

## Chapter 2

# Phonology

This chapter describes the sound system of the Muna language. The emphasis is on the basic sound structures of the language, such as phonemes, syllable structure, stress and phonotactics.

Two observations must be made concerning the scope of the description given here. First, the phonetic description in 2.1 of the consonants and vowels is necessarily impressionistic. The unavailability of Muna speakers in the Netherlands and relatively simple recording techniques made high quality acoustic descriptions impossible.

Second, this description is conservative in that no attempt is made to relate the facts to current phonological theories. Hence one will not find formalized rules or analyses of the facts in the words and notations of a particular school of phonology (for instance, distinctive feature matrix, autosegmental tiers). What is presented here is meant to be an adequate description of the relevant facts.

In 2.1 the phoneme inventory of Muna is given, with subsequent phonetic descriptions and examples. In addition to a list of words showing phonemic oppositions (2.2), a table with phoneme frequencies is presented (2.3). In 2.4 syllable and root structure is discussed, followed by a treatment of stress (2.5) and vowel sequences (2.6). In 2.7 the phonotactics of the simple root are discussed, followed by a section on morphophonemics (2.8). Finally, 2.9 illustrates the phonological adaptations of loanwords.

### *2.1. Phonemes: inventory and description*

#### *2.1.1. Phoneme inventory*

##### *a. Consonants*

In the chart the following abbreviations are used:

vd	: voiced
vl	: voiceless
prenas	: prenasalized

	bilabial	labio-dental	dental	alveolar	palatal	velar	uvular	glottal
stop vl	p			t	(c)	k		
vd	b		ɖ	d	(j)	g		
vl prenas	mp			nt		ŋk		
vd prenas	mb			nd		ŋg		
implosive	ɓ							
nasal	m			n		ŋ		
fricative vl		f		s				h
vd							x	
vl prenas				ns				
trill				r				
lateral				l				
approximant	w				(y)			

Notes 1. The palatal consonants /c/, /j/ and /y/ are marginal loan phonemes. The number of words containing these recent loan phonemes is very low. Consequently, they will not be included in the discussion of consonants.

2. /t/ and /nt/ are placed here with the alveolar /d/, although they are phonetically apico-dentals. The difference between /t/, /nt/ and the lamino-dental /ɖ/, however, is much bigger, hence their inclusion with the alveolars.

#### b. Vowels

	front	central	back
high	i		u
mid	ɛ		ɔ
low		a	

#### 2.1.2. Phonetic description

In this section a phonetic description of all the consonants and vowels will be given with illustrative examples. In these examples the phoneme under discussion will be illustrated both in initial and in medial position within the word. I will give the phonemes in phonemic transcription (marked by //).

followed by the orthography adopted in this grammar (marked by <>). Allophonic descriptions are between square brackets ([]).

### Consonants

/p/	<p>	voiceless bilabial plosive:		
			<i>paso</i>	'nail'
			<i>dopi</i>	'board'
/b/	<b>	voiced bilabial plosive:		
			<i>buku</i>	'bone'
			<i>bebe</i>	'duck'
/mp/	<mp>	voiceless prenasalized bilabial plosive:		
			<i>mpona</i>	'long'
			<i>sampu</i>	'go down'
/mb/	<mb>	voiced prenasalized bilabial plosive:		
			<i>mbololo</i>	'gong'
			<i>lambu</i>	'house'

These four bilabial plosives have flapped or trilled allophonic variants before /ɔ/ in stressed position. When the closure of the plosive is released, the lips are vibrated once or twice fairly lightly while the lower jaw is moved forward a little. This allophone only occurs in less careful speech and is considered at best substandard. Since the International Phonetic Alphabet does not suggest a symbol for this variation, I use the diacritic \* to symbolize this 'rolling release':

<i>puhe</i>	[puhɛ]	~	[p*uhɛ]	'navel'
<i>huri</i>	[buri]	~	[b*uri]	'write'
<i>kambuse</i>	[kambusɛ]	~	[kamb*usɛ]	'cooked maize'
<i>kampuuna</i>	[kampuuna]	~	[kamp*uuna]	'crossroads'

/ʃ/	<bh>	voiced bilabial implosive:		
			<i>bhaguli</i>	'marble'
			<i>tobho</i>	'stab'
/m/	<m>	voiced bilabial nasal:		
			<i>mata</i>	'eye'
			<i>ama</i>	'father'
/w/	<w>	voiced labial approximant. The following are common allophones:		
		[ʋ]	voiced labio-dental approximant, often found before /a,e,i/:	
			<i>wangka</i>	[ʋaŋka] 'tooth'
			<i>wewi</i>	[ʋewi] 'pig'
			<i>wite</i>	[ʋite] 'land'

[w]      voiced spread (unrounded) bilabial approximant with slight lip protrusion, common before /ɔ/ and /u/:

<i>wondu</i>	[wɔndu]	'fragrant'
<i>wulu</i>	[wulu]	'hair'

[β]      voiced bilabial fricative with slight lip protrusion, only before /u/:

<i>wuna</i>	[βuna]	'flower'
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Before /u/ there is therefore free variation between [w] and [β]. This whole system of allophones is quite unstable within the speech community. With several speakers I recorded only the first or the second allophone. The degree of lip protrusion in the second and third allophone also varies, as does the amount of friction to be heard in the third allophone. Whatever the phonetic norm, it is very clearly not a rounded bilabial like the English /w/. The target seems to be a labio-dental or a bilabial spread approximant, with lip protrusion and friction resulting from the following rounded back vowels /ɔ/ and /u/.

/f/      <f>      voiceless labio-dental fricative:

<i>foo</i>	'mango'
<i>mafu</i>	'yam'

/d/      <dh>      voiced lamino-dental plosive:

<i>dhangku</i>	'beard'
<i>medha</i>	'table'

This phoneme only occurs in (suspected) loanwords (see 2.9). In many of these it corresponds to the Indonesian palatal plosive <j>. Many speakers have the Indonesian <j> as a target or norm for this sound in those words, as Indonesian is the prestige language. This target is reached with varying degrees of success, resulting for example in a lamino-palato-alveolar affricate [j].

<i>bhadhu</i>	[βadu]	~	[βaju]	'shirt'
<i>dhambu</i>	[ɖambu]	~	[ɖambu]	'cashew nut'

In words containing <dh> that have no formally corresponding Indonesian equivalent, such as *adhara* 'horse', this allophonic variation does not occur.

