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INTRODUCTION TO SERIES A VOLUME 5

The papers in this volume deal with the phonologies of Nunggubuyu, Burarra, Kala Lagaw Ya, Murinbata, and some aspects of the higher level phonology of Walmatjari. Two papers dealing with orthographic decisions are also included.

Five of the papers in this volume are by SIL authors: Glasgow, Kennedy, Street and Hudson, with the Street paper co-authored by Gregory Papawa Mallinjin. Their papers are herein being made available in preliminary form, and reader's comments would be appreciated by the authors. These papers normally will be further revised and published more widely elsewhere. The other three papers are by non-SIL authors: M. Hore (Church Missionary Society), J. Stokes (Church Missionary Society), and G. McKay (Northern Territory Education Department). With the exception of Graham McKay, the non-SIL authors have had some interaction with SIL personnel in the writing of their papers - usually of a consulting and/or editing nature. For this reason we are pleased to include their papers in this volume.

Michael Hore's paper primarily deals with rules for stress placement and the interaction of stress and length in Nunggubuyu. He is able to show that stress placement is predictable, given the distribution of long syllables. Interestingly, Michael's analysis hangs partly on the analytical decision that Nunggubuyu has a pre-nasalised series of stops - and he shows how this is motivated by the stress analysis. There is a further point of interest to those concerned with the notion of 'simplicity' as a grammar evaluation criterion; Michael shows that the present synchronic facts motivate two rules at quite different points in the cycle; the two rules are very similar, yet neither can be eliminated.

Kathy Glasgow presents the phonemes and morphophonemics of Burarra. Kathy has given considerable attention over the years to the possibility of a geminate versus non-geminate contrast in the stop series, as well as to other issues such as the interpretation of reflexed sounds. This paper is the fruit of that research. Kathy's analysis places the Burarra orthography within the mainstream of Australian phonologies; she rejects the 'geminate hypothesis' (mainly on the basis of mother-tongue speaker's reactions) and expounds a retroflexed order of sounds. In addition, she has divided what previously was analysed as a flapped apico-alveolar stop into a flapped apico-alveolar rhotic, and an apico-alveolar voiced stop. Interestingly, with these changes the segmental inventory is now the same as that in neighbouring languages.
Kathy's second paper deals with the proposed orthography for Burarra and the factors which influenced the decisions made. It is refreshing to see that Aboriginal people were consulted and felt free to take initiative in expressing their feelings concerning their own orthography. It is SIL policy to encourage and co-operate with the initiatives of Aboriginal people.

Rod Kennedy presents an account of Kala Lagaw Ya phonology (Mabuiag dialect, Torres Strait). Kala Lagaw Ya is a language of Australian descent, but heavily influenced by its proximity to the languages of Papua New Guinea.

Judy Stokes' paper on Anindilyakwa phonology is the fruit of many years of wrestling with what must be one of the most difficult of Australian phonologies. Judy gives a good, well documented account of the segmental phonology of the language. She alludes to the difficulties of finding a simple and transparent analysis of the high vowels. This is an area of interest, for it would appear that Anindilyakwa shares some features of the phonologies of Central Australian languages - which have labialised peripheral stops and a tendency to loss of contrast in the high vowels. Velma Leeding has addressed herself to the problem of the high vowels and labialised stops in Anindilyakwa, and is currently preparing a manuscript to be published elsewhere, dealing with these and other problems. Certainly, from a purely linguistic standpoint, Anindilyakwa is a most interesting language, and Judy's high quality work is a welcome addition to the literature on it.

The phonology paper by Chester Street and Gregory Panpawa Mollinjin is a re-written version of a paper on Murinbata which Chester wrote shortly after beginning study of the language. The morphophonemic changes dealt with would be of interest to anyone concerned with the idea of 'consonantal strength' in Natural generative phonology theory. Also included is a short dictionary of approximately 650 words.

Joyce Hudson's paper is a short account of some features of higher level phonology in Walmatjarri. It deals with variations of intonational contours, and the grammatico-semantic parameters which correlate with such variations. The paper is partly based on text data which is included in some unpublished manuscripts on paragraph structure which Joyce wrote several years ago. The references to these texts have been left in the present paper, in the eventuality that the paragraph analysis will be published at a later date.

Finally, Graham McKay's paper gives the results of some testing of the acceptability of the digraph 'ny' as used in many Australian orthographies.

Bruce Waters
Volume Editor
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# The Phonology of Murinbata

**by Chester S. Street and Gregory Panpawa Mollinjin**

## 0. Introduction

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0. INTRODUCTION

The Burarra language is spoken by approximately 600 Australian Aboriginals whose homelands are in the Blyth and Cadell River regions, and who also live at Maningrida. There are three quite close dialects of Burarra. These may be referred to linguistically as the Gun-narta (Gunadba: Hiatt 1965), Gun-nartha and Gun-narda dialects, according to their respective pronunciations of the demonstrative descriptive 'that one near you'. The Gun-nartpa homeland is in the Cadell River area. The Gun-nartha group is also referred to as An-barra, a name which refers to their homeland at the mouth of the Blyth, on the west. The Gun-narda group is also known as Martay, a name referring to a group of clans east of the Blyth. Hiatt refers to the Gun-narta and Gun-narda groups collectively as Gidjingali (Hiatt 1965), a term (Gu-jingarliya) which the people use in referring to their language.

