

BOIKEN PHONEMES

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0. INTRODUCTION.

This paper is a phonemic statement of the Boiken language. This language is a member of the Ndu language family. It is located in the East Sepik District. Yangoru is the chief patrol post. The area comprising this language group is from the Pacific Ocean on the north to the Sepik Plains on the south. The Prince Alexander Mountains are in the center of the group. On the west it is bordered by the Maprik and Arapesh language groups and its eastern boundary extends almost to Wewak.

The language group has a number of dialects. I resided in the village of Kwahwie in the eastern dialect, about 3 miles south of Yangoru. The corpus of data used for this paper was acquired from Demon, a 30 year old citizen of Kwahwie village. He is married and has 3 children. He has had one year of schooling, has worked on a plantation in Rabaul for two years and has done some work in Wewak. He is now an involved resident citizen of Kwahwie.

The number of Boiken speakers is said to exceed 17,000. The dialect on which this paper is based has approximately 7500 speakers. The majority of people of this language group live on the southern flank of the Prince Alexander Range.

The information was gathered while living in Kwahwie village between 1968 and 1973.

1. OUTLINE OF PHONEMES.

1.1. Chart of Phonemes.

1.1.1. Consonants.

	Bilabial	Alveo-Dental	Alveolar	Velar
Plosive	p	ɟ	t	k
Fricative	vl. vd. f		s	h g
Nasal	m		n	
Lateral		l (1)	l	
Vibrant (Semivowel)	w	y	r	

1.1.2. Vowels.

	Front	Central	Back
High	i	ɨ	u
Mid	eɪ	e	o
Low	ɛ	ɐ	ó

1.2. Verbal Description and Contrastive Features.

Boiken consonants occur at four points of articulation Bilabial, Dental (dental or interdental point of articulation with alveopalatal approach and/or release), Alveolar and Velar. Stops contrast in all four positions. Fricatives are not found in the dental position although the /j/ has some fricative qualities and it fluctuates between plosive and fricative.

There is a contrastive voiced lenis velar fricative. Nasals occur in all four positions with [ŋ] and [ŋ̃] being allophones of /n/. Laterals, vibrants and semivowels contrast only in the dental to alveolar area of the mouth.

Boiken vowels are produced in the front, central and back parts of the mouth. The tongue is in the high, mid, or low position. Because each combination occurs in the language, there are 9 phonemic vowels.

2. INTERPRETATION.

2.1. Consideration of /y/ and /w/.

2.1.1. /y/

The /y/ has been treated as a consonant. The native speaker does not hear a /y/ as distinct from the /i/ but confusion is caused by making it an allophone of /i/. So I have chosen to symbolize it as /y/ when it occurs word initial and as /i/ elsewhere. In a number of instances /y/ fluctuates with its absence. /yi/ 'spear' /i/ 'spear'. This corresponds to the Pidgin orthography and has stood up well under testing.

2.1.2. Interpretation of /w/.

Following /m/ /p/ /f/ /h/ /k/, nonsyllabic /w/ occurs in contrast with lack of /w/ preceding some but not all vowels. These are instances of the /w/ phoneme.

continuous aspect marker. Although /gu.ə/ and /gu.wə/ are identical in pronunciation, I write the letter for consistency. No /tu/ or /lu/ words have been found.

The different analysis of the preceding section is supported by syllabicity and the placement of non-phonemic stress on the peak of the first syllable.

One other consideration in writing /w/. The basic pattern of the language is CV and this helps considerably to round out the language.

The inclusion of /w/ and /y/ in the orthography is in line with the Pidgin orthography.

2.2. Consideration of [wul], [uw].

The [wu] when occurring initially is written /wu/. When [uw] occurs medially it is written /u/.

3. DESCRIPTION OF PHONEMES.

3.1. Consonants.

3.1.1. Workchart.

p	ts	t	k
b	dz	d	g
ɸ		s	x
ɸ		z	ʒ ʒ'
m	n l	n	ŋ
		l	
		r	
		r	
w		y	

3.1.2. Description.

3.1.2.1. Stops.

Voiceless stops are initial and intervocalic and voiced stops are medial following their nasal counterpart. The only stop to occur word final is [ʔ], allophone of /k/. In a limited occurrence word medial, [ʔ] replaces [k] when /k/ precedes /m/.

/səkə/ [səkə] 'apika'

/rukmə/ [ʔvʔmə] 'coconut'

When a word ends with [ʔ] and takes a suffix, the [ʔ] retains its quality.