/t/      <t>      voiceless apico-dental plosive:

<i>tombi</i>	'flag'
<i>late</i>	'live'

/d/      <d>      voiced apico-alveolar plosive:

<i>dada</i>	'cook'
<i>madaho</i>	'later'

/d/ may be realized as an implosive [ɗ]. This is often the case before /a/, regularly before /i/ and /ɛ/, but rarely before /ɔ/ and never before /u/. Before /a/ and /ɔ/ the plosive is sometimes made with a post-alveolar or even a retroflex point of articulation:

<i>dahu</i>	[dahu]	~	[ɗahu]	~	[ɗahu]	'dog'
<i>deu</i>	[deu]	~	[deu]			'needle'
<i>lodo</i>	[lɔɗɔ]	~	[lɔɗɔ]			'sleep'

- /nt/ <nt> voiceless apico-dental prenasalized plosive:
- |                 |  |            |
|-----------------|--|------------|
| <i>ntabhala</i> |  | 'thumb'    |
| <i>lantoga</i>  |  | 'bracelet' |
- /nd/ <nd> voiced apico-alveolar prenasalized plosive:
- |              |  |          |
|--------------|--|----------|
| <i>ndau</i>  |  | 'heron'  |
| <i>panda</i> |  | 'bottom' |
- /n/ <n> voiced apico-alveolar nasal:
- |             |  |        |
|-------------|--|--------|
| <i>nea</i>  |  | 'name' |
| <i>lani</i> |  | 'sky'  |
- /s/ <s> voiceless lamino-alveolar grooved fricative (tip of tongue usually behind lower teeth):
- |             |  |                |
|-------------|--|----------------|
| <i>saho</i> |  | 'rafter'       |
| <i>lasa</i> |  | 'ten thousand' |
- /ns/ <ns> voiceless lamino-alveolar prenasalized grooved fricative:
- |              |  |              |
|--------------|--|--------------|
| <i>nsara</i> |  | 'long'       |
| <i>nunsu</i> |  | 'beak, bill' |
- /r/ <r> voiced apico-alveolar trill:
- |             |  |        |
|-------------|--|--------|
| <i>rase</i> |  | 'rust' |
| <i>horo</i> |  | 'fly'  |
- /l/ <l> voiced apico-alveolar clear lateral approximant:
- |              |  |         |
|--------------|--|---------|
| <i>lembi</i> |  | 'naked' |
| <i>ala</i>   |  | 'take'  |
- /k/ <k> voiceless dorso-velar plosive:
- |              |  |           |
|--------------|--|-----------|
| <i>kori</i>  |  | 'leprosy' |
| <i>bhake</i> |  | 'fruit'   |

This sound has the usual allophones before front and back vowels: a palato-velar [k] before /i/ and /ɛ/, and a post-velar [k] before /ɔ/ and /u/. Before /a/, /k/ is a regular velar plosive.

/g/	<g>	voiced dorso-velar plosive:	
		<i>ganda</i>	'drum'
		<i>laga</i>	'tree ant'

Under the same circumstances /g/ has similar allophones as /k/.

/ŋk/	<ŋk>	voiceless prenasalized dorso-velar plosive:	
		<i>ŋkodau</i>	'old'
		<i>rangko</i>	'young'

/ŋg/	<ŋg>	voiced prenasalized dorso-velar plosive:	
		<i>ŋgela</i>	'clean'
		<i>sanggara</i>	'fried banana'

/ŋ/	<ŋ>	voiced dorso-velar nasal:	
		<i>ŋinda</i>	'shine'
		<i>pangaowa</i>	'sail'

/ʁ/	<gh>	voiced dorso-uvular fricative:	
		<i>ghuse</i>	'rain'
		<i>ragha</i>	'branch'

/h/	<h>	voiceless glottal fricative:	
		<i>hende</i>	'rise'
		<i>maho</i>	'near'

#### Vowels

/i/	<i>	high front unrounded vowel:	
		<i>isa</i>	'older sibling'
		<i>kuli</i>	'skin'

/u/	<u>	high back rounded vowel:	
		<i>usa</i>	k.o. tree
		<i>lowu</i>	'drunk'

/a/	<a>	low central unrounded vowel:	
		<i>ana</i>	'child'
		<i>kala</i>	'go'

/ɛ/	<ɛ>	half-open front unrounded vowel:	
		<i>elu</i>	'saliva'
		<i>bhose</i>	'shoulder'

In the immediate environment of another vowel the half-open sound is raised to a half-close vowel [e]:

<i>rea</i>	[rea]	'blood'
<i>neu</i>	[neu]	'dry'
<i>mie</i>	[mie]	'person'

/ɔ/ <ɔ> half-open back rounded vowel:

<i>horo</i>		'fly (v)'
<i>rako</i>		'catch'

In the immediate environment of another vowel the half-close allophone [o] occurs:

<i>oe</i>	[oe]	'water'
<i>wou</i>	[wou]	k.o. tree
<i>peo</i>	[peo]	'extinguished'

Word-initial vowels are optionally preceded by a non-phonemic glottal stop:

<i>ina</i>	[ina]	~	[ʔina]	'mother'
<i>ure</i>	[ure]	~	[ʔure]	'high tide'

## 2.2. List of contrasts

This section presents a list of minimal pairs showing some of the more important contrasts establishing the phonemes in 2.1. The reasons for treating the prenasalized segments as unit phonemes will be discussed in 2.4. I have tried to limit the contrast to initial position in disyllabic roots, but in some cases no good examples were available, either because they did not happen to occur in the data gathered, or because of distributional limitations (*ng* and *ngg*, for instance, are very rare in initial position). In such cases contrast is shown in other environments. In one case (*ngk* - *ngg*) the environment is not completely identical.

p - b	<i>pulu</i>	'tough'	<i>bulu</i>	'draw'
p - mp	<i>pau</i>	'umbrella'	<i>mpau</i>	'sleepy'
b - mb	<i>bulu</i>	'draw'	<i>mbulu</i>	'pick vegetables'
mp - mb	<i>mpali</i>	'stroll'	<i>mbali</i>	'become'
b - bh	<i>baru</i>	'happy'	<i>bharu</i>	'fungus'
bh - mb	<i>bhoto</i>	'guess'	<i>mboto</i>	'stay awake'
p - m	<i>panda</i>	'bottom'	<i>manda</i>	'regret'
p - f	<i>paa</i>	'four'	<i>faa</i>	'termite'
b - w	<i>bulu</i>	'draw'	<i>wulu</i>	'hair'
t - d	<i>tolo</i>	'mucus'	<i>dolo</i>	'roof top'
d - dh	<i>dolo</i>	'roof top'	<i>dholo</i>	'twisted'
t - nt	<i>toro</i>	'ponder'	<i>ntoro</i>	'turn, spin'
d - nd	<i>dawu</i>	'part'	<i>ndawu</i>	'fall'
nt - nd	<i>ntoro</i>	'turn, spin'	<i>ndoro</i>	'skirt'
d - r	<i>dea</i>	'red'	<i>nea</i>	'name'
l - r	<i>lea</i>	'painful'	<i>rea</i>	'blood'
s - ns	<i>sara</i>	k.o. official	<i>nsara</i>	'long'
ns - nt	<i>nsara</i>	'long'	<i>ntara</i>	'hold'

k	-	g	<i>kanda</i>	'wound'	<i>ganda</i>	'drum'
k	-	ngk	<i>bhake</i>	'fruit'	<i>bhangke</i>	'corpse'
g	-	ngg	<i>ago</i>	'cure'	<i>anggo</i>	'unsteady'
ngk	-	ngg	<i>langke</i>	'tail'	<i>langgo</i>	'proud'
g	-	ng	<i>gari</i>	'uncombed'	<i>ngari</i>	'bored'
g	-	gh	<i>gau</i>	'cook'	<i>ghau</i>	'lung'
h	-	gh	<i>haro</i>	'sweep'	<i>gharo</i>	'hungry'
gh	-	r	<i>ghase</i>	'chin'	<i>rase</i>	'rust'
s	-	h	<i>sala</i>	'path'	<i>hala</i>	'wrong'
-	-	h	<i>ala</i>	'take'	<i>hala</i>	'wrong'
-	-	gh	<i>ase</i>	k.o. game	<i>ghase</i>	'chin'

