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PREFACE

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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 Panpawa Mollinjin. 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 retroflexed sounds. This paper is the fruit of that research. Kathy's analysis places the Burarra orthography within the main stream 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 Walmatjari. 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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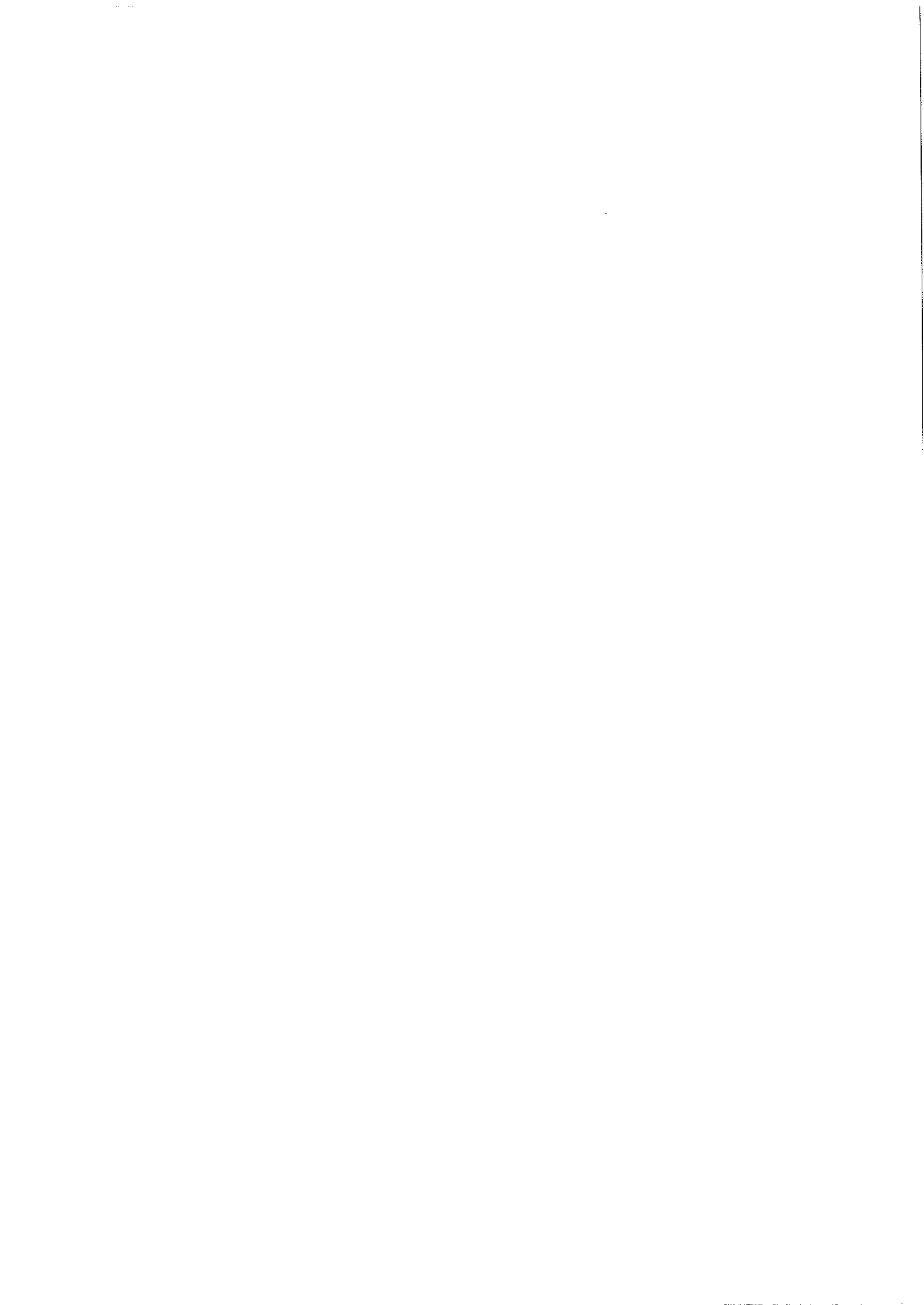
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ANINDILYAKWA PHONOLOGY FROM PHONEME TO SYLLABLE

Judith Stokes

0. INTRODUCTION

Anindilyakwa¹ is the language spoken by the people of Groote Eylandt, which is situated on the western side of the Gulf of Carpentaria. The people are now settled in two communities. About 400 live on the north coast at Umbakumba and about 600 live at Angurugu, which is situated in the western half of the island. Originally, the group of people called Warnindilyakwa lived on the east coast of the island, especially in the south-east area called Dilyakurrkba. Their name has been used to refer to all inhabitants of the island.²

Anindilyakwa is unusual among Australian languages in that in lieu of the typical three or five vowel 'triangular' system (Wurm 1972:53) it has a four-member square scheme, and in addition has the labio-velar consonants /kw/ and /ŋw/.