/p/

[p] voiceless unaspirated bilabial stop

/polle/ [pɔlə] 'pig'

/mɔpʷə/ [mɔpʷə] 'oppossum'

[b] voiced bilabial stop

/rɛmpə/ [ʔrɛmbə] 'hand'

/j/

[tʃ] voiceless dental grooved affricate

/jinkə/ [tʃɪŋgə] 'morote'

/woje/ [wɔtʃə] 'to show'

[dʒ] voiced dental grooved affricate

/mənʒi/ [mɛndʒə] 'rope' (vine)

/t/

[t] voiceless unaspirated alveolar stop

/tə/ [tə] 'go down'

/sihliten/ [s.ɣl.tɛn] 'to finish'

[d] voiced alveolar stop

/tuɛntue/ [tuɛndue] 'men'

/k/

[k] voiceless unaspirated velar stop

/kə/ [kə] 'house'

/nəkə/ [nəkə] 'chicken'

[g] voiced velar stop

/hanku / [xəŋgu] 'hand drum'

[ʔ] voiceless glottal stop

/kwik/ [kwiʔ] 'door'

/hukmə/ [xuʔmə] 'ground'

3.1.2.2. Fricatives.

The fricatives are voiceless word initial, voiced word medial. None occur word final. There is the exception, [ɣ] voiced lenis velar fricative. This phoneme occurs word initial but retains its quality when the stem is prefixed.

/gə/ [ɣə] 'dig out' /məgə/ [mɣɣə] 'dig out'(imperative)

/f/

[p̥] voiceless bilabial fricative

/fok/ [p̥oʔ] 'to wash'

[b̥] voiced bilabial fricative

/əfə/ [əb̥ə] 'bone'

/s/

[s] voiceless alveolar grooved fricative

/sɪmpɪ/ [sɪmbi] 'morning'

[z] voiced alveolar grooved fricative

/həsə/ [xəzə] 'to peel'

/h/

[x] voiceless velar fricative

/hun/ [xun] 'star'

[ɣ] voiced velar fricative

/məhu/ [mæɣu] 'corn'

/g/

[g] voiced lenis velar fricative

/gɪ/ [gɪ] 'to see'

3.1.2.3. Nasals

The four nasals have no voiceless counterparts.

The /m/ occurs word initial and word medial but not word final.

The /n/ occurs initial, medial or final. The /n/ and [ʔ] (allophone of /k/) are the only consonants to occur word final. The [ŋ] fluctuates with [n] in word final position, and occurs preceding the [g] (allophone of /k/).

/m/

[m] voiced bilabial nasal

/mæk/ [mæʔ] 'rain'

/hæmə/ [xæmə] 'bush knife'

/sɪmpə/ [sɪ.mbə] 'tomorrow'

/n/

[ŋ] voiced dental nasal

/nəkə/ [ŋəkə] 'chicken'

/əinə/ [əiŋə] 'yesterday'

/mɪnjə/ [mɪn.dʒə] 'today'

There is some indication that [ŋ] is a separate phoneme from [n]. [na] 'day, sun' [na] 'question marker'. However, the number of contrasts is minimal, the area of meaning is very different, and the contrast varies depending on the speaker. Therefore, to avoid using another form of /n/ in the orthography, no distinction is made. In practice it creates no problem in reading.

[n] voiced alveolar nasal

/nəfə/	[nəbə]	'one'
/nəne/	[nəns]	'we two'
/mɪn/	[mɪn]	'this'
/nɪntɪ/	[nɪndɪ]	'middle'

[ŋ] voiced velar nasal

/penke/	[peŋgə]	'skin'
/men/	[mən]~[mɛn]	'foot'

3.1.2.4. Laterals

The [l̥] is similar to [ŋ] in that it is partly interdental with the mid part of the tongue touching the palate giving it an alveopalatal sound. The [l̥] occurs word initial and intervocalic, never word final. When it occurs intervocalically, it is written /ll/. When it occurs word initial, it is written /l/. The [l̥] is found intervocalic and as the second member of a consonant cluster.

/ll/

/l/ [l̥] voiced dental lateral

/wulle/ [wul̥s] 'work'

/le/ [l̥s] 'to sit'

/l/

[l̥] voiced alveolar flapped lateral

/wela/ [wel̥a] 'grass'

/nunkl̥k/ [nunkl̥.ʔ] 'cold'

The reason we chose for symbolizing /l/ in this way rather than vice versa is that we do not want /ll/ to follow a consonant in a single syllable. /hla/ would be /hlla/ 'to get'.