Hiatt's map of 'The Gidjingali and their neighbours' (Hiatt 1965) is reproduced here as a useful summary, bearing in mind that the Burarra include both Gunadba and Gidjingali. The asterisk on the map is the location of Maningrida.
1. STRESS

Because stress in Burarra influences the distribution and neutralisation of phonemes, it is described first. Stress in Burarra is grammatically predictable. The primary word stress always occurs on the first syllable of the first root in the word. Where there is prefixation (including derivational prefixation) and primary stress therefore occurs word medial, there is a secondary word attack stress. In compound and reduplicated words a secondary stress occurs, as well, on the first syllable of the second root. In deliberate or emphatic speech the primary stress may be postponed to the second root of the word, in which case the first root receives only secondary stress.

The conjunctions ꤄Ꞃa 'and' and ꤄Ꞅa 'and so' are the only words noted as having no primary stress.

In this paper primary stress is marked by a single quote mark. Secondary stress is marked in this section, and elsewhere only when pertinent, by a double quote mark. The following are examples of stress placement.

' ꤆Ꞇa
" ꤆Ꞇa ꤆Ꞇa
" ꤆Ꞇa ꤆Ꞇa

'wola
'wola"wola

'baa
'bu'gu

'bu'gu"bu'gu"gu
'bu'gu"bu'gu"gu

'hold it'
'he is holding it'
'the owner'

'long ago'
'sometime, anytime'

'house, roof'
'fall down'

'my eyelids are drooping'
2. THE PHONEMES

Burarra has 21 consonants and 5 vowels.

The consonants consist of 5 voiceless and 5 voiced stops, 5 nasals, 2 laterals, 2 rhotics and 2 glides.

TABLE 1

Consonants

<table>
<thead>
<tr>
<th></th>
<th>Apico-Bilabial</th>
<th>Apico-Alveolar</th>
<th>Apico-Post-Alveolar</th>
<th>Lamino-Palatal</th>
<th>Dorso-Volar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voiceless Stops</td>
<td>p</td>
<td>t</td>
<td>t</td>
<td>tj</td>
<td>k</td>
</tr>
<tr>
<td>Voiced Stops</td>
<td>b</td>
<td>d</td>
<td>d</td>
<td>dj</td>
<td>g</td>
</tr>
<tr>
<td>Nasals</td>
<td>m</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>n</td>
</tr>
<tr>
<td>Laterals</td>
<td>l</td>
<td>l</td>
<td>l</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rhotics</td>
<td>r</td>
<td>r</td>
<td>r</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glides</td>
<td>w</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

There are 2 high vowels, front and back, and 3 low vowels, front, central and back.

TABLE 2

Vowels

<table>
<thead>
<tr>
<th></th>
<th>Front</th>
<th>Central</th>
<th>Back</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>i</td>
<td></td>
<td>u</td>
</tr>
<tr>
<td>Low</td>
<td>e</td>
<td>a</td>
<td>o</td>
</tr>
</tbody>
</table>
2.1 CONSONANTS

2.1.1 CONSTRAINTS

The flapped rhotic /ɾ/ is the only apico-alveolar consonant that occurs word initial, medial and final without constraint. (See section 2.1.4 for examples.) All other apico-alveolar consonants occur only medial and final. Further, the only apico-alveolar consonants other than /ɾ/ that may occur stem initial following a prefix are /d/ and /n/, and that only as a result of morphophonemic change when preceded by a prefix ending in /n/. (For examples see 3.2.3 and 4.2, example (iv).)

2.1.2 STOPS

The voiced stops, except apico-alveolar (see constraint above), have voiceless allophones which occur word initial. This is evidenced by the voicing which always occurs when a prefix is added. For example:

[′pala] /bala/ + [kuba] /gu'aba/
'house' 'in the house'

[′tawuɾdja] /gawuɾdja/ + [tjiɾuɾgawuɾdja] /djiɾuɾgawuɾdja/
'play' 'she will play'

[′tjaɾaŋa] /daɾaŋa/ + [ana'djaɾaŋa] /ana'djaɾaŋa/
'sand' 'beach'

[′kaŋ] /galan/ + [ana'galan] /ana'galan/
'hook' 'with a hook'

Note that /g/ tends to have a lenis/soft-fricative quality intervocally, as is seen in the last example above.

Only voiceless stops occur word final. These have been interpreted as belonging to the voiceless rather than the voiced phonemes. The voiceless stops tend to be unreleased word final, but utterance final this may fluctuate with aspirated release. The voiceless stops occur in any position following the stressed vowel.

The voiced stops except /d/ occur word initial and in all positions word medial. The phoneme /d/ only occurs following /n/.