This paper illustrates the extensive variation occurring throughout this language, particularly in the vowel system. In the high vowels there are tendencies both to polarisation and to centralisation of the phonetic quality of the vowels, depending largely on the environment. But within the low vowels there is a continuum of phonetic quality with a shared allophone at the boundary between the front and back vowels. In addition, low vowels tend to glide in certain environments.

Because of the extent of variation, allophonic and phonemic variants are shown for the relevant phoneme only. Phonetic symbols for the vowels have only been used where they are significant for the point under discussion.

While the importance of morphophonemics has been taken into account, a full morphophonemic analysis is beyond the scope of this paper. Only the morpheme boundaries significant to the point under discussion have been shown. Since vowel harmony most frequently

occurs across the morpheme boundary, its full treatment is likewise beyond the scope of this paper.

The English glosses of some examples do not include all details regarding verb prefixes and noun classes.

1. DESCRIPTION OF PHONEMES

There are 26 phonemes comprised of 22 consonants (Chart 1) and 4 vowels (Chart 2).

The norm for articulation of the stops is that they are voiceless and unaspirated but all other consonants are voiced. Both stops and nasals are differentiated at 6 points of articulation. A seventh contrast is introduced by secondary articulation, rounding, of the labio-velars. Laterally released consonants are articulated at 4 points with evidence that one of those consonants /l/ probably has its source in borrowings from the mainland. The semi-consonants also contrast at 4 points.

The vowels contrast between front and back and high and low tongue positions.

1.1 CONSONANTAL PHONEMES

1.1.1 CONTRASTS BETWEEN CONSONANTS HAVING SIMILAR MANNER OF ARTICULATION

Stops

The stops contrast at bilabial, inter-dental, alveolar, lamino-palatal, retroflex and velar points of articulation. The seventh contrast is the labio-velar.

Word-medial

/mapa/	'there'
/maʃa/	'ear'
/ʃiʃapaʃa/	'spear (type)'
/matya/	'shark species'
/amaʃa/	'grass'
/-maka/	'mood suffix'
/makwa/	'neap tide'

CHART 1

Consonants

	Bi-labial	Inter-dental	Alv.	Lamino-Palatal	Retro-flex	Velar	Labio-velar
Stops	p	t̪	t	ty	ʈ	k	kw
Nasals	m	ɖ	n	ny	ɳ	ŋ	ŋw
Laterals		ɭ	l	ly	(ɭ)		
Semi-consonants	w		ɣ	y	ɕ		

CHART 2

PHONEME FEATURE CHART

Vowels

	Front	Non-front
High	i	u
Non-high	e	a

Nasals

The nasals contrast at bilabial, inter-dental, alveolar, lamino-palatal, retroflex and velar points of articulation. The seventh contrast is the labio-velar.

Word-medial (open syllables)

/mama/	'no matter'
/yinaŋa/	'nail'
/enena/	'this'
/yaŋanya/	'cicada'
/yinaŋa/	'snake'
/yinaŋa/	'grub species'
/ŋaŋwa/	'father'

Word-medial (closed syllables)

/miŋta/	'plant species'
/eminta/	'nose'
/aŋta/	'plant species'
/aŋta/	'elbow'
/maŋtya/	'bees' eggs'
/-manytya/	'on'

Laterals

The laterals contrast at inter-dental, alveolar, lamino-palatal and retroflex points of articulation.

Word medial

/ŋa _l a/	'she'
/yimaŋala/	'woomera'
/aŋalya/	'place'
/ma _l uwiyā/	'emu'
/a _l a/	'irritant'
/alya/	'slime'

The phoneme /j/ is rare, being found in only a small number of words, apart from the names of a few people having mainland connections, e.g. Ka!a!a and Papapa!i. Most other words have been traced to mainland cognates.

/ma!uwiya/	'emu'	Gupupuyngu	/ma!wiya/
/pa!uwuřa/	'grass species'	Gupupuyngu	/!a:wař/
/atyařka!a/	'fish species'	Gupupuyngu	/watyařka!i/
/awuřuŋa!itya/	'plant species'	Nunggubuyu	/ŋa!ity/
/amaři!a/~amařa!a/	'heron species'	Nunggubuyu	/mařa:!a/
/yimpaři!a/	'mythical being'		

Semi-consonants

The semi-consonants contrast at bi-labial, alveolar, lamino-palatal and retroflex points of articulation.

Word-medial

/awa/	'liver'
/ařa/	'forehead'
/!aya/	'snake species'
/nařa/	'no'
/aŋwuřa/	'more'
/aŋwuřa/	'fire'

The semi-consonants /w/ and /y/ have been interpreted as such because no unambiguous vowel sequences have been observed. This interpretation conforms to the corresponding unambiguous syllable shape CV.

In fast speech the semi-consonants /w/ and /y/ are very lightly articulated but they still act as distinct syllable boundaries.

In word-initial position, the semi-consonant /y/ is not articulated preceding /i/ followed by a lamino-palatal.

