

## WAFFA PHONEMES<sup>1</sup>

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### 0. Introduction

Waffa has received very little mention in previous discussions about New Guinea languages. It is a language spoken by approximately 940 people living in five villages located at the headwaters of the Waffa River. The area is in the Morobe District south of the Markham River in the Kaiapit Sub-District.

Preliminary lexico-statistical comparison indicates that Waffa (previously unclassified) is a member of the Eastern Family as defined by S.A. Wurm.<sup>2</sup> It is more closely related to Tairora than to any other language in the family and will probably prove to be a member of the Tairora Sub-Family.

The unique feature of a contrast between sonorant and obstruent nasal phonemes distinguishes the Waffa system from the phonemic systems of the other languages in the Eastern Family and perhaps from all other Highland languages.<sup>3</sup> In other features the Waffa phoneme system could be regarded as a typical Eastern Highland system. The following description is presented as a basis for detailed comparison with other Highland systems and as a basis for establishing a practical orthography for Waffa.

The materials upon which this analysis is based were collected under the auspices of the Summer Institute of Linguistics, while residing at the village of Kusing for a total of two years during 1962–1966.

1. We gratefully acknowledge the help of Eunice Pike and Dorothy James in the analysis of the Waffa phonemic system, and that of Darlene Bee in preparing this paper for publication.
2. Wurm (1964) and McKaughan (1964).
3. The contrast between an alveolar nasal sonorant and flap is also found in one dialect of the neighbouring Tairora language.

## 1. Phonemic Inventory

Eighteen consonants, five vowels and contrastive stress define the Waffa phonemic system. Charts 1 and 2 show the intersecting contrastive features which define the segmental phonemes.

**CHART 1**  
**Consonants**

	Bilabial	Alveolar	Velar	Glottal
<b>Stops : Prenasalised</b>	b	d	g	
<b>Non-prenasalised</b>	p	t	k	q
<b>Oral Fricatives : Voiced</b>	v			
<b>Voiceless</b>	f	s		h
<b>Nasals : Sonorant</b>	m	n	ng	
<b>Obstruent</b>	mm	nn		
<b>Liquids : Semi-vowel</b>		y		
<b>Vibrant</b>		r		

**CHART 2**  
**Vowels**

	Front	Central	Back
<b>High</b>	i		u
<b>Low</b>	e	a	o

## 2. Problems of Interpretation

Palatalisation, labialisation and prenasalisation of consonants; vowel length; and the consonant-vowel status of high vocoids present interpretational problems. The following are the interpretations chosen in the analysis presented in the following sections of this paper.

### 2.1 Palatalisation and Labialisation of Consonants

Since vowel sequences are common in Waffa, but consonant sequences do not occur, the

palatalisation and labialisation of consonant phonemes has been interpreted as a sequence of consonant plus high vowel. Two further disadvantages of interpreting them as consonant plus /w/ or /y/ are that this would increase the morphophonemic complexity of the verb morphology and it would require the postulation of a /w/ phoneme not otherwise needed in this description of Waffa.<sup>4</sup> Examples are :- [pwáʔʌ] /puára/ *pig*; [ndwa:taino:] /duaátainoo/ *rotting flesh*; [pyé: no:] /pieénoo/ *she is weaving*; [ndyáuno] /diáunoo/ *I am standing*.

## 2.2 Prenasalisation of Stops

The prenasalised voiced stops [mb], [nd] and [ŋg] function in single consonantal positions and have been interpreted as single unit phonemes /b/, /d/, and /g/ respectively, since there are no other consonantal clusters. Examples are : [símbáu] ~ [símpáu] /síbáu/ *fly*; [nda:tó:] /daátóo/ *grandmother*; [ħaíndi] ~ [ħaínti] /vaídi/ *man*; [ŋgí:ŋgʌ] /gíga/ *worm*.

## 2.3 Vowel Length

Phonetic vowel length has been interpreted as instances of geminate vowel sequences, e.g.

/tiínoo/	<i>he is coming down</i>	/tínóo/	<i>he is saying</i>
/kuáannú/	<i>wild cane flowers</i>	/kuáanúu/	<i>spit</i>
/nninnúúna/	<i>vein</i>	/ninúinna/	<i>my sister</i>
/yoópée/	<i>bamboo pipe</i>	/yópee/	<i>able</i>

The distribution of stress justifies the interpretation of geminate sequences as two units rather than one in that either vowel may be stressed, both vowels may be stressed, or both may be unstressed, i.e. VV, VV́, V́V́ or VV, e.g. /mmáata/ *bed*; /mmaápu/ *son*; /mmáara/ *revenge*; /mmaimáura/ *tree type*.