3.1.2.5. Vibrants.

The [r̥] and [r̥̥] are in direct complementary distribution with the voiceless allophone word initial and the voiced allophone word medial. Neither occurs word final.

/r/

[r̥] voiceless alveolar trill

/rafie/ [r̥əbie] 'to break'

[r̥̥] voiced alveolar trill

/muró/ [mur̥̥o] 'alligator'

3.1.2.5. Semivowels.

The /w/ is discussed in 2.1.2. The [y] only occurs word initial.

/y/

[y] voiced dental semivowel

/yempɪ/ [yɛmbɪ] 'road'

/w/

[w] voiced bilabial semivowel

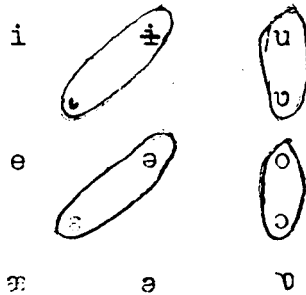
/wə/ [wə] 'tree species'

/kwik/ [kwiʔ] 'door'

3.2. Vowels.

Notice at the outset that there is a pattern of distribution in which certain allophones occur with bilabials and velars and the others with dentals and alveolars. It is also worth mentioning at this point that three phonemic vowels have limited occurrence and distribution. They are /ei/, /ə/, and /o/.

3.2.1. Workchart of Vowels.



3.2.2. Description.

3.2.2.1. High Vowels.

The /i/ has a single allophone. It occurs in word medial or word final positions.

The /i/ and [ɨ] are allophones of /ɨ/. Following bilabials and velars, the [ɨ] is more prevalent, while following dentals and alveolars, the [ɨ] is more prevalent. There is some fluctuation particularly following [l], [m] and [n]. In effect there are a number of allophones of /ɨ/ which range from [ɨ] to [ɨ]. This phoneme is not found in vowel clusters.

The /u/ has an open allophone [u] preceding glottal stop. It is prevalent in vowel clusters.

/i/

[i] high close front unrounded vocoid

/win/ [win] 'blood'

/yawi/ [yawɨ] 'garden'

/ɨ/

[ɨ] high open front unrounded vocoid

/tɨfek/ [t.ɨɛʔ] 'smell'

/sɨ/ [s.ɨ] 'name'

[ɨ] high close central unrounded vocoid

/kɨlle/ [kɨls] 'black'

/nɨmpɨ/ [n.ɨmbɨ] 'hair'

/u/

[u] high close back rounded vocoid

/suə/ [suə] 'pit pit'

/ku/ [ku] 'water'

[ʊ] high open back rounded vocoid

/hukmə/ [xʊʔmə] 'ground'

/məkuk/ [məkʊʔ] 'the end'

3.2.2.2. Mid Vowels.

The [ei], [ə], and [ə] form an interesting arrangement of vowels. The [ei] has limited usage in that it only follows bilabials and velars, may occur medial or final but never initial and is not found in vowel clusters. It is in contrast with [ə] which also follows bilabials and velars. The [ə] is in complementary distribution with [ə] which is generally found following dentals and alveolars.

The [ɔ] is an allophone of /o/ and is found following bilabials and velars. It is lower following certain bilabials as [w] and [ɸ]. The /o/ is a common vowel and is found in vowel clusters as both the first and second members.

/ei/

[e] mid close front unrounded vocoid

/weifa/ [weɛə] 'female bird'

/səkwei/ [səkwe] 'tobacco'

/e/

[ɛ] mid open front unrounded vocoid

/mallempi/ [mɛlɛmbi] 'seat of emotions'

/wune/ [wunɛ] 'I'

[ə] mid central unrounded vocoid

/hempe/ [xəmbə] 'bush'

/səihe/ [səiɛə] 'cassowary'

/o/

[ɔ] mid close back rounded vocoid

/lopo/ [lɔpɔ] 'fence'

/lo/ [lɔ] 'to sit'

[ɔ] mid open back rounded vocoid

/pofɔ/ [pɔfɔ] 'moon'

/hwəpɔ/ [xwəpɔ] 'kwilə'

/homin/ [xomin] 'yellow'

3.2.2.3. Low Vowels.

The /ə/ has a single allophone with limited distribution. It is found word final or preceding a word final [ʔ]. The /e/ is found word initial, medial or final and can be the first or second member of vowel clusters. The /o/ has a single allophone with very limited distribution and occurrence. It is found only word final and is never a member of a vowel cluster.