/yityařa/	[ityařa]	'bird species'
/yilyampařa/	[ilyampařa]	'bird species'
/yinyaku-wiyita/	[inyakuwiyita]	'straight chest'
/yiyepuřikpa/	[iyepuřikpa]	'shark species'

These words have been interpreted as /yi/ to conform with the non-suspect pattern of the y noun class.

/yina/	[yina]	'knee'
/yalyukwa/	[yalyukwa]	'rain'
/yaṛuma/	[yaṛuma]	'big'

The alveolar phoneme has two allophones, the alveolar flap [ɾ] and the alveolar trill [r̄]. These allophones occur in free variation, but the trill tends to be used in precise speech and for emphasis.

Inter-dentals

The articulation of the inter-dental series /ɟ/, /ɲ/ and /ɽ/ is essentially laminal. The tongue tip position varies from inter-dental to dental according to the speaker.

1.1.2 CONTRASTS BETWEEN PHONETICALLY SIMILAR CONSONANTAL SEGMENTS

The following examples show contrasts which have not yet been considered.

Stops /ɟ/, /t/, /ty/, /t/ and semi-consonant /ɾ/

Word-initial

/ɟaɟitya/	'avoidance relation'
/tyaɟiya/	'come out!'
/ɾakaṛtyiya/	'sit up!'

Word-medial

/maɟa/	'ear'
/ɟiɾapata/	'spear (type)'
/matya/	'shark species'
/amaɟa/	'grass'
/maɾa/	'wattle species'

Laterals /ɽ/, /l/, /ly/, /l/ and semi-consonants /ɾ/ and /r̄/

Word-initial

/ɽaka/	'all right?'
/lyakuwaɟiya/	'clap!'

/ʔakaɾtyiya/	'sit up!'
/ɾakayena/	'lie on your back!'

Word-medial (open syllables)

/yilaʔa/	'shellfish species'
/yilyaŋa/	'shovel-nosed ray'
/yiraŋka/	'fly species'
/yiraʔa/	'didjeridu'

/marŋkaʔa/	'place name'
/patyikala/	'tin'
/eŋkalya/	'wet'
/atyaʔkaʔa/	'fish species'
/aŋkaʔa/	'run!'
/kaɾawaʔa/	'fish species'

Word-medial (closed syllables)

/aŋalpiya/	'fish species'
/ʔinaʔpiya/	'crocodile'
/yikaɾpa/	'woomera'

Velars /k/ and /ŋ/, labio-velars /kw/ and /ŋw/ and bi-labial semi-consonant /w/

Word-initial

/kapa/	'be quiet!'
/ŋawa/	'enough'
/kwa/	'come!'
/ŋwaʔina/	'cry!'
/waka/	'other'
/-kwapa/	'-also'

Word-medial

/eka/	'tree'
/ekwa/	'head-carrying support'

/naka/	'he'
/yinaŋa/	'grub species'
/akwa/	'and'
/aŋwa/	'sand dune'
/awa/	'liver'
/ekalya/	'lying'
/akwalya/	'fish'
/maka ^ʷ ʔa/	'thigh'
/ekwa ^ʷ ʔa/	'half'

The labialised consonants /kw/ and /ŋw/ have been interpreted as single phonetically-complex consonants for the following reasons:

- (a) in the word-initial position, the non-suspect pattern allows for only single consonants: /kw/ and /ŋw/ appear in this position, as above;
- (b) there is phonetic contrast between the labial off-glide and its following vowel as one syllable and the sequence CuwV as two syllables, where C is a velar consonant. (See Section 3.1 for the conditions under which /kuw/ may alternate with /kw/.)

/kwa/	[kwa]	'come!'
/kuw-ampilya/	[kuwampilya]	'they will stay'
/akwa/	[akwa]	'and'
/akuwa/	[akuwa]	'fish species'
/aŋwura/	[aŋwura]	'fire'
/aŋu-wu ^ʔ iya/	[aŋuwu ^ʔ iya]	'let her climb'

1.1.3 PHONEMIC VARIATION

Although contrast between velar and labio-velar consonants has been established contiguous to /a/ and /e/, phonemic fluctuation before /u/ and a following consonant other than /m/, /p/, /w/, /kw/ and /ŋw/ is common. This variation occurs between different speakers and has also been observed in the speech of individuals, sometimes within different utterances of the same word.

Such variation results in neutralisation of contrast between [ku] and [kwu] and between [ɲu] and [ɲwu].

/muŋkwuɽiya ~ muŋkuɽiya/	'go to sleep!'
/akwuɽukwuɽa ~ akuɽukuɽa/	'taboo'
/akwuɽena ~ akuɽena/	'wild grape'
/amakwulya ~ amakulya/	'skin'

The labialised velar nasal /ɲw/ is more stable than /kw/, but can be subject to variation as well.

/mamunɲwulya ~ mamunɲulya/	'seaweed species'
/manyunɲwunya ~ manyunɲunya/	'fig species'
but -	
/aŋwuɽa/	'fire'

The phonemic variants /kwu/ and /ɲwu/ have been used arbitrarily throughout the rest of this paper in the preceding environments.

