

2. SOUNDS (PHONEMES)

2.1. VOWELS

There are seven distinct vowels.

- a as in *father*, sometimes shorter. May occur anywhere in a word, initial, medial or final.
- e as in *egg*. May occur anywhere in a word.
- i intermediate between the vowels of *ink* and *steep*.
- o as *aw* in *awful*, sometimes shorter.
- u as in *full*.
- ø as *e* in French *de*.
- ɨ an unrounded u.

All these vowels can occur medially or finally. I have not found u, or ɨ, initially. The following wordlist contains many minimal pairs which establish the separate identity of these seven vowels:

| | | | |
|--------------------|------------|--------------|----------------|
| bədo 'derris root' | do 'creek' | dri 'mayfly' | fi 'butterfly' |
| bədə 'tree' | di 'head' | dro 'cough' | fə 'drum' |
| | de 'ache' | | fi 'face' |

| | | | |
|--------------|---------------|--------------|-----------------------|
| gre 'flower' | kro 'bird' | ku 'blood' | mamə 'brother-in-law' |
| gri 'bamboo' | kru 'moon' | kə 'brother' | məmə 'food' |
| gro 'egret' | kre 'wallaby' | | mumu 'granddaughter' |
| gra 'sun' | | | mɨmɨ 'owl' |
| | | | muma 'lily' |

| | | | |
|------------------|--------------|-----------|----------------------|
| me 'fish' | mbrə 'house' | no 'axe' | pə 'sister-in-law' |
| mi 'finger, eat' | mbrə 'sago' | nu 'egg' | pə 'daughter-in-law' |
| mo 'skin' | mbrɨ 'hair' | ne 'hawk' | |
| mu 'red' | | ni 'get' | |
| mə 'eat!' | | | |

| | | |
|----------------|----------------|---------------|
| ri 'small' | rəto 'cheek' | mvrɪ 'basket' |
| re 'betel nut' | roto 'inquest' | mvra 'enemy' |
| ru 'lime' | | |
| rə 'rain' | | |

| | | |
|---------------------|------------------|----------------|
| mvo 'froth' | we 'breadfruit' | nda 'you(sg.)' |
| mvɪ 'firewood' | wo 'catfish' | nde 'you(pl.)' |
| mvə 'father-in-law' | wa future marker | ndo 'father' |
| mve 'girl' | wi 'vine' | ndu 'child' |
| | | ndi 'tree' |

A final ə occurs on the end of most words that do not end in another vowel. In this situation ə is probably not significant, but supplied for euphony.

2.2. CONSONANTS

The labial stops are p, b, mb and 'b.

p is as in English and may occur initially or medially. I have not found it to follow m.

b is as in English and may occur initially or medially. It is rare.

mb is much commoner than b, and may occur initially or medially.

'b is a preglottalised voiced stop. It is rare. The following vocabulary serves to distinguish some of this group

| | | | |
|------------------|-------------|--------------------|-------------|
| papə 'rat' | 'bɪ 'house' | mbe 'bud' | mbra 'sago' |
| babə 'fan' | mbɪ 'spear' | pə 'sister-in-law' | pra 'canoe' |
| mbapə 'ancestor' | | | |

| | |
|-------------|---------------------|
| 'ba 'water' | mbre 'house' |
| | brə 'landing place' |

p, b and mb are clearly distinguished but 'b could be a variant of p or b. Appearances in similar environments make it unlikely that 'b is a variant of p.

w is as in English after stops. When initial or between vowels it tends to be a fricative ʋ. It is never final. It is distinguished from mb, p and 'b, but only tentatively from b.

| | |
|--------------------------|-----------------------------|
| mbo 'wife's grandfather' | 'ba 'water' |
| wo 'catfish' | wa (ʋa) future tense marker |

| | |
|------------|---------------------|
| babə 'fan' | wawa (ʋaba) 'uncle' |
|------------|---------------------|

I found no minimal pairs to differentiate w from labialisation of other consonants (especially p, t, k, b, d, g and r) alone and in combination, and accordingly labialisation can be represented by w following the

consonants affected. I found also no minimal pair to differentiate consonant w from vowel u, but to use the same symbol for both would produce some puzzling words:

wawa'u 'frilled lizard' would then be written uaua'u
wuwawu 'sand' would be uuauuu.

m as in English. This may be initial or medial. When at the end of a word, some speakers attach e, while others pronounce m final. It is distinguished from mb:

mo 'skin' mu 'red' me 'fish'
mbo 'wife's grandfather' mbu 'nephew' mbe 'they'

Probably also kam 'brother-in-law' kamba 'stone'.

There are two labiodentals, f and v.

f was only observed in initial position. As in English.

v may be initial or medial, and is pronounced as in English.