The voiced and voiceless stops contrast in their mutual environment, that is, word medially in any position following the stressed vowel. The following are examples of voiced/voiceless contrast.
Intervocalic: all vd/vl stops except apico-alveolar

- [ˈkopʃ] /ˈgopa/ 'keep for self'
- [ˈkobʌ] /ˈgoba/ 'pied/magpie goose'
- [ˈyaʃʌ] /ˈyaʃa/ 'for short time'
- [ˈmaŋa] /ˈmaŋa/ 'tail'
- [ˈpalaʃa] /ˈbalatja/ 'hessian bag'
- [ˈpaladʒa] /ˈbaladja/ 'food'
- [ˈpukula] /ˈbukula/ 'forehead'
- [ˈpugula] /ˈbugula/ 'water'

Following nasals: non-apical stops

- [ˈtjaŋpa] /ˈdjaŋpa/ 'type of tree bark.'
- [ˈраŋba] /ˈraŋba/ 'thigh'
- [ˈtjamtja] /ˈdjamtja/ 'mother's brother'
- [ŋamŋamdu] /ŋamŋamja/ 'taste, test'
- [ˈmiŋka] /ˈmiŋka/ 'sandfly'
- [ˈdjongo] /ˈdjingga/ 'pandanus nut'

Following laterals: non-apical stops

- [ˈwoʃpa] /ˈwoʃpa/ 'hunt'
- [ˈwoʃba] /ˈwoʃba/ 'dragonfly'
- [ˈpaŋtja] /ˈbaltja/ 'lift up'
- [ˈkuŋdja] /ˈguldjə/ 'to vomit'
- [ˈpalka] /ˈbalka/ 'to adhere to'
- [ˈkalgu] /ˈgaltə/ 'flying fox'

Following the flapped rhotic: all non-apical stops

- [ˈwaŋpa] /ˈwaŋpa/ 'completely'
- [ˈwaŋbulula] /waŋbulula/ 'pelican'
- [ˈpaŋtjeke] /ˈbaŋtjeke/ 'to dream'
- [ˈpaɲdjeke] /ˈbaɲdjeka/ 'to step back'
- [ˈmaŋka] /ˈmaŋka/ 'try'
- [ˈbaŋgawa] /ˈbaŋgawa/ 'get someone to go with oneself'

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Contrasts between the stops of all series may be seen in the following sets of examples, with the exception of apico-alveolar where there are constraints upon it.

<table>
<thead>
<tr>
<th>Word initial</th>
<th>'belabila</th>
<th>'table'</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>'delapa</td>
<td>'child'</td>
</tr>
<tr>
<td></td>
<td>'djel</td>
<td>'ground'</td>
</tr>
<tr>
<td></td>
<td>'gelama</td>
<td>'ear'</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Word medial, stressed, syllable initial:</th>
<th>mingu'beqa</th>
<th>'long stick'</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>an'deřa</td>
<td>'strong one' (see section 2.1.1)</td>
</tr>
<tr>
<td></td>
<td>nu'deřa</td>
<td>'I am strong'</td>
</tr>
<tr>
<td></td>
<td>nu'djeka</td>
<td>'I could return'</td>
</tr>
<tr>
<td></td>
<td>guna'gepa</td>
<td>'dawn'</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Word medial, unstressed, syllable initial:</th>
<th>'gapa</th>
<th>'there known'</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>'gaba</td>
<td>'there unknown'</td>
</tr>
<tr>
<td></td>
<td>'gata</td>
<td>'planetary star'</td>
</tr>
<tr>
<td></td>
<td>'waŋuŋa</td>
<td>'wild dog'</td>
</tr>
</tbody>
</table>
Word medial following nasal:

'gaŋbak  'armlet'
'banda    'shin'
'banqja    'freshwater tortoise'
'bandja    'submerged'
'rangu     'moon'

Word final:

'daŋrap    'last one'
an'marbat   'skeleton'
'marbatj    'plate, billy tin'
an'djambatj 'good hunter'
'gaŋbak     'armlet'

2.1.3 NASALS
The nasals except /n/ occur word initial, medial and final. /n/ occurs medial and final.

Nasal contrasts may be seen in the following sets of examples.

Word or stem
initial:

'mola    'again'
'ŋonqja    'mud whelk shellfish'
gun'nom    'rectangular one'
'ŋola     'didjeridu'

Word medial:

'gama    'woman'
'gana    'have eyes open'
'ganaŋuŋdja    'sit down'
'gaŋawa    'a yellow seaweed'
'gaŋala    type of palm with edible fruit
Word final:  
'waŋpam    'completely'
gu'man    'he will probably get it'
'waŋpant    'emu'
'buŋn    a subsection of Yirrchinga moiety
'galaŋ    'axe'

2.1.4 LATERALS, RHOTICS AND GLIDES

The flapped rhotic */ʔ/* tends to be trilled word final and as the first member of a consonant cluster.

The laterals, rhotics and glides occur word initial, medial and final, except */l*/ which occurs only medial and final according to apico-alveolar constraints.

The laterals, rhotics and glides contrast in the following sets of examples.

Word initial:  
'qak    'to the ultimate'
ʔaka    'and so'
'qaka    'sit down'
'wakwak    'crow'
yagųma    'agree'

Word medial, unstressed:  
'malawa    'recognise'
'maŋa    term of address for male of Jowunga moiety
'maŋymbay    'pygmy goose', 'adultery'
'maŋadatj    'a flirtation'
an'mawuna    'his shadow/spirit'
'qulu    'it's yellow'
mun'mayana

Word medial, stressed:  
mu'qalaŋdjja    'it could dry'
gu'kuŋa    'in the place'
ammu'ragalk    'sorcerer'
guna'waruŋa    'concerning death'
2.2 VOWELS

2.2.1 NEUTRALISATION

The 5 vowels which contrast in primary stressed syllables are neutralised in the following ways to a 3-way contrast in secondary stressed syllables and unstressed syllables.