When the consonants /m/, /p/, /w/, /kw/ and /ɲw/ occur at the onset of the next syllable, there is minimal phonemic fluctuation. Normally /ku/ and /ɲu/ occur. In some people's speech /kwu/ and /ɲwu/ may occur as possible variants in a few words.

(Open syllables)

/wakuma/	[wakuma]	'put it down!'
/yakuwa/	[yakuwa]	'you and I'
/aŋupina/	[aŋupina]	'sky'
/yaŋunɲwa/	[yaŋunɲwa~yaŋwunɲwa]	'eel'

(Closed syllables)

/kumpamuɽa/	[kumpamuɽa]	'fish species'
/yukunɲpa/	[yukunɲpa]	'possum'
/maŋkuɽkwa/	[maŋkuɽkwa]	'pandanus'
/aŋuɽkwa/	[aŋuɽkwa]	place name

The variation between /k/ and /kw/ and between /ɲ/ and /ɲw/ preceding consonants other than /m/, /p/, /w/, /kw/ and /ɲw/ has been interpreted as phonemic not only on the basis of established contrast preceding low vowels but also on the basis of morphophonemic analysis. In verb prefixation, several very common

prefixes end in the velars /k/ and /ŋ/. In non-suspicious environments preceding verb stems beginning with low vowels, there is never variation to the counterpart labio-velars. Nor are labio-velars found in the environments preceding verb stems beginning with consonants other than /m/, /p/, /w/, /kw/ and /ŋw/. In the latter case the empty morpheme /i/ links the prefix with the verb stem.

/k-eŋkiřatya/	[keŋkiřatya]	'I will hear it'
/niŋ-ampilya/	[niŋampilya]	'I stayed'
/yiŋ-i-łikatya/	[yiŋiłikatya]	'she is going'
/ak-i-řiřena/	[akiřiřena]	'we (inclusive) will chop it'

When these prefixes occur preceding the consonants /m/, /p/, /w/, /kw/ and /ŋw/, only [ku] and [ŋu] occur across the morpheme boundary.

/k-u-mepina/	[kumepina]	'I will sing'
/niŋ-u-wuřena/	[n(ŋuwuřena~nuŋuwuřena)]	'I am climbing'
/yiŋ-u-ŋwařina/	[y(ŋuŋwařina~yuŋuŋwařina)]	'she is crying'

In the last two examples there is an alternate phonetic form which can be attributed to vowel harmony.

Since the phonetic variants [kwu] and [ŋwu] never occur across the morpheme boundaries, then the identity of the prefixes is maintained with the inherent nature of the velars /k/ and /ŋ/. The empty morpheme linking the prefix to the verb stem anticipates the following consonants. Thus [ku] and [ŋu] are interpreted as being derived from the velars [k] and [ŋ]. This supports the interpretation that there is full phonemic variation between /ku/ and /kwu/ and between /ŋu/ and /ŋwu/ preceding consonants other than /m/, /p/, /w/, /kw/ and /ŋw/.

Other examples of phonemic variation are given in Section 3.2.1.

1.1.4 ALLOPHONIC VARIATION

Lamino-palatals /ty/, /ly/ and /y/ and the retroflex /ɽ/

The phonemes /ty/ and /ly/, /y/ and /ɽ/ sometimes have an indeterminate central vowel as an offglide preceding the vowel /u/. This is considered to be a sub-phonemic variation of the palatalisation.

/tyuřa/	[tyuřa~ty ^ə uřa]	'book' ³
/yalyukwa/	[yalyukwa~yaly ^ə ukwa]	'rain'
/yukwa/	[yukwa~y ^ə ukwa]	'give me!'
/yukpa/	[yukpa~y ^ə ukpa]	'bird species'
/ařukwa/	[ařukwa~ař ^ə ukwa]	'raw'

1.2 VOWEL PHONEMES

The phonetic realisation of vowels in Anindilyakwa is distributed over almost the entire phonetic spectrum from the four underlying oppositions displayed in Chart 2. These basic oppositions are front and non-front, high and non-high. In the non-high vowels, although the range of the /a/ phoneme is very wide it does not extend to the most fronted tongue position. The front vowel /e/ extends from mid to low position but maintains contrast with the high front vowel /i/.

In Anindilyakwa four vowels are necessary to morphophonemic processes and to give adequate contrast to semantic differentiations of lexical items.