These two consonants are distinguished from p, b and w.

fi 'face' vo 'coconut' fe 'drum'
vi 'sago' wo 'catfish' pe 'sister-in-law'
wi (bi) 'vine' mbo 'wife's grandfather'
mvo 'froth'

A labiodental nasal m̥ can precede v. This cannot be differentiated from m, and only occurs in this environment. It is probably a variant of m and does not require a separate symbol.

The alveolar stops form a series corresponding to the labials, and are t, d, nd and 'd.

t is as in English and may occur initially or medially. I have not found it to follow n.

d is as in English and may occur initially or medially.

nd may occur initially and medially.

'd is a preglottalised stop. It is rare, and occurs initially and medially.

The following groups of words distinguish the four stops:

do 'creek' 'di 'net'
ndo 'father' ndi 'tree'
to 'brother' di 'head'

t, d and nd are clearly distinguished. 'd is separated from d and nd, but not from t, although occurrence in similar environments makes it unlikely that they are variants of one phoneme.

s as in English, always voiceless. May be initial, medial or final.

z as in English. May be initial or medial. Both these sibilants are distinguished from the corresponding stops.

| | |
|-----------------------|---------------------------------------|
| zi 'husband's parent' | nzo 'swamp': compare with lists above |
| sim 'grandfather' | sra 'shell money' |
| tim "'bigmaus" fish' | tra 'pandanus' |

They are also distinguished from each other.

| | |
|--------------------|--------------|
| ŋiso 'grass skirt' | nsu 'banana' |
| ŋizo 'headache' | nzu 'wasp' |

n as in English, may be initial or medial. It is distinguished from nd and m.

| | | |
|-------------|--------------|---------------|
| nu 'egg' | no 'axe' | nam 'mother' |
| mu 'red' | mo 'skin' | ndam 'sister' |
| ndu 'child' | ndo 'father' | |

r is trilled, as in Scottish English. It may occur initially or medially. l occurs as a free fluctuant, and Rao speakers learning English have great difficulty distinguishing it. r may be preglottalised.

'ru 'pig' ru 'lime'

There are two alveopalatals, č and j.

č as čh in English. May be initial or medial.

j as in English. May be initial or medial.

These two consonants are distinguished from t, d, s and z.

| | | | |
|-------------|---------------------|-----------|-----------------------|
| či 'now' | ji 'sand' | dí 'head' | zi 'husband's parent' |
| sa 'mussel' | ča 'faeces' | ču 'milk' | tu 'pig meat' |
| vitu 'ash' | viču 'spinning top' | | |

y may occur initially or medially. It is distinguished from j and z.

| | |
|--------------------|----------------|
| nyi 'tinea' | nyo 'you(pl.)' |
| nji 'wife's uncle' | nzo 'swamp' |

It is not clearly distinguished from vowel i, but yeyeto 'coleus' would be confusingly written ieietyo, if y were not used as the consonant symbol.

The velar stops are k, g and ŋg. Presumably the preglottalised velar stop that we would expect to correspond to 'b and 'd is represented by the glottal stop '.

k as in English. It may be initial or medial.

g as in English, always hard. It may be initial or medial.

ŋg as ŋg in angry. It may be initial or medial. The following vocabulary serves to differentiate the three stops:

| | | | |
|----------------|--------------|-------------|--------------|
| gi 'hot' | grɪ 'bamboo' | kro 'bird' | ŋə 'ankle' |
| ŋgi 'saucepan' | ŋgrɪ 'sore' | gro 'egret' | kə 'brother' |

ŋ as ng in *singing*. It may be initial or medial.

When final, the consonantal quality almost disappears, giving rise to nasalisation of the preceding vowel. To distinguish ŋ from ŋg, m and n, the following words are given:

| | | | |
|--------------|------------|-------------|------------------|
| no 'axe' | gru 'dish' | ŋə 'ground' | ŋəŋə 'black' |
| ŋgo 'yellow' | ŋru 'tree' | ŋge 'ankle' | meme 'food' |
| no 'tree' | | | ŋəŋə 'afternoon' |

The glottal stop ' is a significant sound, and distinct from k and g. It may occur medially or initially. The preglottalised consonants 'b, 'd and 'r may also be thought of consonant clusters of the glottal stop followed by b, d and r. The identity of ' is shown in the following vocabulary:

| | | |
|----------------|-------------|------------|
| 'rɪ 'garden' | 'ro 'oat' | 'ru 'pig' |
| ri 'small' | kro 'bird' | kru 'moon' |
| 'i 'crocodile' | gro 'egret' | ru 'lime' |
| gi 'hot' | | |

h is a rough aspirate, well voiced. It is of rare occurrence, and may belong to the same phoneme as g.

Stress falls on the first vowel of a word except when a later vowel is followed by the glottal stop; in which case the later vowel takes the stress. Stress does not appear to be significant.