## 2.4 Consonant-Vowel Status of High Vocoids

Syllabic high vocoids are interpreted as /i/ and /u/. Non-syllabic high front vocoids are interpreted as /y/. Non-syllabic high back vocoids do not occur apart from labialisation. Examples are : [ħí:ħí] /mmímmí/ *type of worm*; [sáné:tu] /sánéetu/ *lightning*; [kópéyʌ] /kópéya/ *type of fly*; [ħué:ħá:ħé:] /vuéeváavée/ *quickly*.

4. In a single instance the analysis adopted here leads to ambiguity. Normally /ii/ represents [i:], e.g. [ni:tʌ] /niíta/ *with me*; [ħí:] /nní/ *when you come*; [ħi:taɾaino:] /niítarainoo/ *he is sick*. Just one morpheme for *you pl. does* /ii/ represent [yi], that is palatalisation followed by a high front vocoid, e.g. [ŋyi] /ngii/ *your pl.* The analysis of palatalisation as a vowel has not been abandoned on account of this one instance of [yi].

### 3. Description and Distribution of Phonemes

#### 3.1 Articulatory Description

##### 3.1.1 Consonants

- /p/, /t/ and /k/ are voiceless bilabial [p], alveo-dental [t] and velar [k] unaspirated stops.
- /b/, /d/ and /g/ are prenasalised bilabial, alveolar and velar stops. Voiced allophones [mb], [nd] and [ŋg] occur word initially and in fluctuation with voiceless allophones [mp], [nt] and [ŋk] word medially. The voiceless allophones tend to occur more frequently in word final syllables. Examples are : [mbú:mʌ] /búuma/ *stamens*; [yámbá:] /[yámpá:] /yábáa/ *banana*; [ndú:nʌ] /dúuna/ *deafness*; [yándá:] / [yántá:] /yádáa/ *elbow*; [ŋgí:ŋgʌ] / [ŋgí:ŋkʌ] /gíiga/ *worm*.
- /q/ is a voiceless glottal stop [ʔ]. Following pause, word-initial /q/ is manifested as [ʔ] freely varying with zero. There are no words which phonemically commence with a vowel.<sup>5</sup>
- /v/ and /f/ are bilabial fricatives, voiced [ɸ] and voiceless [ɸ̥] respectively.
- /s/ is a voiceless alveolar grooved fricative [s].
- /h/ is a voiceless glottal fricative [h].
- /m/, /n/ and /ŋ/ are voiced bilabial [m], alveolar [n] and velar [ŋ] nasals.
- /mm/ is a nasalised voiced bilabial fricative [ɸ̃].
- /nn/ is a voiced alveolar flapped nasal [ɳ].
- /r/ is a voiced alveolar flapped vibrant [ɽ]. In word initial position it may occur with a non-phonemic neutral vowel onset.
- /y/ is a voiced high front non-syllabic vocoid. Allophones with friction [ɣ] and without friction [y] occur in free variation. Preceding a high vowel the fricative allophone occurs the more frequently of the two.

##### 3.1.2 Vowels

- /i/ and /u/ are high front unrounded and back rounded vocoids respectively. Voiced close ([i] and [u]) and open ([ɪ] and [ʊ]) variants occur in fluctuation word initially and medially, and in stressed syllables word finally. Voiceless variants [I] and [U] occur in fluctuation with [i] and [u] in unstressed final syllables following voiceless stops.
- /e/ and /o/ are voiced mid front unrounded and back rounded vocoids respectively. Open variants [ɛ] and [ɔ̂] occur except in word final syllables under intonational conditions of high pitch, when the close variants [e] and [o] occur.
- /a/ is a voiced low central unrounded vocoid. In vowel clusters an open variant [a] occurs. Elsewhere the phoneme is reflected by a close variant [ʌ̃].

5. In the orthography used for Waffa literature word-initial /q/ has been omitted except when it is labialised, since initial /q/ does not contrast with initial vowel.