1.2.1 VOWEL CONTRASTS

Front vowels /i/ and /e/

/akina/	[aki na]	'that'
/akena/	[akena]	'but'
/ni- ařina/	[ni ařina]	'it fell'
/ni- ařena/	[ni ařena]	'pull it out of the fire!'
/m-ipina/	[mɪpina]	'same'
/mepina/	[mepina]	'wattle species'
/y-ipa/	[yɪpa]	'any?'
/ayepa/	[æ ^ɪ yepa]	'sand bar'

Back vowels /u/ and /a/

/wuřena/	[wuřena]	'climb!'
/wařena/	[wʌřena]	'hit!'
/nu-wařa/	[nu:wařa]	'he doesn't want'
/na-wařa/	[nʌwařa]	'they don't want'

/aŋwʊŋʈa/	[aŋwʊŋʈa]	'ankle'
/aŋwaŋʈa/	[aŋwʌŋʈa]	'stone'
/ayaɭukwa/	[ayaɭukwa]	'paperbark species'
/yeɭakwa/	[yeɭʌ ^u kwa]	'here'
/aŋakupa/	[aŋakupa]	'over there'
/kapa/	[kʌpa]	'be quiet!'

High vowels /i/ and /u/

Marginal contrast is attested between /i/ and /u/. Despite the fact that there are some phonological environments that determine the phonetic quality of high vowels (Section 1.2.2), there remains a core of words that resist both phonetic fluctuation between /i/ and /u/ and environmental conditioning. This core of words attests the necessity of /i/ and /u/ to the phonology of the language.

/aɕumpa/	[aɕumpa]	'blister'
/aɕimpa/	[aɕɪmpa]	'stingray species'
/eŋpiʃa/	[eŋpiʃa]	'wide'
/eŋmuʃa/	[eŋmʊʃa]	'fat'
/t ^ʌ imiʃa/	[t ^ʌ imiʃa]	'bird species'
/yimiʃiɕa/	[yimiʃiɕa~yimɛʃiɕa]	'plant species'
/yimuʃaɭya/	[yimʊʃaɭya]	'green tree ant'
/yipuʃiɭya/	[yipʊʃiɭya]	'bird species'
/t̥imiʃmaɕa/	[t̥imiʃmaɕa]	'sand fly'
/yimuʃminyā/	[yimʊʃminyā]	'barnacles'
/yiŋuʃma/	[yiŋuʃma]	'fish species'
/yʊŋwʊɭa/	[yʊŋwʊɭa]	'trepan'

This contrast is further supported by the following examples where /k/ ~ /kw/ for the back vowel (see Section 1.1.3).

/alyakiɭya/	[alyakɪɭya]	'fish species'
/amakɭya/	[amakɪɭya~amakwɪɭya]	'skin'

/mur̥iŋkiʃa/	[mur̥iŋkɛʃa~mur̥iŋkøʃa]	'sinker'
/mur̥uŋkuʃa/	[mur̥uŋkuʃa~mur̥uŋkwøʃa]	'yam species'
/mikiʃa/	[mikiʃa]	'edible root'
/amukuʃa/	[amukuʃa~amukwøʃa]	'face'
/waŋkina/	[waŋkɛna~waŋkøna]	'fetch it!'
/yukuŋa/	[yukuŋa~yukwøna]	'baler shell'

Low vowels /e/ and /a/

/mema/	[mema]	'this'
/mama/	[mama]	'no matter'
/ŋempena/	[ŋempɛna]	'bathe!'
/tyampana/	[tyampɛna]	personal name
/eʃa/	[ɛʃa]	'vomit'
/aʃa/	[ʌʃa]	'forehead'
/peʃa/	[pɛʃa]	'move!'
/paʃa/	[pʌʃa]	'monsoon wind'
/keʃa/	[kɛʃa]	'look!'
/kaʃa/	[kʌʃa]	'perhaps!'
/meʃa/	[mɛʃa]	'string, blood'
/maʃa/	[mʌʃa]	'tree species'
/eɬa/	[ɛɬa]	'marriage'
/maɬa/	[mʌɬa]	'ear'
/ekwa/	[e ^l kwa]	'head-carrying support'
/akwa/	[a ^u kwa]	'and'
/ni-ʃeku-wuʃa/	[niʃe ^l kuwuʃa]	'he threw down the snake'
/ni-ʃaku-wuʃa/	[niʃʌkuwuʃa]	'he threw down the fish'
/ni-ŋekpuɾaka/	[niŋɛkpuɾaka]	'he made it'
/ni-ŋak-puʃukwatya/	[niŋʌkpuʃukwatya]	'he flattened the mound'

The shared allophone [æ]

Low front [æ] is shared as an allophone by both /e/ and /a/. In many words free fluctuation between the phonemes /e/ and /a/ is permissible (see Section 3.2.2). In addition, speakers vary in their phonetic norms for /e/ and /a/. This is an area which has proved difficult to analyse due to the prevalence of fluctuation.

In many other words, however, /a/ does not fluctuate with /e/. Discussion with a number of native speakers who are not necessarily literate has revealed that they have an innate ability to assign [æ] unambiguously to either /a/ or /e/ in all such words.

In the following examples an /e/ phoneme may vary in tongue height, but it contrasts with /a/ because it is never back. An /a/ phoneme may remain constant or may fluctuate towards /æ/, but it retains a contrast with /e/ because it is never raised as high as mid position.