Word modal in a few reduplicated words, when primary stressed vowels become secondary stressed (cf. section 1), the low front and low back vowels neutralise in favour of the high front and back vowels respectively. In the following examples the primary stressed vowels are low, and the secondary stressed vowels are high.

\[
\begin{align*}
[\text{pʌləbila\'] } & \text{ /buləbila/ } \text{ 'table'} \\
[\text{ŋəŋu\'] } & \text{ /ŋəŋu\'a/ } \text{ 'sleep, day'}
\end{align*}
\]

Word final in unstressed syllables the vowels /e/ and /o/ are neutralised in favour of /a/, the rounded variants tending to occur in fluctuation with [3] and [ʌ] where the stressed vowel is rounded, and the front unrounded variants tending to occur in fluctuation with [ʌ] and [ʌ] where the stressed vowel is unrounded. For example:

\[
\begin{align*}
[\text{puˈraya/puˈraya\'] } & \text{ /buˈraya/ } \text{ 'later'} \\
[\text{woˈrə/woˈrə\'] } & \text{ /woˈrə/ } \text{ 'too bad'}
\end{align*}
\]

Burarra speakers prefer spelling these variants as /a/ word finally.

2.2.2 FLUCTUATION

Fluctuation occurs between full vowel phonemes - sometimes dependent on the speaker, other times dependent on special speech forms such as songs.
In some words, /i/ and /u/ fluctuate word medially contiguous to bilabial or dorso-velar consonants. For example:

'wugup'a / 'wigoipa
'bupudja / 'bipidja
'gin-qa / 'gin-qa
'nyuyjpa / 'nyuyjiya
'añbuña / añbiñi

'together'
'blow'
'what'
'we (plural)'
'to us (plural)'

Note that the word final vowel change in the last example above is explained by the fluctuation of /i/ and /a/ which follows.

The vowels /i/ and /a/ fluctuate in the unstressed syllables of some words when the stressed vowel is /a/. For example:

'waykan / 'waykin
'baladja / 'balidja / 'balidji
'nyupa / nyupi
'waygadjja / waygadjji

'high'
'food'
'1'
'maybe'

2.2.3 INTERPRETATION OF GLIDES

The glide [a'] is interpreted as /aw/. The glides [æ] [a] [ɔ] and [u] are interpreted as /ey/ /ay/ /oy/ and /uy/ except preceding the lamino-palatal stops or nasal in closed syllables, where the high off-glide is transitional and sub-phonemic. Examples of these interpretations follow.

['ŋa'] // theano/' 'yes'
['pæ'ba] // the boon/' 'pass by'
['pamba'] // 'bambay/' 'old woman'
['ɔ'bo'pa] // 'boypo/' 'he will go also'
['ɔ'gu'ba] // 'guypa/' 'he could sink'
['ŋa'nbak] // 'nañbak/' 'armlet'
['kumba'ʃi] // 'gumbatj/' 'chest'
2.2.4 STRESSED VOWEL CONTRASTS

The five stressed vowels /i/ /a/ /o/ and /u/ contrast in the following sets of examples:

'djižtja  'a water lily'
djaŋdja  'pour'
djaŋtwja  'carve'
djoŋndja  'pull out of water'
djuŋa  'paper'
gipa  'already'
guna'gepa  'dawn'
gapal  'grassland'
gopa  'keep for self'
gupa  'build'

'wiŋpa  'spill'
'weŋa  'bad'
'waŋpuŋa  'sorcery item'
'woŋa  'too bad!'
'wuŋa  'man'

2.2.5 UNSTRESSED VOWEL CONTRASTS

There is no vowel contrast word initial, where only /a/ occurs. The vowels /i/ /a/ and /u/ contrast word medial and final in the following sets of examples, where the vowels being contrasted are underlined.

Word medial:  nq'buna  'I hit him'
nq'buna  'I hit you'
nuna'buna  'he hit me'

nunabiŋbuna  'they two hit me'
bubuŋ'boy  'you all go'
2.2.6 VOWEL ALLOPHONES

The following is a description of the vowel allophones and the environments in which they occur in stressed and unstressed syllables.

/i/  [i] Voiced high close front unrounded vocoid.
In unstressed syllables occurs word final, in all positions preceding /y/, and immediately pre-stress following /r/.
In stressed syllables occurs between /ə/ and /ɛ/, between bilabials, and following /r/ when preceding a bilabial.

[ɛ] Voiced mid close front unrounded vocoid.
In unstressed syllables occurs immediately pre-stress following /ŋ/ in the prefix [ŋe-] /ŋi- 'I to you', and between /ɾ/ and /p/ in the word '[ŋaɾepa] /ŋaɾipa 'you and I'.
In stressed syllables occurs preceding bilabials and dorso-velars, and following apico-post-alveolars, either word final or preceding apical or laminal consonants.

[ɔ] Voiced high open front unrounded vocoid.
Occurs elsewhere in stressed and unstressed syllables.

/e/  [ɛ] Voiced mid open front unrounded vocoid.
In stressed syllables occurs following /dʒ/ preceding /i/.
(In unstressed syllables [ɛ] occurs word final as an allophone of the neutralised vowel /a/.)
[ə] Voiced raised low close front unrounded vocoid.
    In stressed syllables occurs preceding apico-post-
    alveolars.