### 2.3. Phoneme frequency

In a corpus of over 1,000 disyllabic roots (CVCV type, see 2.4) the frequency (in percent) of the consonant phonemes in word-initial and word-medial position is as follows (because of rounding off, the total is not exactly 100):

phoneme	initial	medial
p	7.6	3.8
b	4.5	2.1
mp	0.6	2.5
mb	1.2	5.4
bh	6.6	2.5
f	1.5	1.1
t	11.5	5.9
d	4.5	3.8
dh	3.3	2.1
nt	1.0	4.2
nd	0.9	5.2
s	8.1	4.9
ns	0.3	2.2
k	7.8	4.5
g	4.2	2.5
ngk	0.5	5.1
ngg	0.3	0.6
gh	5.6	2.2
h	3.7	2.5
l	8.8	14.5
r	6.5	8.6
w	5.4	3.9
m	4.0	2.7
n	1.8	5.1
ng	0.4	1.6
	-----	-----
	100.6	99.5

The following observations can be made on the basis of these figures:

1. Initially, voiceless stops, *s* and *l* occur with high frequency.
2. Prenasalized consonants and *ng* are relatively rare in initial position.
3. Medially, liquids are highly favoured; apart from these consonants, preferences seem less distinctive in this position.



4. The functional load of *ngg* as a phoneme is very low.

The relative frequency of vowels (in percent) in these roots is as follows (divided between occurrence in the final or the penultimate syllable):

	penultimate	final
i	11	17
e	14	14
a	35	32
o	22	18
u	18	19

## 2.4. Syllable and root structure

### 2.4.1. Syllable structure

The structure of the syllable depends crucially on the analysis of the prenasalized segments *mp*, *mb*, *nt*, *nd*, *ngk*, *ngg* and *ns*. Are these phonetically complex sound units or are they sequences? And what is the syllable division of words like *lambu* 'house'?

The analysis adopted here treats these segments as unit phonemes in all positions in view of the following considerations:

1. There are no unambiguous consonant sequences in the language (such as *kl*, *tr* and *ps*). This makes a sequence analysis suspicious.
2. There are no word-final consonants. It seems reasonable to assume that this is a property of the syllable rather than of the word. A syllable division of *lambu* as *lam-bu* is therefore untenable, the more so as word-initial prenasalized segments also occur (for example *ndoke* 'monkey').
3. The prenasalized consonants function as units in the morphological process of full reduplication (that is, reduplication of the first two syllables, see 10.3). Notice the following examples:

<i>lambu</i>	'house'
<i>ka-lambu-lambu</i>	'small house'
<i>pulangku</i>	'staircase'
<i>ka-pula-pulangku</i>	'small staircase'

A diminutive is made by the combination of the prefix *ka-* and reduplication of the first two syllables of the root. In the second example it is clear that the prenasalized consonant *ngk* is part of the third syllable. This is therefore evidence that the syllable breaks in *lambu* and *pulangku* should be as follows (syllable boundary is indicated by a dot):

<i>la.mbu</i>	'house'
<i>pu.la.ngku</i>	'staircase'

4. A final point which may be mentioned is the psychological status of this analysis. Everybody who was asked to identify the syllables in the two words above agreed on *la.mbu* and *pu.la.ngku* as the correct division. Since

there is no written tradition in Muna, this must reflect a structural property of the language.

Syllable structure in Muna is therefore as follows: (C) V

I am aware that there is an alternative solution, namely to treat the pre-nasalized segments as clusters of plosives or *s* preceded by a homorganic nasal. This analysis would mean eliminating seven phonemes from the inventory and adding seven consonant clusters, which would furthermore complicate the syllable structure. In both analyses a simplification in one area leads to a complexity in another. For reasons of distribution and symmetry I have adopted the solution outlined above.

One other point which deserves attention is the analysis of vowel sequences (such as *aa*, *ei*, *ou*). Is there any evidence that these segments are sequences of phonemes and not monophonemic long vowels and diphthongs?

The first reason is one of symmetry. All possible sequences of like and unlike vowels occur (see 2.6), which supports the analysis of such sequences as V.V. Secondly, in reduplication processes the sequences can be separated. Notice the following pairs:

<i>ne-langke</i>	'it is high'
<i>no-mba-langke-langke</i>	'it is rather high'
<i>no-ngkodau</i>	'it is old'
<i>no-mba-ngkoda-ngkodau</i>	'it is rather old'

From the second example it is clear that the sequence *au* in *ngkodau* is split up since it belongs to two different syllables, the final *u* constituting a syllable in its own right.

Some examples of syllable divisions:

<i>afumaa</i>	<i>a.fu.ma.a</i>	'I eat'
<i>mbololo</i>	<i>mbo.lo.lo</i>	'gong'
<i>nompona</i>	<i>no.mpo.na</i>	'long'
<i>gholeo</i>	<i>gho.le.o</i>	'sun, day'
<i>kausō</i>	<i>ka.u.so</i>	'shoe'

#### 2.4.2. Root structure

Roots display various combinations of syllable types. The following chart shows the root structures that are most common in the language. Although most of these forms are plain roots, some roots of more than two syllables may have frozen morphology. Based on a sample of approximately 2,500 roots, the relative frequency of root types is given, but structures that occur less than five times in the corpus have been ignored (0.1%).

number of syllables	structure	example	gloss	frequency
1	CV	<i>we</i>	loc. prep.	0.4
2	V.V	<i>o.e</i>	'water'	0.2
	V.CV	<i>i.fi</i>	'fire'	4
	CV.V	<i>ha.e</i>	'what'	6
	CV.CV	<i>bha.ngka</i>	'boat'	44

3	V.V.CV	<i>a.i.ni</i>	'this'	0.2
	V.CV.V	<i>u.le.a</i>	'load'	0.4
	V.CV.CV	<i>a.dha.ra</i>	'horse'	2
	CV.V.V	<i>wa.e.a</i>	'bat'	0.5
	CV.V.CV	<i>gho.e.ra</i>	'district'	3
	CV.CV.V	<i>gho.hi.a</i>	'salt'	5
	CV.CV.CV	<i>fo.no.ti</i>	'edible shellfish'	25
4	V.CV.CV.CV	<i>a.li.ngki.ta</i>	'wash corpse'	0.2
	CV.V.CV.V	<i>ka.i.nde.a</i>	'plantation'	0.2
	CV.V.CV.CV	<i>ka.o.mbe.la</i>	'hut'	0.5
	CV.CV.V.V	<i>bho.ko.e.o</i>	'sea shell'	0.2
	CV.CV.V.CV	<i>to.nu.a.na</i>	'soul'	1
	CV.CV.CV.V	<i>ma.li.mu.a</i>	'bewitch'	2
	CV.CV.CV.CV	<i>bhi.ri.na.nda</i>	'widow'	4
5	CV.CV.CV.CV.CV	<i>pa.da.ma.la.la</i>	'citronella'	0.4

The following conclusions can be drawn concerning the structure of the root:

1. The majority of roots are disyllabic, although trisyllabic roots are also common. Roots consisting of one, four or five syllables are marginal (altogether less than 10%).
2. CV syllables are much more common than V syllables.
3. V syllables tend to occur in root-final position.
4. Trisyllabic roots contain at least one CV syllable (there are no V.V.V roots).
5. Sequences of three vowels are very uncommon in roots (0.7%).