[ε ~ æ] contrasting with [ʌ]

/aŋempa/	[aŋεmpa~aŋæmpa]	'place'
/aŋampa/	[aŋʌmpa]	'where?'
/eɽiřa/	[εɽiřa~æɽiřa]	'hole'
/aɽiřa/	[ʌɽiřa]	'few'
/yimεŋta/	[yimεŋta~yimæŋta]	'turtle'
/maŋta	[mʌŋta]	'bird species'
/nuw-εŋkiřatya/	[nuwεŋkiřatya~nuwæŋkiřatya]	'they hear'
/nuw-aŋkiřatya/	[nuwʌŋkiřatya]	'they ran'

[ε~æ] contrasting with [ʌ~æ]

/awiyempa/	[awiyεmpa~awiyæmpa]	'anger'
/yampi ya/	[yʌmpiya~yæmpiya]	'throat'
/yiniyeřuwena/	[yiniyeřuwena~yiniyæřuwena]	'native cat'
/yini-yařuwena/	[yiniyʌřuwena~yiniyæřuwena]	'we went past him'
/k-εniŋmuɽinama/	[kεniŋmuɽinama~kæniŋmuɽinama]	'I'll find out'
/kani-ŋmuřiɽinama/	[kʌniŋmuřiɽinama~kæniŋmuřiɽinama]	'they (two) will get fat'

1.2.2 VOWEL ALLOPHONES

High vowels

High vowel allophones form a phonetic continuum from close front unrounded [i] to back rounded [u]. Across the centre of the continuum it is not always possible for native speakers to assign indeterminate central vowels unambiguously to either /i/ or /u/, especially in unstressed syllables. However, there are environmental conditioning factors which have a strong influence on the vowel quality, causing polarisation of the front and back vowels to the allophones [i]~[ɪ] and [u] at either end of the continuum.

High vowels contiguous to /y/, /w/, /kw/ and /ŋw/ never centralise.

/yimawuɾa/	[ɪmawuɾa]	'moon'
/yiŋwa/	[ɪŋwa]	'crow'
/yuŋwuɭa/	[yuŋwuɭa]	'trepang'
/wiya/	[wiya]	'here!'
/mawɪya mawuɪya/	[mawɪɪya~mawuɪya]	'pubic tassel'
/wuɾuwaɾa/	[wuɾuwaɾa]	'dog'
/yukwuna/	[yukwuna]	'give me!'
/kwitya kwutya/	[kwɪɪya~kwutya]	'look!'
/wu-kwiyukwiyina/	[wukwiyukwiyɪna]	'carry it in front of you!'
/amuŋwɪnya amuŋwunya/	[amuŋgwɪɪnya~amuŋwunya~amuŋunya]	'soft'
/-ɭaŋwiya/	[ɭaŋwiya]	'along'

In some words, when not contiguous to /m/ or /p/, /i/ may fluctuate between [ɪ] and [ɛ], but does not vary with [ʊ] or [u].

/eɭiɾa/	[eɭɪɾa~eɭɛɾa]	'hole'
/ekiɾa/	[ekɪɾa~ekɛɾa]	'name'
/yiniɭena/	[yɪɪɭena~yɪɛɭena]	'coral'
/ɾiɭena/	[ɾɪɪɭena~ɾɛɭena]	'chop!'

In some words, when contiguous to /m/ or /p/, /u/ may fluctuate between [ʊ] and [ʊ], but does not vary with [ɛ] or [ɪ].

/aɾuma/	[aɾuma~aɾɛma]	'big'
/wupuɾa/	[wupuɾa~wupɛɾa]	'like'

/amakwilyumuta/	[amakwilyumuta~amakwilyumuta]	'huge'
/tupulkuma/	[tupulkuma~tupulkuma]	'goanna species'

In many cases, however, there appears a central indeterminate vowel, especially in unstressed environments, which is difficult to identify with either end of the continuum. When this indeterminate vowel occurs contiguous to /m/ and /p/, it has been assigned to /u/.

/alumiya/	[alumiya~alumiya]	'tree species'
/alapura/	[alapura~alapura]	'tree species'
/munina/	[munina~munina]	'burrawang'
/mamuka/	[mamuka~mamuka]	'bandicoot's nest'
/aruputa/	[aruputa~aruputa]	'strong'

This means that /i/ occurs contiguous to /m/ and /p/ only when it is phonetically [i] or [ɪ].

/mikiřa/	[mikiřa]	'plant species'
/aripa/	[aripa]	'dry land'
/arimpa/	[arimpa]	'stingray species'
/mepina/	[mepina]	'sing!'

In all other environments the indeterminate vowel has been assigned to /i/ as there is no feature of labialisation in the contiguous consonants.

/antinta/	[antinta~antinta]	'heart'
/alikiřa/	[alikiřa~alikiřa]	'house'
/tiřintiya/	[tiřintiya~tiřintiya]	'get down!'
/arinka/	[arinka~arinka]	'head'

The high vowels are involved in morphophonemic processes, occurring as empty morphemes connecting roots and affixes. These morphophonemic processes, already mentioned in Section 1.1.3, have been taken into account but have not been fully dealt with in this paper.