[a] Voiced low front unrounded vocoid.
    Occurs elsewhere in stressed syllables only.

/a/ [‘a] Voiced low open front unrounded vocoid.
    In stressed syllables occurs following lamino-palatals
    and following /r/ preceding the cluster /tʃ/.  

[a] Voiced unrounded vocoid gliding from low open central to
    mid open front position.  Occurs in stressed syllables
    which are closed with /n/ or /tʃ/.

[ʌ] Voiced lowered mid open central unrounded vocoid.
    In unstressed syllables occurs word final in 2-syllable
    stems having the stressed vowel /a/.
    In stressed syllables occurs following apical consonants
    when preceding dorso-velar consonants.

[ˈɔ] Voiced fronted low close back rounded vocoid.
    In stressed syllables occurs following /w/ when preceding
    apico-post-alveolars.

[a] Voiced low open central unrounded vocoid.
    Occurs elsewhere in stressed syllables.

[+] Voiced high close central unrounded vocoid.
    In unstressed syllables occurs stem final preceding suffix.

[a] Voiced mid close central unrounded vocoid.
    Occurs elsewhere post stress word medial.

[ɔ] Voiced mid close central rounded vocoid.
    Occurs in fluctuation with [ʌ] word final following
    rounded stressed vowels.

[ʌ] Voiced mid open central unrounded vocoid.
    Occurs elsewhere in word final unstressed syllables.

/o/ [ɔ] Voiced mid open back rounded vocoid.
    In stressed syllables occurs preceding apico-post-
    alveolars, following /dʒ/ when preceding /l/, and follow-
    ing /ɡ/ when preceding /m/ or /tʃ/.

[ɔ] Voiced low close back rounded vocoid.
    Occurs elsewhere in stressed syllables.
    (In unstressed syllables [ɔ] occurs word final as an
    allophone of the neutralised vowel /a/.)
/u/ [ʊ] Voiced raised mid close back rounded vocoid.
In unstressed syllables occurs word final following the clusters /ŋ/ and /lq/.
In stressed syllables occurs following /ɡ/ /k/ and /w/
when preceding /w/ and /k/, following /ŋ/ or /q/ when pre-
ceding /f/, and following /t/ word final.

[ʊ] Voiced high open central vocoid fluctuating with voiced
raised mid close back rounded vocoid.
In closed stressed syllables occurs following /ɡ/ or /ŋ/
when preceding /y/.

[ʉ] Voiced high open front rounded vocoid.
In stressed syllables occurs following /b/ preceding /p/
or /f/.

[u] Voiced high open back rounded vocoid.
Occurs elsewhere in stressed syllables.
In unstressed syllables occurs following bilabials and
following the cluster /ŋ/ word final.

[u] Voiced high open central rounded vocoid.
Occurs elsewhere in unstressed syllables.
In closed stressed syllables occurs following /m/ when
preceding /n/.

3. DISTRIBUTION

In the examples in this section, a prefix is set off from the stem by
a hyphen, other syllable breaks are shown by a full stop, and stress
is not written.

3.1 DISTRIBUTION OF SYLLABLES

There are six syllable types in Burarra which occur as shown in
Table 3.
TABLE 3
Distribution of Syllables

<table>
<thead>
<tr>
<th>Word Initial</th>
<th>Word Medial</th>
<th>Word Final</th>
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<tbody>
<tr>
<td>in</td>
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<td>as</td>
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</tr>
</tbody>
</table>

V syllables occur only word initial in prefixes and in the word a,na 'mother', o 'or' (perhaps from English), and in the response forms e-e (assent) and i-i (emphatic assent).

C syllables occur only word initial as contractions of single CV syllable prefixes preceding homorganic stops and in the word a,gu,la 'for you'.

The most common VC syllable is the class marking prefix am-. Other VC syllables are in the words ay 'yes, what do you want?' or 'what did you say?' and ayu 'is that all right?'.

CV syllables occur in all positions. As many as four CV syllables may occur in the prefix and four in stems. Except for the aspect suffix -n (probability) which joins the last syllable of the stem to become C2 in C1VC2, all suffixes are CV syllables, and as many as five may occur on a word.

CVC syllables occur in all positions with some limitations - that is, only one may occur in the prefix and two in the stem. There are no CVC suffixes.

CVCC syllables occur in all word positions but only in the stem, and only one may occur per word except where there is reduplication.

Single syllable words may be CV, CVC, or CVCC.
As many as thirteen syllables may occur in a word, e.g., ぬ.な.ひ.る.い.と.し.よ.く.だ.ま.な.ぱ.ぱ 'they 2 did not whip me as the others'. However, such long words are very rare. In a brief count from various texts, three-syllable words were most common. Next most common were two, then four-syllable words. Less common in order of frequency were five, six, and one-syllable words. There was 1 eight-syllable word.

Examples of the syllable types in various positions follow:

V  a-ma  'he could get him'
    a.ма  'mother!'
C  m-ba.ŋa  'he is eating it'
    ñ-jaŋ,dja  'you are taking it'
    (see section 4.1)
VC  an-gu,djaj,tja  'knife (a thing for cutting with)'
CV  ma  'get it'
    gu-ma  'he could get it'
    we.ضا  'wash it'
    a.ɯ.ᵊ-ba.ма. пу.نا  'they two forgot'
CVC  djaj  'desire'
    buŋ-ɡan,gu  'by moonlight'
    wak,wak  'crow'
    a.ɯ.ᵊ-djaj,waŋ,ya  'they could all turn their heads around'
CVCC  gołk  'swag'
    yełm.ба  'husband'
    an-golm.ба, kołm.ба  'little round one'
    bałmaŋk  'wind'

3.2 DISTRIBUTION OF PHONEMES

3.2.1 IN THE WORD

Word initial the only vowel which occurs is /a/. All consonants occur except the voiceless stops and the non-flap apico-alveolar consonants.