### 2.5. Stress

With minor exceptions, stress is predictable and therefore non-phonemic. Stress falls on the penultimate syllable of the word, whether it is a root or a derivation. The only exceptions are certain vowel sequences (see 2.6) and words containing the clitic *-a* (see 9.22). Secondary stress can be heard on the fourth and sixth syllable from the end; stress therefore seems to be spread out evenly over the word in rhythmic patterns. In the following examples <`> marks primary stress on the following syllable, whereas secondary stress is indicated by <,>:

<i>`ani</i>	'bee'
<i>`bhosu</i>	'water jug'
<i>ka`bhongka</i>	'main road'
<i>,ghunde`letu</i>	'worm'
<i>ne.tula`tula</i>	'he tells a story'
<i>,netu.latu`lamo</i>	'he has told a story'

### 2.6. Vowel sequences

In sequences of two vowels, all five vowels are found as either the first or the second element. As noted in 2.4.1 the second vowel constitutes a separate syllable. Examples:

<i>ghii</i>	'peel (betelnut)'
<i>bhie</i>	'heavy'
<i>lia</i>	'cave'
<i>lio</i>	'palm rib'
<i>diu</i>	'movement'
<i>bhei</i>	'rotten'
<i>bhee</i>	'crazy'
<i>bhea</i>	'betel'
<i>feo</i>	'squeeze'
<i>deu</i>	'needle'
<i>ghai</i>	'coconut'
<i>ghae</i>	'cry'
<i>gaa</i>	'marry'
<i>dhao</i>	'learn to stand'
<i>ghau</i>	'lung'
<i>doi</i>	'money'
<i>oe</i>	'water'
<i>bhoa</i>	'hawk'
<i>foo</i>	'mango'
<i>wou</i>	k.o. tree
<i>pui</i>	'coccyx'
<i>ghue</i>	'rattan'
<i>dua</i>	'two'
<i>suo</i>	'bamboo trap'
<i>tuu</i>	'knee'

When the two adjacent vowels are different, stress is regular and falls on the penult. When the two vowels are identical, however, the resulting sequence is phonetically one long vocoid. Examples:

<i>nee</i>	[ne:]	'nose'
<i>laa</i>	[la:]	'river'
<i>tuu</i>	[tu:]	'knee'

In other words, the final unstressed vowel is absorbed into the preceding identical vowel. This accounts for the fact that when Muna people do write their language, they tend to write word-final sequences of like vowels as one vowel (for example *fuma* for *fumaa* 'eat').

The disyllabic character of the sequence reappears when it occurs in non-final position because of affixation (for example *fumaa-mo*, *nee-ku*), when the phonetically long vocoid is stressed on its second part. In such cases the sequence is always written as a double vowel.

As noted in 2.4.2, sequences of three vowels are quite uncommon. The following were recorded in roots (in derivations there are many more possibilities):

<i>bheau</i>	'candlenut tree'
<i>bhokoeo</i>	k.o. shellfish
<i>bhuia</i>	'card game'
<i>bues</i>	'crocodile'
<i>daoa</i>	'market'
<i>kaeo</i>	k.o. plant

<i>kaue</i>	'swing'
<i>sua</i>	'nine'
<i>sua</i>	'pimple'
<i>waa</i>	'bat'

In some of these words stress assignment is irregular, as it does not fall on the penult but on the antepenult. This is the case in the following examples:

<i>˘bhuia</i>	<i>˘sua</i>
<i>˘daaa</i>	<i>˘sua</i>
<i>˘kaeo</i>	<i>˘waa</i>
<i>˘kaue</i>	

But in the following examples stress is regularly on the penult:

*bhe˘au*  
*bhoko˘eo*  
*bu˘ea*

The rules governing these phenomena are still unclear. Notice that a word like *sua* 'nine' cannot be reinterpreted or analysed as \**siwa*, because of the clear phonetic differences between these sounds: *w* does not show any lip rounding before *a*, whereas *u* is a fully rounded vowel.

Finally, there are two roots with sequences of three like vowels, although the first syllable is in both cases probably a frozen morpheme. In these examples a glottal stop occurs between the first and the second vowel:

<i>maaa</i>	[maʔa:]	'slim, slender' (compare <i>aa</i> 'waist')
<i>kaaa</i>	[kaʔa:]	'crevice, gap'

This glottal stop, which is non-phonemic, also occurs optionally between the first and the second vowel in a sequence of three vowels in complex words:

<i>no-ko-oe</i>	[nɔkɔ:e]	˘ [nɔkɔʔoe]	'it has water'
<i>no-ko-ue</i>	[nɔkɔue]	˘ [nɔkɔʔue]	'it has veins'

## 2.7. Phonotactics

In this section an attempt is made to analyse the structure of roots in terms of the combinatory possibilities of vowels and consonants. Such an analysis for (what is now called) Proto-Malayo-Polynesian in Chrétien (1965) has yielded important insights, whereas Uhlenbeck (1949) and Adelaar (1983) have shown that such patternings are an important feature in Javanese and Malay respectively and presumably in other Austronesian languages as well.

