slippery
	['kʷindiŋɣam]	/kwindiŋgam/	correction
	['pʰindzitˈ]	/pindzit/	trouble
/kw kp/ and /k/			
	['ɻʷalba]	/kwalba/	ficus tree
	['ɻʰalakˈ]	/kalak/	he has hit
	[ɻʷaʂapˈ]	/kwahap/	no
	[ɻʰaʂapɻʰaʂapˈ]	/kahapkahap/	insane
[ʔ] and /k/	['ɻʰoɻʰolakˈ]	/kokolak/	full
	['ɻʰatsaʔ]	/katsakw/	he came
/gw gb/ and /g/			
	['ɣʷalam]	/gwalam/	kind of spice
	['ɣalam]	/galam/	leader
	['seŋgʷe]	/seŋgwe/	kunai grass
	['seŋgelau]	/seŋgelau/	star
/b/ and /w/	['bem]	/bem/	god
	['wem]	/wem/	axe
	['dubatˈ]	/dubat/	cassowary bone
	['dobe]	/dowe/	near
/t/ and /s/	['tʰaɾapˈŋi]	/tarapŋi/	short
	['saɾakˈŋi]	/sarakŋi/	slope, mountain side
	['ɻʷata]	/kwata/	death adder
	['ɻʷase]	/kwase/	kind of yam

/t/ and /ts/ and /s/	['tʰinəŋ]	/tinəŋ/	tread please
	['tsilaŋ]	/tsilaŋ/	quickly (Yaknge)
	['silim]	/silim/	day
	['wətʰə]	/wətə/	pincers
	['ətsək']	/ətsək/	wedge
	['wəsə]	/wəsə/	leech
/ts/ and /dz/	['tsəɾet']	/tsəret/	kind of bird
	['dzədzəɾəm]	/dzədzərəm/	kind of bird
/l/ and /r/	[lolo$_{ɻ}$om]	/lolohom/	kind of little lizard
	['ɾoɾo]	/roro/	kind of frower grass
	['bələŋi]	/bələŋi/	bad
	['bəɾəŋi]	/bərəŋi/	his hand
/n/ and /ŋ/	['ŋak'ŋak']	/ŋakŋak/	clicking of a certain bird
	[nap'ŋap']	/napŋap/	just his clearing
	['binen]	/binen/	knot of an arrow
	[k$_{ɻ}$oŋaeŋ]	/koŋaeŋ/	kind of bird of paradise
	['alani]	/alani/	my friend
	['alaŋi]	/alaŋi/	his friend
	['e$_{ɻ}$ongi]	/ehongi/	your maternal uncle
	['se$_{ɻ}$oŋgi]	/sehoŋgi/	your corn
/w/ and /u/	['bibioŋ]	/wiwioŋ/	man's name
	['ui$_{ɻ}$a]	/uiga/	he filled and she... (/u-i-ga/)

The semivowel /w/ has distinct friction, while the vowel /u/ does not have friction. This applies also to the semivowel /y/ and the vowel /i/.

/y/ and /i/	['yuyubi]	/yuyuwi/	man's name
	['giu]	/giu/	kind of tree
	['tʰaiyu]	/taiyu/	man's name
	['siuk']	/siuk/	kind of bird
	['kʰietʰayək']	/kietayək/	from Kieta
	['miyək']	/miyək/	from there
	['k$_{ɻ}$ʰəyan 'k$_{ɻ}$ʰəldzap']	/kəyan kəldzap/	he looked after
	['k$_{ɻ}$ʰəiŋ 'k$_{ɻ}$ʰaiga]	/kəiŋ kaiga/	the moon came and...

Contrasts of Vowels

/i/ and /e/	['bim]	/bim/	war
	['bem]	/bem/	god
	['muaɾi]	/muari/	kind of snake
	['muaɾe]	/muare/	afternoon

/e/ and /ə/	['kʰeləkˀ]	/kelək/	grease
	['ḳʰələkˀ]	/kələk/	he has hit
	['seɪ̯]	/sel/	fence
	['səɪ̯]	/səl/	sandy soil
/ɑ/ and /ə/	['wɑtˀŋi]	/wɑtŋi/	inactive
	['wətˀŋi]	/wətŋi/	button, batten
	['ɣɑləm]	/gɑləm/	leader
	['ɣələm]	/gələm/	stomach
/o/ and /ə/	['dopˀ]	/dop/	enough
	['dəpˀ]	/dəp/	stairs
/o/ and /u/	['moɣotˀ]	/mohot/	one
	['muɣutˀ]	/muhut/	kind of tree
	['tʰoḳʰuŋi]	/tokuŋi/	his brain
	['tʰuḳʰuŋi]	/tukuŋi/	tree sap

Appendix 3 - [ʔ]

Possibly this word final phoneme has originally been /kp/. Then the development has led towards simplicity and differentiation between the velar and labial components of the same phoneme /kp/. Now the Huon Peninsula languages east of Burum employ the glottal plosive [ʔ] in this environment where the languages west of Burum employ the labial plosive [p]. This is one distinctive feature differentiating the Eastern and Western Huon families of languages. If we on this basis would re-check Dr. McElhanon's classification of languages into these two families, then Kuat-Siawari and Tobo should be transferred over to the Eastern family. Another criterium could be the occurrence of double plosives (gb) and (kp) versus labialized velar plosives: In the languages to the east of Burum (kp) and (gb) generally occur, whereas in the languages immediately to the west of Burum (kw) and (gw) predominantly occur.

The [ʔ] contrasts with word-final /p/ in Yaknge. It could be added as an allophone of /kʷ/. This would partly fill the gap that would otherwise occur in the distribution of the voiceless plosives into the syllable final position. Having the glottal as an allophone of /kw/ makes the distribution matrix more symmetrical. However, /kw/ would still not occur syllable-finally in word medial position. In addition, /kw/ does not occur syllable finally in Wanduhum nor in adjacent languages. If [ʔ] is analysed as a separate phoneme it has very limited distribution. Finally, the final segment in /-ɑp/ is often completely dropped.

Bibliography

Hooley, Bruce A., and McElhanon, K.A. 1970. Languages of the Morobe District.

McElhanon, K.E. 1967. Preliminary observations on the Huon Peninsula languages. Oceanic Linguistics 7.

_____. 1973. Towards a Typology of the Finisterre-Huon Languages, New Guinea. Pacific Linguistics B(22).

_____. 1978. A classification of the languages of the Morobe Province, Papua New Guinea with the linguistic situation of individual villages.

_____. 1984. A Linguistic Field Guide to the Morobe Province, Papua New Guinea. Pacific Linguistics D(57).

_____ and Voorhoeve, C.L. 1970 The Trans-New Guinea Phylum: Explorations in Deep-Level Genetic Relationships. Pacific Linguistics B(16).