Word medial all vowels occur in stressed syllables, and /i/ /a/ and /u/ occur in unstressed syllables. All consonants occur.
Word final only the vowels /i/ /a/ and /u/ occur. All consonants except the voiced stops occur.

3.2.2 IN THE SYLLABLE

The only vowel which may occur in V and VC syllables is /a/, except for a single occurrence each of /i/ /e/ and /o/ as V syllable. These are listed in section 3.1 above.

All vowels occur in CV, CVC and CVCC syllables.

Only /n/ and /y/ may occur as consonants in the VC syllable. (See section 3.1 above for examples.)

All consonants occur in CV syllables.

In CVC syllables all consonants except apico-alveolar stops, nasals and laterals occur as the first consonant. All except the voiced stops occur as the second consonant.

In CVCC syllables all except the apico-alveolar consonants and /t/ /θ/ and /ι/ of the apico-post-alveolar consonants have been found to occur as the first consonant. As the penultimate consonant, only the laterals, rhotics and /u/ occur. The penultimate consonants may be followed by /κ/ /t/ /m/ /n/ or /ŋ/ as the final consonant, and in one instance by /p/ in an adaptation of the English word 'salt' djołp.

The distribution of consonants in CVC and CVCC syllables is shown in Table 4 on the following page.
### TABLE 4

**Distribution of Consonants in Closed Syllables**

<table>
<thead>
<tr>
<th>Consonants</th>
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</table>
There are constraints upon which penultimate and final consonants may occur together in CVCC syllables. Co-occurrences noted to date are shown in Table 5.

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3.2.3 ACROSS SYLLABLE BOUNDARIES

The CC clusters found to occur across syllable boundaries are shown in Table 6 on the following page.
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</table>

**CC Clusters Across Syllable Boundaries**

**TABLE 6**
The cluster /nn/ occurs only across morpheme boundaries at prefix-stem juncture, e.g. an-maka 'bad one'. And contrary to what one would expect, /ndj/ also occurs only at prefix-stem juncture, e.g. ñ-djarlapa 'you could fix it', while /ndj/ occurs elsewhere medially, e.g. ñandja 'pelican', a-gandja 'he took him'. This conclusion is based on the absence of the vowel allophones which typically occur preceding lamino-palatals in closed syllables, e.g. [mitja/miŋpa] /mitja/miŋpa/ 'like', ['ŋaŋba] /ŋaŋba/ 'armlet'. Other than at prefix-stem juncture, /n/ only precedes bilabials in consonant clusters.

CCC clusters which occur across syllable boundaries are listed below with examples:

| /Ik.n/  | nhalk.nalk     | type of fish          |
| /Ik.w/  | walk.walk      | 'spirit of dead'      |
| /ln.b/  | gun-baln.ba⁵⁴  | 'short one'           |
| /ln.g/  | baln.ga        | 'evening'             |
| /K.t.k/ | (example excluded as it may be offensive) |
| /K.p/   | dinn.p.a       | 'put into belt or naga' |
| /K.t/   | duñk.tu⁵⁴      | 'bloodwood tree'      |
| /K.tj/  | a-n-dju⁵⁴.tu⁵⁴ | 'greedy one'          |
| /K.m/   | riñk.mi⁵⁴     | 'cripple'             |
| /K.w/   | muñk.wa⁵⁴     | 'short stick for throwing at geese' |
| /Rn.b/  | yeñm.ba       | 'husband'             |
| /Rn.dj/ | djoñn.dja      | 'pull out of water'   |
| /Rg.b/  | gunboñn.biya  | 'snore'               |
| /Rn.g/  | biñn.giya      | 'sling dillybag on oneself' |
| /Rn.m/  | buñbruñ.ma     | 'put hand into hole'  |
| /Rn.b/  | qaym.bua       | 'be quiet!'           |
| /Wk.tj/ | yawk.tja       | 'to cover or fill a hole' |
| /Ym.b/  | mu-djaim.bana  | 'wild sugar cane'     |
| /Rg.g/  | bukayn.gula    | 'thresher shark'      |
4. MORPHOPHONEMICS

The following changes occur in Burarra morpheme boundaries. (In the examples in this section prefixes are set off from stems by hyphens.)