I restrict myself to disyllabic CV.CV roots of which there are just over 1,100 in my corpus. The following chart shows the result of a comparison of the initial consonant (C1) and the medial consonant (C2) of these roots. I use the following notations:

- v : occurs twice or more
- (v) : occurs only once
- : does not occur

	C2	p	b	mp	mb	bh	f	t	d	dh	nt	nd	s
C1													
p	v	-	v	-	-	-	-	v	v	v	v	v	v
b	-	v	-	v	-	-	-	v	v	v	v	v	v
mp	-	-	-	-	-	-	-	-	v	-	-	-	v
mb	-	-	-	-	-	-	-	v	-	(v)	-	-	-
bh	-	-	-	-	v	-	-	v	v	(v)	v	(v)	v
f	v	-	-	-	-	-	v	v	(v)	-	-	v	-
t	v	-	v	v	v	v	v	v	v	v	v	v	v
d	v	-	v	v	-	-	-	v	v	-	-	v	(v)
dh	-	(v)	v	v	-	-	-	-	-	v	-	(v)	v
nt	(v)	-	-	-	-	-	-	-	(v)	-	-	-	-
nd	-	-	-	-	-	-	-	-	-	-	-	-	-
s	v	v	v	v	v	v	(v)	-	v	v	v	v	v
ns	-	-	-	-	-	-	-	-	-	-	-	-	-
k	v	v	v	v	v	v	-	v	v	(v)	v	v	v
g	-	(v)	v	v	-	-	-	v	v	v	v	v	v
ngk	-	(v)	-	-	-	-	-	-	-	-	-	-	-
ngg	-	-	-	-	-	-	-	-	-	-	-	-	(v)
gh	-	v	v	v	v	v	v	v	v	-	v	v	v
h	(v)	-	-	v	(v)	-	-	v	(v)	(v)	(v)	v	-
l	v	v	v	v	v	-	-	v	v	-	v	v	v
r	v	v	v	v	-	-	v	v	v	-	v	v	v
w	-	-	-	v	(v)	-	-	v	-	(v)	v	(v)	v
m	-	-	-	(v)	-	(v)	(v)	v	v	v	v	v	v
n	v	-	-	-	(v)	(v)	(v)	-	-	-	-	-	(v)
ng	-	-	-	-	-	-	-	-	-	(v)	-	(v)	-

	C2	ns	k	g	ngk	ngg	gh	h	l	r	w	m	n	ng
C1														
p	v	v	v	v	-	v	v	v	v	v	-	-	v	-
b	v	v	-	v	-	-	-	-	v	v	-	-	v	v
mp	-	-	v	-	-	-	-	-	(v)	-	-	-	v	v
mb	-	v	-	-	-	-	-	-	v	v	-	-	v	v
bh	v	v	v	v	-	(v)	v	v	v	v	v	-	v	v
f	-	(v)	-	-	-	(v)	-	v	v	v	-	-	v	(v)
t	-	v	v	v	v	v	v	v	v	v	v	v	v	v
d	(v)	v	v	v	-	v	v	v	(v)	(v)	(v)	v	v	(v)
dh	-	v	v	v	-	-	-	v	v	(v)	(v)	(v)	(v)	-
nt	-	-	(v)	-	-	(v)	-	v	v	-	-	-	-	-
nd	-	v	-	-	-	-	-	v	v	v	v	-	-	(v)
s	v	v	-	v	-	v	v	v	v	v	v	v	v	v
ns	-	-	-	-	-	-	-	(v)	v	-	-	-	-	-
k	-	-	-	v	-	-	(v)	v	v	v	v	v	v	-
g	(v)	-	v	-	-	-	(v)	v	v	v	(v)	(v)	(v)	-
ngk	-	-	-	-	-	-	-	v	v	-	-	-	(v)	-
ngg	-	-	-	-	-	-	-	(v)	(v)	-	-	-	-	-
gh	-	-	-	v	-	v	v	v	v	v	v	v	v	-
h	(v)	(v)	-	(v)	-	-	(v)	v	v	v	v	v	v	-
l	v	v	v	v	(v)	(v)	v	v	(v)	v	v	v	v	(v)
r	v	v	v	v	v	v	(v)	-	v	v	v	v	v	(v)
w	-	v	(v)	(v)	-	v	v	v	v	v	v	-	v	(v)
m	v	v	(v)	v	(v)	-	v	v	v	(v)	(v)	v	v	-
n	(v)	-	(v)	v	-	(v)	(v)	v	(v)	(v)	(v)	v	(v)	-
ng	-	-	-	-	-	-	-	(v)	v	-	-	-	-	-

The main difficulty in the analysis of these facts is to distinguish between accidental and systematic gaps. Conclusions must therefore be cautious and provisional; for this reason conclusions concerning low-frequency phonemes such as *h*, *ng* and *ngg* are not drawn. Taking observations by the above-mentioned authors as starting points, the following tentative phonotactic constraints can be formulated. (In the following, the word 'contra-voiced' means differing in voice from the other consonant in the root.)

1. Initial plosives do not co-occur with contra-voiced homorganic plosives (the implosive *bh* counts as a plosive here). Hence the following pairs are systematic gaps:

p..b..	p..bh..
bh..p..	b..p..
k..g..	g..k..

This constraint does not apply to *t* and *d*, which is evidence of the fact that these sounds are not homorganic (apico-dental versus apico-alveolar).

Closer scrutiny reveals that the fricative *f* and the approximant *w* share this non-occurrence with contra-voiced bilabial plosives. There are no examples of the following patterns:

f..b..	f..bh..
b..f..	bh..f..
w..p..	w..f..
p..w..	f..w..

For the labials the rule can therefore be extended to exclude all co-occurrences of contra-voiced labial obstruents (plosives, fricative and approximant).

The behaviour of the uvular fricative *gh* shows that combinations with the velar plosives do not occur:

gh..k..	k..gh..
gh..g..	g..gh..

This may mean that phonologically these sounds are homorganic and hence the velar area falls under the same generalization as the labial area. In that case the non-occurrence of *g* and *gh* could be accidental.

2. Prenasalized plosives do not co-occur with contra-voiced obstruents. The following patterns are not found:

p..mb..	mb..p..
b..mp..	mp..b..
bh..mp..	mp..bh..
f..mb..	mb..f..
w..mp..	mp..w..
k..ngg..	ngg..k..
g..ngk..	ngk..g..

Non-occurrence of *bh..mb..* and *f..mp..* is therefore probably accidental (compare also the trisyllabic *kabhamba* 'spider'). As for *gh*, it does occur with *ngk* but not with *ngg*, the reversal of what we expect. This



might mean that this rule does not hold for velar obstruents, or, alternatively, that *gh* is voiceless at some level of its representation or was voiceless in the past. The latter possibility is most plausible in view of the fact that Muna *gh* reflects PAN \*q, possibly a voiceless uvular plosive (see Van den Berg 1988).

3. Obstruents and prenasalized consonants do not co-occur with homorganic nasals. The following patterns are found either rarely or not at all:

p..m..	m..p..	mp..m..	m..mp..
b..m..	m..b..	mb..m..	m..mb..
bh..m..	m..bh..	nt..n..	n..nt..
f..m..	m..f..	nd..n..	n..nd..
w..m..	m..w..	ns..n..	n..ns..
k..ng..	ng..k..	ngk..ng..	ng..ngk..
g..ng..	ng..g..	ngg..ng..	ng..ngg..

The following roots are exceptions to these rules:

<i>membe</i>	'goat' (onomatopoeic? compare Wolio <i>bembe</i> )
<i>mafu</i>	'yam'
<i>mawa</i>	'flood'
<i>nunsu</i>	'beak, mouth'

4. Prenasalized plosives do not co-occur:

mp..mb..	mb..mp..
ns..ngk..	ngk..ns.. etc.

5. Unlike liquids do not co-occur:

l..r..	r..l..
--------	--------

Exception: *lera* 'blessing' (loan?)

6. Not a constraint, but a tendency, is the fact that prenasalized consonants tend to co-occur with liquids, non-homorganic nasals and non-homorganic contra-voiced plosives.