Low vowels

Allophones of /e/. The low front vowel allophones form a continuum from mid close [e] to low close [æ], but are never centralised or rounded. Variation in height is partly dependent on environment but also depends on the speaker, as has been noted in Section 1.2.1.

/akena/	[akena]	'but'
/mema/	[mema]	'this'
/eřa/	[eřa]	'vomit'
/eniŋapa/	[eniŋapa~æniŋapa]	'good'
/eminta/	[eminta~æminta]	'nose'
/yimeŋta/	[yimeŋta~yimæŋta]	'turtle'

The phoneme /e/ has an [ɪ] offglide which occurs most frequently preceding /k/ and /kw/ but also occurs preceding /ŋ/ and /p/. In these environments the phonetic distinction between the possible allophones [æ] and [ɛ] is neutralised by the glide and has been interpreted as [e^ɪ] because it is never [ʌ^ɪ].

/eka/	[e ^ɪ ka]	'tree'
/ekwa/	[e ^ɪ kwa]	'head-carrying support'
/niřekuwařa/	[niře ^ɪ kuwařa]	'he killed the snake'
/eŋkuwa/	[eŋkuwa~e ^ɪ ŋkuwa~æŋkuwa]	'far away'
/yuwepa/	[yuweɾʌ~yuwe ^ɪ pa]	'ant species'

The common two syllable word /eka/ (tree, stick) has a permissible but rare alternative [e^ɪyika]. This alternative for the /e^ɪ/ offglide does not occur elsewhere in the environments under discussion.

It should be noted that the [æ^ɪ] offglide (which could be interpreted as an [e^ɪ] offglide) is in free variation with the [ʌ^ɪ] offglide in many words (see Section 1.2.2). Some speakers reject the alternative [ʌ^ɪ] offglide. This suggests the possibility of contrast but this contrast has not been able to be maintained.

Allophones of /a/. The low non-front vowel allophones form a continuum from the low close front allophone [æ] through the norm [ʌ] to the mid back rounded allophone [ɔ]. Variation in tongue position again depends partly on environment and partly on the individual speaker. /i/ and /u/ offglides occur across the range depending on environment.

The mid central open allophone [ə] occurs in word final position only, but it is frequently lowered towards the phonemic norm.

/amařa/	[amařə]	'grass'
/awilyapa/	[awilyapə~awilyapə ^v]	'one'

Environmental conditioning factors:

- (i) Preceding the lamino-palatal /y/, [ʌ^l] varies with [ɔ^l] when the preceding consonant is a bilabial, labio-velar or the semi-consonant /w/. [ʌ^l] varies with [æ^l] elsewhere.

/aɬuwaya/	[aɬuʌ ^l ya~aɬuɔ ^l ya]	'for a little while'
/ayakwa/	[ʌ ^l yakwa~æ ^l yakwa]	'word'

- (ii) Contiguous to bi-labials and labio-velars and the semi-consonant /w/, there is a strong tendency for the back allophones and the /u/ offglide to predominate. This tendency is strongest between two such consonants and in this environment shows less variation.

/-laŋwa/	[ɭŋwa~ɭɔŋwa]	'from'
/akwalya/	[ʌ ^u kwalya~ʌ ^u kwɔlya]	'fish'
/ŋawa/	[ŋʌwa~ŋʌ ^u wa~ŋɔ ^u wa]	'enough'
/ɬukwuɭuɭuwawa/	[ɬukwuɭuɭuɔ ^u wa]	'frill-necked lizard'
/awuʔarɪya/	[ʌ ^u wuʔarɪya~ɔ ^u wuʔarɪya]	'bad'
/aɭukwanytya/	[aɭukwɔnytya]	'dance'
/wampilya/	[wɔmpilya]	'stay!'
/waɾɪɛna/	[waɾɪɛna]	'work!'

- (iii) Preceding lamino-palatals other than /y/:
 sometimes [ʌ] ~ [ʌ^l] but not [æ^l]
 sometimes [ʌ^l] ~ [æ^l]
 sometimes [æ] ~ [æ^l]
 sometimes [ʌ] ~ [æ]
 sometimes [ʌ] only

/ɭikatya/	[ɭikɭtya~ɭikɭ ^l tya]	'go!'
/ŋanyaŋwa/	[ŋʌ ^l nyaŋwa~ŋæ ^l nyaŋwa]	'my'
/miyatya/	[miyætya~miyæ ^l tya]	'paddle, shoulder blade'
/manyuŋwunya/	[mʌnyuŋwunya~mænyuŋwunya]	'fig species'
/aŋalya/	[aŋʌlya]	'place'

- (iv) Following lamino-palatals, and also preceding /n/ in most words, [æ] is the norm but variation to /ʌ/ is possible.