4.1 AT ALL MORPHEME BOUNDARIES

Unstressed vowels are deleted between homorganic nasal plus stop or stop plus nasal, and also between /ŋ/ and /ɲ/.

\[
\begin{align*}
\text{mu} + \text{bu} & \rightarrow \text{m-bu} & \text{'he could hit it'} \\
\text{ŋu} + \text{ga} & \rightarrow \text{ŋ-ga} & \text{'I could take it'} \\
\text{mu} + \text{biŋi} & \rightarrow \text{mbiŋi} & \text{'they 2 to it (mun- class)'} \\
\text{gum-} + \text{balma} + \text{ba} & \rightarrow \text{gum-balmba} & \text{'short'} \\
\text{a-ŋika} + \text{ŋa} & \rightarrow \text{a-ŋika} & \text{'he is crawling'} \\
\text{ŋuna} + \text{ŋima} & \rightarrow \text{ŋun-ŋima} & \text{'he could hold me'}
\end{align*}
\]

4.2 AT PREFIX-STEM JUNCTURE

(i) The vowel is deleted from the prefix ŋi- (2nd person singular), except preceding /ŋ/ /ɲ/ and /ʁ/. Following the resulting ŋ-, /ŋ/ becomes /ŋ/, and /ŋ/ and /ʁ/ become /y/.

\[
\begin{align*}
\text{ŋi} + \text{baj} & \rightarrow \text{ŋ-baj} & \text{'you could eat it'} \\
\text{ŋi} + \text{ga} & \rightarrow \text{ŋ-dja} & \text{'you could take it'} \\
\text{ŋi} + \text{ma} & \rightarrow \text{ŋ-ma} & \text{'you could get it'} \\
\text{ŋi} + \text{ŋaga} & \rightarrow \text{ŋ-ŋaga} & \text{'you have none'} \\
\text{ŋi} + \text{yalpa} & \rightarrow \text{ŋ-yalpa} & \text{'you could cook it'} \\
\text{ŋi} + \text{ŋima} & \rightarrow \text{ŋ-yima} & \text{'you could paint it'} \\
\text{ŋi} + \text{yenga} & \rightarrow \text{ŋ-yenga} & \text{'you could speak'}
\end{align*}
\]

(ii) Preceding /ŋ/ and /ʁ/, the ŋi- prefix becomes ŋ-, and following the resulting ŋ-, /ʁ/ becomes /q/.

\[
\begin{align*}
\text{ŋi} + \text{ŋaŋaŋaŋa} & \rightarrow \text{ŋ-ŋaŋaŋa} & \text{'you could play'} \\
\text{ŋi} + \text{ŋa} & \rightarrow \text{ŋ-da} & \text{'you could spear it'}
\end{align*}
\]

(iii) When the prefix ŋi- is a part of a larger prefix complex, the /i/ tends to become /u/ in words having a rounded stressed vowel.
(iv) When stems beginning with /q/ receive a prefix ending in /n/, the /q/ becomes /d/.

an- + deña → an-deña  
'strong one'

(v) When stems beginning with /r/ receive a prefix of one syllable with /r/ final, the /r-r/ becomes /n-d/.

a-r- + ra → an-da  
'they could spear us'

bu-r- + ra → bin-da  
'the he could spear them'

(vi) When the final /r/ of the prefix bu-r- is involved in the above change of /r-r/ to /n-d/, the vowel of bu-r- also changes to /i/.

bu-r- + ḫina → bin-dima  
'the he could hold them'

(vii) When stems beginning with /r/ receive a prefix of more than one syllable in which the final consonant is /r/, the stem initial /r/ becomes /q/.

awu-r- + ḥigirga → awu-qigirga  
'they could go walkabout'

gubu-r- + ḫana → gubu-qina  
'they two nailed it'

(viii) Proceeding stems in which the stressed vowel is unrounded and the initial consonant of the stem is apical or laminal, the prefix final /u/ in the syllable /bu/ becomes /i/.

a-bbu- + ḥa → a-bbi-ḥa  
'they could see us'

bu-bu- + ḫima → bubi-ḥima  
'they all/we all could hold you'

ni-bbu- + djena → ni-bbi-djena  
'they all/we all could search for you'

Compare with the following examples where the stressed vowel is rounded or the stem initial consonant is bilabial or velar.

a-bbu- + ga → a-bbu-ga  
'they could take us'

bu-bu- + ḫima → bubi-ḥima  
'they all/we all could paint you'
(iii) Intervocalic /b/ in the prefix tends to become /w/ preceding stems beginning with /b/ or /m/.

\[
\begin{align*}
\text{ȵu}b\text{u}- + \text{bo}y & \rightarrow \text{ȵu}bu\text{-bo}y & \text{let's go} \\
\text{ȵi}bu- + \text{ma} & \rightarrow \text{ȵi}wu-\text{ma} & \text{you all/we all could get it}
\end{align*}
\]

Compare the following examples where the stems begin with other than /b/ or /m/.

\[
\begin{align*}
\text{ȵu}b\text{u}- + \text{w}alagi\text{ya} & \rightarrow \text{ȵu}bu\text{-w}alagi\text{ya} & \text{let's dance} \\
\text{ȵi}bu- + \text{go}n\text{g}a & \rightarrow \text{ȵi}bu\text{-go}n\text{g}a & \text{you all/we all could cut it}
\end{align*}
\]

(x) When the prefix gu- occurs with a derivational function as part of the stem following the prefix an- and preceding a root beginning with /ŋ/ or /ŋ/, gu- may become gu-. This has been noted in the following two words only.

\[
\begin{align*}
\text{an-}gu\text{n}a\text{lt}j\text{a} & \rightarrow \text{an-gu}n\text{n}a\text{lt}j\text{a} & \text{white one} \\
\text{an-gu}n\text{n}a\text{lt}j\text{a} & \rightarrow \text{an-gu}n\text{n}a\text{lt}j\text{a} & \text{white cockatoo}
\end{align*}
\]