The remaining gaps cannot be easily accounted for. Is the non-occurrence of *p..f..* and *k..f..* a pattern? What about *f..s..* and *h..s..*? Ad hoc constraints can be formulated, but in order to draw firmer conclusions a bigger data base would be needed, all loanwords would have to be identified and independent examinations in other languages carried out.

Good candidates for accidental gaps are the following pairs:

p..ng..	gh..p..
s..t..	l..f..
w..d..	m..gh..

#### Consonant-vowel constraints

There is one very clear constraint on the combination of C and V in roots: *bh* does not occur before *u*. In other words, *bh* has a defective distribution

in combination with vowels. Among all the root types there is only one exception to this rule, the word *bhuia* 'card game', possibly a loan from Wolio.

What the reason is for this constraint is not clear, but possibly there is a correlation between the 'backness' of *u* and the frontness preferences of implosives. It is typologically well known that bilabial implosives are much more frequent than alveolar implosives, while velar implosives are very rare. The backness of *u* may function as a kind of block to the implosion of the previous consonant. Alternatively, the lip rounding of *u* may be of some influence in the process.

Other non-existent combinations involve low-frequency consonants (*nse*, *ngu*) and are best considered accidental.

## 2.8. Morphophonemics

Under this heading a few processes will be described in which allomorphy is determined by the phonological shape of the root. Three such processes can be distinguished, while a fourth one is included here too.

### 2.8.1. -um- allomorphy

The infix *-um-* serves to form the irrealis of certain verbs, and, in combination with the suffix *-no*, the active participle of those verbs (see 4.5 for meaning and usage). This infix has a number of allomorphs which are given in order of importance, first in combination with roots, then with prefixes and finally with reduplication.

#### A. In combination with roots.

- a. In the majority of cases (except for those mentioned under b, c and d) the regular infix *-um-* is infixed after the first consonant of the root:

<i>dadi</i>	<i>dfumjadi</i>	'live'
<i>dhudhu</i>	<i>dhfumjudhu</i>	'push'
<i>gaa</i>	<i>gfumjaa</i>	'marry'
<i>hela</i>	<i>hfumjela</i>	'sail'
<i>solo</i>	<i>sfumjolo</i>	'flow'
<i>rende</i>	<i>rfumjende</i>	'alight'

- b. When the root has an initial vowel, the prefix *m-* is found as an allomorph:

<i>ala</i>	<i>m-ala</i>	'take'
<i>ere</i>	<i>m-ere</i>	'stand up'
<i>uta</i>	<i>m-uta</i>	'pick fruit'
<i>omba</i>	<i>m-omba</i>	'appear'

- c. When the root has an initial *p* or *f*, this consonant is replaced by *m* (nasal substitution):

<i>pongko</i>	<i>[m]ongko</i>	'kill'
<i>pili</i>	<i>[m]ili</i>	'choose'
<i>foni</i>	<i>[m]oni</i>	'climb, go up'
<i>futaa</i>	<i>[m]utaa</i>	'laugh'

- d. When the root has an initial *b*, *bh*, nasal or prenasalized consonant, there is no formal change in the root (a 'zero morpheme'):

<i>baru</i>		'happy'
<i>bhala</i>		'big'
<i>manda</i>		'repent'
<i>nale</i>		'soft, weak'
<i>mbolaku</i>		'steal'
<i>ndiwawa</i>		'yawn'

A special case is formed by roots with initial *w*. Some of these roots undergo nasal substitution, but the majority do not change:

<i>waa</i>	[ <i>m</i> ]aa	'give'
<i>wora</i>	[ <i>m</i> ]ora	'see'
<i>wanu</i>		'get up'
<i>wei</i>		'clear (a field)'

- e. A final allomorph is dialectal within standard Muna. This is the infix *-im-*, which is found in roots of which the first vowel is *i*. This phenomenon, which is a case of vowel harmony, seems to be restricted to a few villages in Katobu, such as Watuputi:

<i>limba</i>	l[ <i>im</i> ]imba	'go out'
<i>hiri</i>	h[ <i>im</i> ]iri	'peel'
<i>sikola</i>	s[ <i>im</i> ]ikola	'go to school'

A number of regular irrealis forms with high frequency can be further reduced by deletion of *m* when this *m* is the result of nasal substitution or nasal prefixation. In the following examples, person inflections have been added for the sake of naturalness:

realis	irrealis	
<i>a-wora-e</i>	<i>a-[m]ora-e</i>   <i>a-ora-e</i>	'I see it'
<i>no-omba</i>	<i>na-[m]omba</i>   <i>na-omba</i>	'he appears'
<i>a-foroghu</i>	<i>a-[m]oroghu</i>   <i>a-oroghu</i>	'I drink'
<i>a-fumaa</i>	<i>a-omaa</i> (= <i>ao-maa</i> )	'I eat'

The last example is irregular in that the regular form (\**a-[m]omaa*) does not exist (or no longer exists). For all three examples the subject prefixes have been reinterpreted as belonging to the irrealis *ao*-class (see 4.5).

#### B. In combination with prefixes.

When roots are affixed with verbal prefixes (that is, when the resulting derivation is a verb) the behaviour of *-um-* is not predictable, but has to be specified for each prefix. Three cases can be distinguished (for meaning and usage of these prefixes, see chapter 10), of which the first two are illustrated by two examples each.

- a. The prefix is amenable to *-um-*: the normal allophonic rules for roots apply. This is the case with the following prefixes:

<i>fe-</i> (a-class)	<i>feka-</i>	
<i>fo<sub>1</sub>-</i>	<i>foko-</i>	
<i>ka-</i>	<i>para-</i>	
<i>no-fo-ada-e</i>	<i>na-[m]o-ada-e</i>	'he borrows it'
<i>no-ka-baru-baru</i>	<i>na-k[um]a-baru-baru</i>	'he is naughty'

- b. The prefix is resistant to *-um-*: the rules do not apply. This is true for the majority of prefixes:

<i>fe-</i> (ae-class)	<i>po-</i>	
<i>fo<sub>2</sub>-</i>	<i>poka-</i>	
<i>ki-/ha</i>	<i>ponta-</i>	
<i>ko-</i>	<i>si-</i>	
<i>paka-</i>	<i>si-/ha</i>	
<i>piki-</i>	<i>ti-</i>	
<i>no-ko-doi</i>	<i>na-ko-doi</i>	'he has money'
<i>no-ti-wora</i>	<i>na-ti-wora</i>	'it is visible'

- c. The prefix is blocked for *-um-*: the rules cannot apply because of the shape of the prefix (initial nasal or prenasalized consonant). Examples are the following prefixes:

<i>mansi-</i>	<i>mpo-</i>
<i>manso-</i>	<i>ngko-</i>
<i>mba-</i>	<i>nsa-</i>

These facts can be reanalysed in terms of weak and strong morpheme boundaries before a given prefix, such that a certain prefix is specified for its morphological boundary, a weak one allowing for *-um-* allomorphy, while a strong boundary is resistant to such rules.