### 3.1.3 Stress

Contrastive syllable stress may occur on one or more syllables of a word.<sup>6</sup> The following sets demonstrate stress contrasts :

/haáya/	wing	/mmáta/	a short way	/yeéna/	rope
/háaya/	fuzz	/mmátá/	ground	/yéenna/	food
		/mmatáa/	spear	/mmééya/	tail

### 3.2 Distribution

Distribution of phonemes will be discussed with reference to the syllable and the word. For this purpose the syllable and the word will be defined as follows :

A SYLLABLE is a unit of potential stress having a nucleus of a single vowel and an optional onset consisting of a single consonant or a consonant followed by a non-syllabic high vowel (2.1). The following syllable patterns, therefore, occur : V, CV, and CVV. The V syllable is limited in distribution to word-medial and -final positions, and two V syllables in sequence have not been observed.

A WORD is a rhythm unit containing one or more syllables. Words containing from one to twelve syllables have been recorded. None, or any, or all of the syllables of a word may be stressed. Phonological word borders have the following phonetic characteristics. Word initial borders are marked by a consonant and an up-step in pitch. Word final borders are marked by a vowel, decrescendo, length, and a general down-drift of pitch.

- (a) All consonants occur in CV and CVV syllables in all positions within words.
- (b) All vowels occur in V and CV syllables in their positions within words.
- (c) In CV syllables all combinations of consonant and vowel occur.
- (d) In CVV syllables not followed by a V syllable, the only vowel sequences which occur are /ua/ and /ia/, and this is true for all positions within words.<sup>7</sup>
- (e) In CVV syllables all consonants are followed by /u/, and all consonants except /q/, /h/ and /y/ are followed by /i/.
- (f) In the disyllabic grouping CV, V, the vowel sequences /aa/, /ee/, /ii/, /oo/, /uu/, /ai/ and /au/ occur. In word-final position, in vocative forms only, the additional sequences /ao/, /io/ and /uo/ occur.
- (g) In the disyllabic grouping CVV.V, the vowel sequences /uaa/, /iaa/, /uee/, /iee/, /uii/, /iii/,<sup>7</sup> /uoo/, /ioo/, /uai/, /iai/, /uau/ and /iau/ occur.

6. Some words have no stressed syllables and some have all syllables stressed. These may be identified by frame techniques as used in tone analysis. See Pike and Kindberg (1956) for their application to a language with a stress system very similar to that of Waffa. It should be noted that in the orthography of Waffa literature stress is unmarked.

7. See footnote 4.

#### 4 Illustrative Pairs of Phonemic Contrasts

The following contrastive pairs demonstrate the phonemically separate status of those phonemes which are phonemically most similar.

/p/ : /b/	/yaápa/ /sípu/	bark cloth door	/yábáa/ /síbáu/	banana fly
/t/ : /d/	/yáata/ /tínóo/	ear he is saying	/yádáa/ /dínóo/	elbow he is standing
/k/ : /g/	/káaka/ /kuátínóo/	lime he is talking	/káaga/ /guátínóo/	dividing mark in garden he is splitting wood
/f/ : /v/	/faínni /úufa/	dog red	/vaíni/ /óova/	close by type of yam
/p/ : /f/	/puaáráa/	single	/fuáara/	bearers of house
/b/ : /v/	/kóobi/	claws	/kóova/	father
/s/ : /h/	/saívai/	half	/haívai/	he shot
/s/ : /t/	/tiínoo/	he is coming down	/siína/	bow string
/m/ : /n/ : /ng/	/mátee/ /ngámi/	now second son	/náammée/	type of tree
/m/ : /mm/	/mókoo/ /kama/	live coals round taro	/mmoóka/ /mmamma/	back; leech skin
/n/ : /nn/	/naú/ /kuáanúu/	yesterday spit	/nnau/ /kuáannú/	house a cultivated cane
/r/ : /t/	/mmaráa/ /rínóo/	belong he is fighting	/mmátá/ /tínóo/	ground he is saying
/r/ : /nn/	/ráínoo/	he is laughing	/nnáinoo/	he is eating
/i/ : /e/	/tiínoo/	he is coming down	/teénoo/	we
/u/ : /o/	/qávú/	eye	/qáavo/	this one
/a/ : /e/ : /o/	/yaámma/ /yóonna/	reed skirt mud	/yéenna/	food
/i/ : /e/ : /a/ : /o/ : /u/	/nnínoo/ /naánoo/ /nnóonna/	he is coming big sister big	/neénoo/ /naánna/ /nnúuna/	I faeces throat

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