/ə/

[ɛ] low close front unrounded vocoid

/nɛnkə/ [nɛŋgɛ] 'sister'

/mɛk/ [mɛʔ] 'rain'

/ə/

[ə] low open central rounded vocoid

/ərə/	[ə̃rə]	'to carry'
/yalle/	[yalẽ]	'stomach'
/kə/	[kə]	'house'

/o/

[o] low open back rounded vocoid

/ró/	[r̃o]	'women'
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3.3 Contrasts.

3.3.1. Consonants.

p - p̃	/yafa/	[yap̃]	'father'
	/fəpək/	[p̃əpəʔ]	'something'
	/fak/	[p̃əʔ]	'something'
	/pə/	[pə]	'stone'
	/məfə/	[məp̃]	'enough'
	/məp̃wə/	[məp̃wə]	'possum'
	/fipik/	[p̃ipiʔ]	'dry'
	/pimpi/	[pimbi]	'some'
ts̃ - s̃	/j̃t̃/	[ts̃̃]	'flowering seed'
	/s̃t̃/	[s̃̃]	'name'
	/j̃ə/	[ts̃ə]	'time'
	/s̃ə/	[s̃̃]	'cut coconut'
	/məj̃ə/	[məts̃ə]	'now'
	/məs̃ə/	[məz̃ə]	'cut coconut' (imp)
	/juh̃uə/	[t̃ʃ̃uə]	'before'
	/suh̃uə/	[s̃ʃ̃uə]	'sleep'
	/j̃afa/	[ts̃ab̃]	'fourth'
	/s̃afa/	[s̃̃ab̃]	'bloated'

k - x	/kə/	[kə]	'house'	
	/hə/	[xə]	'tie on a roof structure'	
	/kiə/	[kiə]	'come down'	
	/hiə/	[xiə]	'mosquito'	
	/kumpik/ /humpik/	[kumbi?] [xumbi?]	'wet' 'search and find'	
	/ku/	[ku]	'water'	
	/hun/	[xun]	'star'	
	/kenie/ /heniek/	[kənie] [xənie?]	'tail' 'how many'	
	b - ɸ	/rəmpə/ /rəfə/	[rəmpə] [rəfə]	'hand' 'to sew'
		/kwompi/ /kwofi/	[kwombi] [kwɔbi]	'happy' 'breest bone'
/nəmpə/ /nəfə/		[nəmpə] [nəfə]	'earlier' 'one'	
/hɪfək/ /humpək/		[xɪfə?] [xumbə?]	'food' 'dry object'	
/təmpɪə/ /səfɪə/		[təmpɪə] [səpɪə]	'stagnant' 'empty'	
/rɪfə/ /rɪmpɪ/		[rɪfə] [rɪmpɪ]	'to create an obstruction' 'outside edge of a garden'	
dz - z		/hənɟə/ /həsə/	[xəndzə] [xəzə]	'brother's wife' 'cutting'
		g - ɸ	/munku/ /muhu/	[mungu] [mugu]
/mənki/ /məhi/			[məŋki] [məgi]	'you fasten' 'frog'
x - ɸ			/hə/	[xə]
	/gə/	[gə]	'to dig out'	
	/hó/ /gò/	[xó] [gò]	'tie on the roof structure' 'woven leg band'	
	/há/ /gá/	[xá] [gá]	'eating' 'looking'	

	/he/	[xə]	'to eat'
	/ge/	[gə]	'to shave'
	/hɪfək/	[xɪbɛ?]	'food'
	/gɪfək/	[gɪbɛ?]	'to look at something'
I - 1	/wula/	[wulə]	'to convulse'
	/wulla/	[wulə]	'go inside'
	/hələ/	[xələ]	'clothing'
	/həllə/	[xələ]	'coming uphill carrying something'
	/sələ/	[sələ]	'jump'
	/səlle/	[sələ]	'to undress'
	/polɪ/	[polɪ]	'sick'
	/polle/	[polɪ]	'pig'
I - r̄	/wələ/	[wələ]	'grass'
	/wərə/	[wərə]	'dog'
	/wəlie/	[wəlie]	'to fight'
	/wərie/	[wərie]	'to answer'
	/wele/	[wələ]	'worry or concern'
	/were/	[wərə]	'bird's name'