### C. In combination with reduplication.

With fully reduplicated roots (that is, repetition of the first two syllables of the root) only the reduplicated part is affixed with *-um-* while the base remains unchanged. In these examples I ignore inflection and meaning (for reduplication see 10.3).

reduplicated irrealis	realis	
<i>s[um]uli-suli</i>	<i>suli</i>	'return'
<i>l[um]imba-limba</i>	<i>limba</i>	'go out'
<i>[m]anta-antagi</i>	<i>antagi</i>	'wait'

This is true for almost all cases, except when the base has an initial *p* or *f*. In these cases, both the reduplicated part and the base undergo nasal substitution:

<i>[m]oni-[m]oni</i>	<i>foní</i>	'climb, go up'
<i>[m]eki-[m]ekiri</i>	<i>fekiri</i>	'think'
<i>[m]unda-[m]unda</i>	<i>punda</i>	'jump'

With partial reduplication (that is, only the first syllable of the base is repeated) both regular *um*-infixation and blocking occur as variants, although infixation seems to be more common:

<i>ro-rondo</i> / <i>r[um]o-rondo</i>	<i>rondo</i>	'dark'
<i>tu-turu</i> / <i>t[um]u-turu</i>	<i>turu</i>	'sleepy'
<i>ke-kebha</i> / <i>k[um]e-kebha</i>	<i>kebha</i>	'tap (a tree)'

### 2.8.2. Nasal accretion

In a number of words, to be specified below, a process occurs that can be called 'nasal accretion', that is, the addition of a homorganic nasal to an obstruent (plosive, fricative, approximant) resulting in a prenasalized consonant. First I will treat the formal side of this process, followed by a discussion of its occurrence and usage.

The following phonemes can undergo nasal accretion (right-hand column specifies the resulting prenasalized consonant):

<i>p</i>	<i>mp</i>
<i>f</i>	<i>mp</i> ( <i>mf</i> )
<i>b, bh, w</i>	<i>mb</i>
<i>t</i>	<i>nt</i>
<i>d</i>	<i>nd</i>
<i>s</i>	<i>ns</i>
<i>k, gh</i>	<i>ngk</i>
<i>g</i>	<i>ngg</i>

Of all the plosives, only *dh* (a loan phoneme) does not participate in this process. The implosive *bh* loses its implosive character, while the continuants *f* and *w* are occlusivized to *mp* and *mb* respectively. The prenasalized counterpart of *gh* is *ngk*, which is remarkable in that there is a difference in place of articulation (uvular versus velar) as well as in voicing. This supports the earlier observation that *gh* was possibly a voiceless plosive at an earlier stage.

As for *f*, in a very limited number of words *f* can have the prenasalized variant *mf* in addition to *mp*, mostly after the prefix *para-*. Since *mf* is not an independently established phoneme and clusters do not occur in the language, this poses a problem. The best solution seems to be to regard *mf* as a juncture allophone of *mp*, that is, an allophone which is only found at a special morpheme boundary.

Nasal accretion occurs in the following three cases:

- a. In combination with certain affixes, for example *ka-* (10.2.17), *ka-/-ha* (10.2.18) and *para-* (10.2.38):

<i>ka-ntisa</i>	'plants, crop'	<i>tisa</i>	'plant'
<i>ka-mpooli</i>	'result'	<i>pooli</i>	'obtain'
<i>ka-mpumaa-ha</i>	'eating utensil, plate'	<i>fumaa</i>	'eat'
<i>ka-ngkoleo-ha</i>	'clothesline'	<i>gholeo</i>	'dry (in the sun)'
<i>para-mpodea</i>	'shout repeatedly'	<i>podea</i>	'shout'
<i>para-mpeena</i>	'ask all the time'	<i>feena</i>	'ask'
(also: <i>para-mfeena</i> )			

b. In a number of compounds (10.4), with *ka-* (5.9.2; 10.2.17) or *ko-* (10.2.21):

<i>pae ngka-dea</i>	'red rice'
<i>kontu ngko-wuna</i>	'stone with flowers'
<i>no-filei ngka-pode-podes</i>	'she ran away screaming'
<i>turu-ngkato</i>	'eaves'
<i>no-angka-angka-mbono-da</i>	'he followed them stealthily'

c. Initially, in a few words. In these cases there appears to be free variation between the 'plain' and the prenasalized consonant, although most informants agree that the prenasalized variant sounds more 'refined', having a poetic or literary flavour. This may be true for the first few examples, but seems rather far-fetched for the word for 'tomato', in which the prenasalized variant is used in everyday conversation.

<i>kolipopo</i>	<i>ngkolipopo</i>	'star'
<i>bidhadhari</i>	<i>mbidhadhari</i>	'fairy'
<i>kamokula</i>	<i>ngkamokula</i>	'elder, parent'
<i>birita</i>	<i>mbirita</i>	'news'
<i>badha</i>	<i>mbadha</i>	'body'
<i>tigho</i>	<i>ntigho</i>	'always'
<i>tamate</i>	<i>ntamate</i>	'tomato'

### 2.8.3. Possessive suffix *-ndo/-do*

The regular third person plural possessive suffix *-ndo* 'their' (see 5.4.1) has a variant *-do* which is found with bases containing a prenasalized consonant. In some high-frequency words the variant with *-do* is the only possible one, but in many cases doublet forms are attested:

<i>lambu-do</i>	'their house'
<i>amba-do</i>	'their word, they said'
<i>randa-(n)do</i>	'their stomach'
<i>sa-kundo-(n)do</i>	'when they had left'
<i>ni-angka-(n)do</i>	'their leader'
<i>kambele-(n)do</i>	'their shadow'

This phenomenon is no doubt related to the phonotactic constraint formulated in 2.6 that prenasalized consonants do not co-occur in roots. Apparently this constraint is also at work in complex words. Notice that it does not apply to the first person inclusive *-nto*, which is never affected. However, the form *-to* is probably found in the noun *omputo* 'ruler, king' (lit. 'our lord'), which is related to *ompu* 'lord'.

### 2.8.4. Allomorphy of *-Ci* and *-Cao*

Although strictly speaking the following problems are not related to morphophonemics, this seems the best place to discuss them.

The suffixes *-Ci* (transitivizing, often a locative or petative meaning, see 10.2.16) and *-Cao* (intensifier, see 10.2.15) each have a number of allomorphs. In the case of *-Ci* the following consonants can take the C position:

*p, t, k, f, s, gh, h, m, n, ng, l, r, w*

(that is, all the voiceless plosives, the fricatives, nasals, liquids and the approximant). These consonants thus seem to form a natural class over against the remaining consonants (voiced plosives, the implosive and the prenasalized consonants).

To illustrate this suffix I give two examples (for further information see 10.2.16):

<i>leni</i>	'swim'	<i>leni-fi</i>	'swim for something'
<i>lodo</i>	'sleep'	<i>lodo-ghi</i>	'sleep on something'

In the case of the suffix *-Cao* the C position can be occupied by one of the following consonants:

*p, t, f, s, h, l, r*

This is a smaller set, also excluding the nasals, the velar/uvular *k* and *gh* and *w*. For examples and usage of *-Cao* see 10.2.15.