(xi) Vowel clusters created at prefix-stem juncture become fused. There are only two instances of this.

\[
\begin{align*}
\text{nudji} + \text{ama} & \rightarrow \text{nudj-a}m\text{a} & \text{my mother} \\
\text{nun} + \text{a}n\text{a} & \rightarrow \text{nun-a}n\text{a} & \text{my father}
\end{align*}
\]

4.3 AT STEM-SUFFIX JUNCTURE

(i) Unstressed stem final /a/ becomes /i/ preceding the suffix -ya.

\[
\begin{align*}
\text{a-we}p\text{a} + -\text{ya} & \rightarrow \text{a-we}pi\text{ya} & \text{he is washing himself} \\
\text{gu-}\text{r}u\text{ma} + -\text{ya} & \rightarrow \text{gu-}r\text{umi}\text{ya} & \text{it is breaking itself}
\end{align*}
\]
(ii) When the suffix -pa is added to word final /iyal/, the resulting /iyapa/ may contract to /iya/.

\[ a-bamiya + -pa + a-bamiyapa \]

'he also is carrying on his head'

(iii) Stem final /dja/ and /tja/ become /dju/ and /tju/ where the stressed vowel is /u/ and the suffix -qa is added.

\[ a-yurtja + -ə + a-yurtjuna \]

'he is running'

\[ a-qtujə + -ə + a-qtujuna \]

'he is full'

(iv) Stem final /dja/ and /tja/ become /dji/ and /tji/ where the stressed vowel is other than /u/ and the suffix -qa is added.

\[ gu-li̱dja + -ə + gu-li̱djiña \]

'it is all clear'

\[ gu-dje̱dje̱dja + -ə + gu-dje̱dje̱djiña \]

'he is pouring it'

\[ a-galadja + -ə + a-galadjiña \]

'he is paddling (canoe)'

\[ a-botja + -ə + a-botjiña \]

'he is spitting'

(v) In words where the stressed vowel is non-front, stem final /a/ becomes /u/ when it is preceded by a bilabial and a suffix other than -ya is added.

\[ a-gaypa + -ə + a-gaypuna \]

'he deprived him'

\[ mu-guyba + -ə + mu-guybuna \]

'it is sinking'

\[ a-galmə + -ə + a-galmuna \]

'he got up'

\[ gu-bošwa + -ə + gu-bošwuna \]

'he thought about it'

(vi) When the suffix -xa is added to the word a-ni 'he could stay/be', the /i/ may be deleted from the stem and the stress moved to the prefix.

\[ a-ni + -x̂a + a-nì̱xa \]

'anxa' 'he is'

(Note: the full form is always written)

(vii) Word final /we/ when not contiguous to the stressed syllable, may elide following /u/, and the /u/ become /a/ except following dorso-velars.
ŋulwa / ŋula 'for you'
awuñĩŋ-beŋkuwa / awuñĩŋ-beŋku 'husband and wife'

(viii) Stem final voiceless stops elide when the suffix -djan is added, and the suffix initial /dj/ becomes /tʃ/.

wamut + -djan → wamutjan  (feminine form of a subsection)
nařitj + -djan → nařitjan  (feminine form of a subsection)
godjok + -djan → godjjan  (feminine form of a subsection)

Note that in the last example the entire final syllable of the stem elides.
The voiced/voiceless contrast may alternatively be described as stop verses geminate stop cluster. This interpretation was employed by D. & K. Glasgow for Burarra in 1967, and is used by McKay (1975) for Rembarrnga, Carroll (1976) for Kunwinjku, Wood (1977) for Galpu, McKay (1979) for Djeebanna and Ether (1979) for Nakkara. However, the voiced/voiceless contrast in Burarra is maintained as a two stop series in the present paper, as it is also for Guwiwu (Lowe 1975) and Djinang (Waters 1979), the languages immediately to the east of Burarra.

The decision to maintain a voiced series of stops and a voiceless series of stops in this paper was finally determined by the preference of a Burarra teaching assistant, who has been receiving some in-service linguistic instruction at Maningrida. When an alternate draft of this paper was being written according to the geminate stop cluster interpretation, he requested a copy. But he said that if he were writing the paper, he would describe Burarra as having both a voiced and voiceless series of stops rather than geminate stop clusters. He felt this way even though he was able to distinguish between phonetic, phonemic and orthographic symbolisation and was aware of the weight of distributional symmetry in favour of geminate clusters. This indicates that Burarra speakers do not have an intuitive feel for geminate clusters, and it is desirable that the description of their language be appealing to the Burarra themselves.

In contrast to the word initial stops, there are no instances of word final voiceless stops which become voiced with the addition of a suffix, thereby indicating a voiced interpretation. Instead, a morphophonemic change takes place, in which the word final stop is elided and the suffix initial stop becomes voiceless (see 4.3(viii)).

[d] may alternatively be considered a voiced allophone of /t/ following /n/. However, since it is the voiced stops only of the apico-post-alveolar and lamino-palatal series which occur following nasal, not the voiceless stops, there is reason to interpret [d] as /d/. Note that /d/ may also occur stem initial following a prefix ending in /n/, e.g. an'dana 'he could spear us'.

N.B. All references in this paper are given at the conclusion of the following paper, 'Burarra Orthography'.