3.3.2. Vowels.

i - ɨ	/ji/	[tsɪ]	'river rubbish'
	/jɪ/	[tsɨ]	'seeds'
i - ɪ	/fik/	[pɪ?]	'to beat out a fire'
	/fɪk/	[pɪ?]	'untie'
	/elɪ/	[əlɪ]	'to spear'
	/eli/	[əlɪ]	'special friend'
	/yi/	[yɪ]	'a spear'
	/gɪ/	[gɪ]	'to look'
s - ɨ	/rek/	[r̄s?]	'to light a fire'
	/rɪk/	[r̄ɨ?]	'sound'
	/sek/	[sɨ?]	'to cover up'
	/sik/	[sɨ?]	'seed'

e - ə	/hei/	[xe]	'to hang up'
	/he/	[xə]	'to eat'
	/hweik/	[xweʔ]	'ə bird'
	/hwek/	[xwəʔ]	'pig's jungle house'
	/hwei/	[xwe]	'flood'
	/hwe/	[xwə]	'to dodge'
ɛ - æ	/yɛ/	[yɛ]	'do'
	/yæ/	[yæ]	'doing'
	/lɛ/	[lɛ]	'sit'
	/læ/	[læ]	'sitting'
	/jɛk/	[tʂɛʔ]	'tie morota'
	/jæ/	[tʂæʔ]	'time'
ə - ɐ	/pə/	[pə]	'stone'
	/pɐ/	[pɐ]	'edge of property'
	/mək/	[mɛʔ]	'thus'
	/mæk/	[mæʔ]	'rain'
ə - ʊ	/hə/	[xə]	'tie morota'
	/hʊ/	[xʊ]	'tanget'
	/tə/	[tə]	'go down'
	/tʊ/	[tʊ]	'leg'
	/gə/	[gə]	'dig'
	/gʊ/	[gʊ]	'woven arm bend'
ɔ - ʊ	/pɔ/	[pɔ]	'cut sago'
	/pʊ/	[pʊ]	'name of a tree'
	/hɔ/	[hɔ]	'to eat'
	/hʊ/	[xʊ]	'tanget'
ɨ - u	/hlɨ/	[xlɨ]	'hold' (fut)
	/hlu/	[xlu]	'hold' (pres)
	/frɨ/	[ɸrɨ]	'finish'
	/fru/	[ɸru]	'wall'
	/fɨk/	[ɸiʔ]	'slip'
	/fuk/	[ɸuʔ]	'behind'

o - u	/po/	[po]	'beət səgo'
	/pu/	[pu]	'landslide'
	/hun/	[xun]	'star'
	/honen/	[xonən]	'boy'
	/rowei/	[rowe]	'toilet'
	/rueihi/	[rueɣi]	'second wife'

i - ɨ - u

	/fik/	[pɨʔ]	'beət out ə fire'
	/fɨk/	[pɨʔ]	'untie'
	/fuk/	[puʔ]	'behind'

i - e - æ - ə - u

	/ki/	[ki]	'tie'
	/kei/	[ke]	'to go'
	/ká/	[kæ]	'to come'
	/ka/	[kə]	'house'
	/ku/	[ku]	'water'

ɨ - u - o - ɔ - ə - e

	/rɨ/	[rɨ]	'stand'
	/ru/	[rɨ]	'stand' (pres)
	/ro/	[rɔ]	'to cut a coconut'
	/ró/	[rɔ]	'women'
	/rə/	[rə]	'to put'
	/ré/	[rə]	'standing'
	/rei/	[rɛ]	'river flooding over pit pit'

o - ɔ - ə - e - s - ɨ - i

	/so/	[so]	'carry on the head'
	/só/	[sɔ]	'one'
	/sə/	[sə]	'get ə coconut'
	/se/	[sə]	'peel'
	/si/	[si]	'bamboo'
	/sɨ/	[sɨ]	'name'
	/sá/	[sə]	'peeling'

i -ī -u -ə -e -e

/mahi/	[mǣi]	'frog'
/mehi/	[mǣī]	'to look' (imp)
/mahu/	[mǣu]	'corn'
/mahe/	[mǣe]	'dig' (imp)
/mahə/	[mǣə]	'dig' (imp)
/mahei/	[mǣē]	'hang up' (imp)

3.4. Supra-segmental items.

Stress (loudness), length and pitch are non-contrastive on the phonological word level, being governed by the following principles:

1) Pitch is determined by phrase level features (intonation pattern). Words in isolation are usually pronounced with normal prepause sequence (rising) or statement (falling) intonation.