As for the status of these consonants in the derivation, a possible solution is to treat them as underlying final consonants of the root, which are deleted in every environment except before the suffixes *-i* and *-ao*. Positing underlying final consonants however, violates an exceptionless rule in the (surface) phonology of the language, namely that there are no syllable-final consonants. Also, one runs into problems with verbs that take more than one suffix. I therefore simply choose to describe the different allomorphs as bound allomorphs for which the verb has to be specified in the lexicon.

For a discussion of a similar case of allomorphy in Maori, see Hale (1973).

### 2.9. Adaptation of loanwords

Like all other languages, Muna has borrowed and still borrows a large part of its vocabulary. The source languages are Malay/Indonesian, Bugis, Wolio and (formerly) Dutch. In this section the main phonological adaptations loanwords have undergone will be discussed. In many cases there is a known corresponding lexeme in Malay and hence I take the source language to be Malay (possibly through Bugis or Wolio), although in many cases the words are ultimately from Sanskrit, Arabic, Dutch and other languages.

The most important adaptations can be classified as follows:

1. replacement of foreign sounds;
2. avoidance of final consonants;
3. breaking of clusters.

#### 1. Replacement of foreign sounds

- a. Malay *e* (schwa) is replaced by *a*:

Muna	Malay/Indonesian	
<i>tarigu</i>	<i>terigu</i>	'wheat'
<i>kalasi</i>	<i>kelas</i>	'class'
<i>talati</i>	<i>telat</i>	'late'

But *e* is replaced by *i* following *s*:

<i>sikola</i>	<i>sekolah</i>	'school'
<i>sinapa</i>	<i>senapan</i>	'rifle'
<i>sipeda</i>	<i>sepeda</i>	'bicycle'

b. Malay/Indonesian *j* (voiced palatal plosive) is regularly replaced by *dh*, but educated speakers of Muna may retain its palatal character (see also the discussion on *dh* in 2.1.2):

<i>dhambu</i>	<i>jambu</i>	'cashew'
<i>dhala</i>	<i>jalan</i>	'way, road'
<i>dhamani</i>	<i>jaman</i>	'era'

But *d* is also frequently replaced by *dh*:

<i>dhalima</i>	<i>delima</i>	'pomegranate'
<i>dhoa</i>	<i>doa</i>	'ritual prayer, charm'
<i>dhosa</i>	<i>dosa</i>	'sin'

The existence of the word *dosa* 'guilt, debt' next to *dhosa* 'sin' suggests an interesting but complicated history of borrowing and semantic change of these words.

c. *c* (voiceless palatal plosive) is replaced by *s*:

<i>soba</i>	<i>coba</i>	'try'
<i>bisara</i>	<i>bicara</i>	'speak'
<i>hansuru</i>	<i>hancur</i>	'ruined'

In recent loans *c* is either retained or (in the speech of non-educated people) replaced by *t*:

<i>ceti</i>	<i>cet</i>	'paint'
<i>ceta</i>	<i>cetak</i>	'print'
<i>beca</i> ~ <i>beta</i>	<i>becak</i>	'becak, trishaw'
<i>cina</i> ~ <i>tina</i>	<i>cina</i>	'Chinese'

d. *y* is replaced by *e* intervocalically and after *h*; initially it is retained:

<i>parasaea</i>	<i>percaya</i>	'believe'
<i>raesti</i>	<i>rakyat</i>	'people'
<i>sambahea</i>	<i>sembahyang</i>	'Muslim prayer'
<i>yakini</i>	<i>yakin</i>	'certain, convinced'

The sequence *ayu* is replaced by *au*:

<i>payung</i>	<i>pau</i>	'umbrella'
<i>Melayu</i>	<i>Malau</i>	'Malay'

e. *ny* (palatal nasal) is replaced by *n*:

<i>mina</i>	<i>minyak</i>	'oil'
<i>panaki</i>	<i>penyakit</i>	'disease'



## 2. Avoidance of final consonants

In some cases final consonants are deleted:

<i>bensi</i>	<i>bensin</i>	'gasoline'
<i>kiama</i>	<i>kiamat</i>	'doomsday'
<i>koso</i>	<i>kosong</i>	'empty'
<i>mogo</i>	<i>mogok</i>	'fail, break down'
<i>nilo</i>	<i>nilon</i>	'nylon'
<i>obe</i>	<i>obeng</i>	'screwdriver'
<i>sumu</i>	<i>sumur</i>	'well'

But more usual is the addition of a vowel. The conditions specifying when the final consonant is deleted and when a vowel is added and which vowel that must be, cannot be given at present.

<i>adhati</i>	<i>adat</i>	'customary law'
<i>bani</i>	<i>ban</i>	'tyre'
<i>bebasi</i>	<i>bebas</i>	'free'
<i>hafala</i>	<i>hafal</i>	'memorize'
<i>haku</i>	<i>hak</i>	'right'
<i>imamu</i>	<i>imam</i>	'Muslim leader'
<i>imani</i>	<i>iman</i>	'faith'
<i>kakusu</i>	<i>kakus</i>	'toilet'
<i>kantori</i>	<i>kantor</i>	'office'
<i>kasara</i>	<i>kasar</i>	'rough, uncivilized'
<i>tanggala</i>	<i>tanggal</i>	'date'
<i>wolu</i>	<i>wol</i>	'wool'

## 3. Breaking of clusters

A vowel is inserted in a consonant cluster. If the final syllable is open, an extra vowel is added to that syllable:

<i>arataa</i>	<i>harta</i>	'wealth'
<i>haragaa</i>	<i>harga</i>	'price'
<i>ilimiu</i>	<i>ilmu</i>	'knowledge'
<i>karadhaa</i>	<i>kerja</i>	'work'
<i>sakusii</i>	<i>saksi</i>	'witness'
<i>wakutuu</i>	<i>waktu</i>	'time'

Other examples of the breaking of clusters:

<i>karatasi</i>	<i>kertas</i>	'paper'
<i>misikini</i>	<i>misikin</i>	'poor'
<i>parakesa</i>	<i>periksa</i>	'investigate'
<i>surudadu</i>	<i>serdadu</i>	'soldier'

Finally a few examples of some idiosyncratic adaptations:

<i>faraluu</i>	<i>perlu, fardu</i>	'necessary, obligatory'
<i>harasia</i>	<i>rahasia</i>	'secret'
<i>koburu</i>	<i>kubur</i>	'grave'
<i>putolo</i>	<i>potlot</i>	'pencil'
<i>rangkaea</i> (verb)	<i>orang kaya</i>	'rich (man)'

The following words seem to be direct borrowings from Dutch:

<i>bisiloi</i>	<i>besluit</i>	'decision'
<i>harendesi</i>	<i>herendienst</i>	'statutory labour'
<i>ndoro</i>	<i>onderrok</i>	'skirt'

In the last example *ondoro* was probably re-analysed as *o ndoro*, in which *o* is the article (5.6).