2) Length is determined mainly by vowel quality, but is also strongly influenced by phonological phrase placement. Low vowels tend to be longer than high vowels, with the high central vowel being shortest and the low central vowel the greatest in length. Phrase final vowels in open syllables are usually slightly longer than normal and lenis in strength, depending on the type of phonological phrase. The vowels of syllables taking a phrase stress are usually slightly longer than normal and fortis.

3) Phonological words are normally pronounced with light stress on the first and alternate following syllables. Medial syllables containing consonant or vowel clusters, or

medial closed syllables, also tend to be slightly stressed. A compound word generally takes the normal stresses of each of its component parts - i.e. a single grammatical compound word remains two (or more) phonological words.

Words within phrases retain their normal stress and length features unless modified by **specific** phrase level features.

Shorter phonological phrases (and thus words in isolation) tend to have more exaggerated length features. In longer phonological phrases, two contiguous vowels in phrase medial position tend to correspond in length to a single longer vowel. In extra long phonological phrases contiguous vowels in initial or final position similarly tend to lose their individual length features and be pronounced with a combined length of a single longer vowel.

The following phrase final intonation contrasts have been observed:

1. sequences: slight rise in pitch prepause, with slight decrease in loudness.
2. statement: slight fall in pitch prepause, with slight decrease in loudness.
3. hesitation: level pitch prepause with no increase or decrease in loudness.
4. interrogative: rise in pitch prepause, rising to a higher pitch than that of sequence intonation, with slight increase in loudness.

Note: Interrogative intonation is used only when there is no grammatical question marker in the sentence.

If the final syllable of the final word of a phonological phrase is stressed, the entire intonational contour occurs on that syllable. If the penultimate syllable is stressed, the intonational contour begins on the syllable stressed and steps up or down to the unstressed syllable, continuing the rise or fall on that syllable.

Precontour phrase stresses with accompanying pitch rises also occur, the number of such precontour stresses being in proportion to the length of the phonological phrase.

4. DISTRIBUTION.

4.1. Syllable.

Two basic syllable structures have been observed.

1. (C)V(C) 2. CCV(C) 3. VV

4.1.1. Examples of type 1.

V	/ə.fə/	[ə.bə]	'bone'
CV	/sɪ.fi/	[s..bi]	'to close'
VC	/mi.em.pen.ke/	[mi.sm.bəŋ.gə]	'tree bark'
CVC	/ke.ləm.pen.kel/	[kə.ɬəm.bəŋ.gə]	'lips'

4.1.2. Examples of type 2.

CCV	/plə.rə/	[plə.rə]	'to leave'
CCVC	/pu.fu.nɪn.klɪk/	[pu.ɸu.n.n,ɛk.ʔ]	'back side'

4.1.3. The syllables /au/ and /aɪ/ are possible and often heard.

/au/ [au] 'clay sauce pan'

/aurɪ/ [aurɪ] 'to go uphill'

/aɪ/ [aɪ] 'you go' (imp)

4.2. Distribution of vowels and consonants.

4.2.1. In the syllable.

A sequence of vowels is considered a sequence of syllables except when the first member is /ə/. The following chart indicates the vowel clusters observed.

	/i/	/u/	/ei/	/o/	/ə/	/ə/
/i/	X	iu	ie	io	iə	iə
/u/	ui	X				uə
/o/	oi	ou	oei	X		oə
/ə/	ei	əu	əei	əo		X

Note: /iu/ interpreted as /yu/

The /ə/ and /e/ occur in the syllable initial position. Any vowel can occur in the syllable medial or syllable final position.

All consonant phonemes with the exception of /l/ [l̥] can occur in syllable initial position. The phonemes /r/ and /l/ [l̥] occur in consonant clusters as the second member and will be in a syllable medial position. Any bilabial or velar stop or fricative can be the first member of a consonant cluster with the second member being /l/ [l̥] or /r/.

/hunkrɪn/	'to hold in position'	/pr-/	no example
/kla/	'to cry'	/plara/	'to leave'
/kwa/	'to pick up'	/pwa/	'pond'
/hrie/	'sing sing'	/fru/	'wall'
/hla/	'to get'	/fla/	'to tear down'
/hwa/	'to lie down'	/fwa/	'trouble'

Since words with prenasalized stops have been divided into syllables between the nasal and the stop, it is possible for /m/ and /n/ to be syllable final as well as /k/ (its allophone [ʔ]).

4.2.2. Distribution in the word.

Consonant and vowel clusters cross syllable boundaries in the following pattern:

Consonants.	Vowels
$C_1 \cdot C_2$	$V_1 \cdot V_2$
m. p	i. ə, o, ə́, e
n. t, k, j	u. e, ə
k. m	o. e, ə

4.3. Frequency count.

A count was made of the first 1000 phonemes of the text in 7.2. The results show vowels occurring 46.3^o/o and consonants 53.7^o/o. This is the reverse of the count in the previous phonemics paper. This is due to /w/ being written as a consonant. The /ɨ/ is a common phoneme as it occurs in many pronouns and pronouns are present in every sentence.

e	^o /o 13.1	n	^o /o 10.2	ll	^o /o 2.3
a	11.1	r	7.4	y	2.2
ɨ	9.3	k	7.2	s	1.3
u	3.9	w	5.6	f	1.2
i	3.5	t	5.3	l	1.2
o	2.4	m	2.9	g	1.2
ə	2.0	p	2.8	j	.3
ei	.7	h	2.6		
ó	.3				

5. ORTHOGRAPHY.

We have used the present orthography since January of 1971. It has proved satisfactory in all respects.

In teaching we find three problem areas.

(1) The /é/ [æ] is pronounced [ə]. I find that in other dialects of the Boiken language this sound is not so common.

Perhaps the mark on the e is not readily seen at first. They have less trouble reading in context because this sound has a grammatical function.

(2) The /k/ is pronounced like an English k by English speakers when it is word final. In that position it has the [ʔ] sound.

(3) When /l/ occurs word medial the reader tends to pronounce it as [l̥] rather than [l]. I find no problem with the non-phonemic set up of the /l/.

The /ɛ/ has caused no problems to either the literate or the illiterate.

Our books of Mark and Genesis are printed in this orthography and it is satisfactory. I have worked rather extensively with literates and semi-literates and to a lesser degree with illiterates.

Orthography	Phonemes	Allophones
p	/p/	[p] [b]
j	/j/	[t͡s] [d͡z]
t	/t/	[t] [d]
k	/k/	[k] [g] [ʔ]
f	/f/	[p̥] [b̥]
s	/s/	[s] [z]
h	/h/	[x] [ç]
g	/g/	[ç]
m	/m/	[m]
n	/n/	[n] [ɲ] [ŋ]
ll	/ll/(intervocalic)	[l̥]
l	/ll/(initial)	[l]
	/l/	[l̥]
r	/r/	[r̥] [r]
y	/y/	[y]
w	/w/	[w]
i	/i/	[i]
ɨ	/ɨ/	[ɨ] [ɨ̥]
u	/u/	[u] [v]
ei	/é/	[e]
e	/e/	[ɛ] [ə]
o	/o/	[o] [ɔ]
ə	/ə/	[æ]
a	/a/	[a]
ó	/ó/	[ɔ]

6. TEXT.

Wunere sɪ Demon. Wunere wiare sɪ Kwəhwie. Pofore sɪ Me.
 /wunere sɪ tɛmon wunere wiare sɪ kwəhwie pofore sɪ mé
 [unɛ̃ɛ s. temon unɛ̃ɛ wiɛ̃ɛ s. kwəhwie pɔbɔ̃ɛ s. me

Nəre sɪ nɛmpə tri.

/nɛ̃ɛ sɪnamba t̃ri 2 Pidgin words

[nɛ̃ɛ s. nɛmbə t̃ri

Məjə wunə Demon Yuere polle Yuəmpəri yəɾɪre hwəfu wunə
 /məjə wunə tɛmon yuere polle yuəmpəri yəɾɪre hwəfu wunə
 [mətʂə unɛ̃ɛ temon yuɛ̃ɛ pɔɫs yuəmbɛ̃ri yɛ̃̃.ɾɛ xwabu unɛ̃ɛ

wəhwie wɛrɛ yo.

/wəhwie wɛrɛ yo.

[wəgwɪs wɛ̃ɛ yo

Suek Yuəmpəri tɪ kwenɪsɪk. Tɪre wəikərə polle nenwulle
 /suek yuəmpəri tɪ kwenɪsɪk tɪre wəikərə polle nen wulle
 [sue? yuəmbɛ̃ri t.kwɛn.z.? t.ɾɛ wəikɛ̃ɛ pɔɫs nen ulɛ̃

wen tɪre wəikərə pollere nenen tie hɛmpɛmpə rik. Rɪrɪɪn tɪ
 /wen tɪre wəikərə pollere nenen tie hɛmpɛmpə rik. rɪrɪɪn tɪ
 [wɛn t.ɾɛ wəikɛ̃ɛ pɔɫsɛ̃ nɛnɛn tie xɛmbɛmbɛ ɾ̃.? ɾ̃.ɾ̃i.n t.

kwenɪsɪk, 'Yehe yəi nɛ mɪnən polle nəfə yɪá heonɪk?'

/kwenɪsɪk yehe yəi nɛ mɪnən polle nəfə yɪá heonɪk

[kwɛn.z.? yɛgɛ yəi nɛ m.nən pɔɫs naba yɪə heon.?]

Yuəmpəri mək kwenɪsɪrɔ̃ tɪ kié nɛnku gɪlɛk.

/yuəmpəri mək kwenɪsɪrɔ̃ tɪ kié nɛnku gɪlɛk./

[yuəmbɛ̃ri mə? kwɛn.z.ɾɛ t. kiə nɛngu gɪɫs?]

7. DIALECT INFORMATION.

It is estimated that there are over 100 villages in the Boiken language area. Since villages are constituted of hamlets and the hamlets of the various villages tend to blend together, an accurate count is difficult to determine. Many villages are very difficult to reach, accessible only by foot.

The following information is based on survey work done in April and May, 1973. All the villages were not visited so there is no claim to 100% accuracy.

There appear to be 4 dialects of the Boiken language.

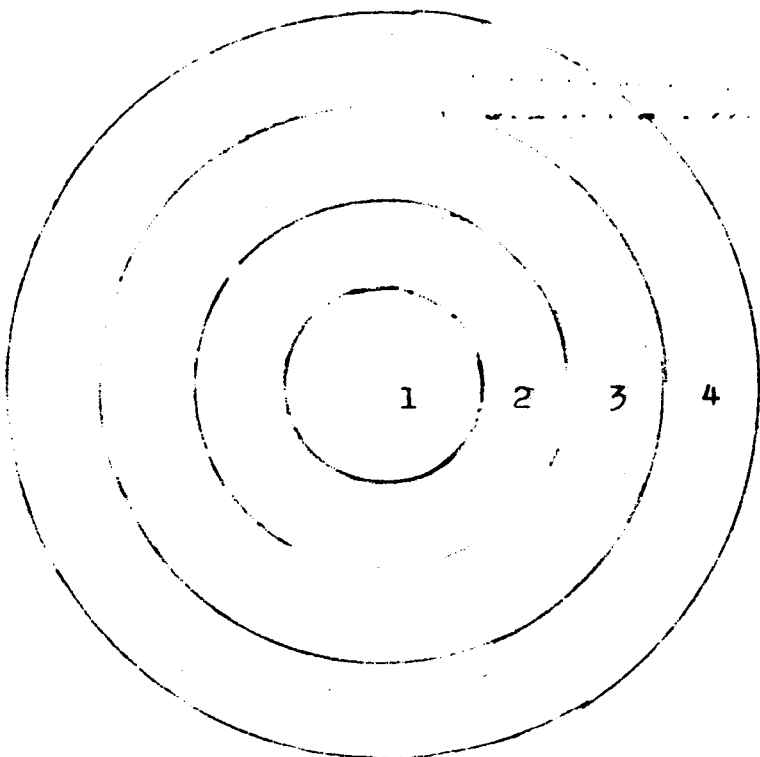
Dialect 1. Yangoru patrol post is the center. The population is about 7000. This is the dialect in which our work has been done.

Dialect 2. The coastal area from Yaripos to Boiken. Going west out of Wewak on the coastal road is a group of people numbering about 3000.

Dialect 3. A group of people living in mountain villages about 20 miles southwest of Wewak. Sasoi is about in the center. Dialect 1 borders dialect 3 on the west. Dialect 2 is separated from dialects 1 and 3 by the Prince Alexander Range. This dialect numbers about 6000.

Dialect 4. Two villages on the Sepik Plains south of dialect 1. There are reports of 1 or 2 other villages related to these 2. Total number would be less than 1000.

Two coastal islands with a related Boiken language have not been visited by myself as yet.



The relationship of dialects 2-3-4 to dialect 1 are illustrated by these concentric circles. My feeling is that all 4 dialects will need separately printed materials. Dialect 2 is intelligible to dialect 1 and vice versa. Dialect 4 is difficult to understand for the dialect 1 speaker.

There are phonemic and vocabulary differences among the dialects. I suspect the grammatical structure to be similar.

For the survey work I used 20 recorded statements in the Yangoru dialect and asked the informant to give me a Pidgin translation. Also I asked for a summary of a short story. Then I took a word list. I tried to use older men as many younger men have been around more and know some of the dialect differences.