/yampiya/	[yæmpiya~ɣampiya]	'throat'
/alyalyikpa/	[alyælyikpa~alyɔlyikpa]	'tongue'
/kanu-mena/	[kænumena~kɔnumena]	'they (two) will take it'

1.2.3 EPENTHETIC VOWELS

Another interesting feature of Anindilyakwa is the occurrence of an optional central epenthetic vowel following the alveolar /r/ and the retroflex /ɽ/. A contrast can be established between the sequences CVC_e~CVC and CVCV, and between the sequences CVCV_eC~CVCC and CVCVC, where V_e is the epenthetic vowel.

/amarŋka/	['a'maɽŋka~'a'maɽəŋka]	'laugh'
/am-aɽiŋka/	['ama'ɽiŋka]	'head (compound)'
/yiŋkaɽma/	[yiŋ'kaɽma~yiŋ'kaɽəma]	'skink species'
/niŋka-aɽuma/	['niŋka'aɽuma]	'you (singular) are big'
/ni-ɭaɽm-a/	[ni'ɭaɽma~ni'ɭaɽəma]	'he chased it'
/ni-ɭaɽ-uma/	['niɭaɽ'uma]	'he fell'
/memiɽma/	['memiɽma~'memiɽəma]	'nape of neck'
/meɽipuɽa/	['meɽi'puɽa]	'scorpion'

The interpretation of this transitional vowel as an intrusion and not a deletion depends on the analysis of stress. Briefly stated, in normal speech stress is always slight and never falls on the final syllable. In words of three syllables where both vowels in the first two syllables are either high or low, both vowels are evenly stressed. Otherwise only the low vowel is stressed. In words of four syllables the first and penultimate vowels are stressed.

The indeterminate central epenthetic vowel is normally short and unstressed. For this vowel to be interpreted as a full vowel the stress pattern would be changed.

In the example /memiɽma/, the phonetic variant ['memiɽəma] may occur but never *[memiɽvma] since this would require the stress pattern *['memi'ɽuma].

In a few short words where all syllables except the last contain high vowels, it is possible for the extra vowel to be stressed as a full vowel. This vowel is interpreted as epenthetic on the basis of native reaction.

/yimuʁŋwa/ ['yi'muʁŋwa~'yimu'ʁŋwa] 'tree species'

In words of more than four syllables the epenthetic vowel cannot be differentiated from a full vowel on the basis of stress patterning.

/'awaʁ'walya~'awaʁu'walya/ 'shade'

2. DISTRIBUTION

2.1 SYLLABLE TYPES

There are six syllable types, as follows:

V	/e.ta.	'marriage'
VC	/eŋ.ma.	'bad'
VCC	/aɾm.pu.ɫi.ʁa/	'jellyfish species'
CV	/ma.ɫa/	'ear'
CVC	/maŋ.ma/	'brain'
CVCC	/ma.yalŋ.ka/	'edible root species'

Words consist of from one to twelve syllables but monosyllabic words are restricted to a couple of exclamations and the question particle /na/. Words usually have from three to eight syllables.

In word-initial position all syllable types occur. Word-medial, CV, CVC and CVCC occur. Word-final, only CV occurs.

2.2 PHONEME DISTRIBUTION

2.2.1 CONSONANTS

Consonants occur word-initial and word-medial but not word-final, except in one of the alternative forms of the exclamation /tyity~tyi~tyeyi/ 'away!'.

In casual speech the final vowel may be deleted, as in the exclamation /kapa~kap/ 'be quiet!'

Single Consonants

All consonants except /t̪/, /n̪/, /ŋ̪/, /k/ and /l/ are found word-initial; all occur in the intervocalic position.

Word initial

/piya/	'but'
/ɟakina/	'she'
/tuɟula/	'bell' ³
/tyaŋawila/	'tree species'
/kaŋa/	'you (plural)'
/kwa/	'come'
/maɟa/	'ear'
/nakina/	'he'
/nyir̥iŋmina/	'blow your nose!'
/ŋayuwa/	'I'
/ŋwaɟina/	'cry!'
/ɟaka/	'all right'
/lyan̄mena/	'precede!'
/wiya/	'here!'
/r̥iŋkatyũŋwuna/	'look at yourself!'
/yaɟa/	'nothing'
/r̥iɟena/	'chop!'

Word medial

/yuwepa/	'ant species'
/maɟa/	'ear'
/ɟir̥upata/	'spear type'
/ɟikatya/	'go!'
/amaɟa/	'grass'
/ekiŋa/	'name'
/akwa/	'and'
/yuwama/	'fly species'
/aɟina/	'food'
/mena/	'because'
/maminya/	'firefly'

/yiŋaŋa/	'snake'
/aŋalya/	'place'
/aŋwaɭa/	'crab species'
/ŋaɭuwa/	'she'
/yimaŋala/	'woomera type'
/akwalya/	'fish'
/maɭuwiya/	'emu'
/awa/	'liver'
/meʔa/	'string, blood'
/ɭaya/	'snake species'
/naʔa/	'no'

Consonant di-clusters

Examples of consonant di-clusters which occur only word-medial are ordered horizontally according to Chart 3:

/ɭumatpaʔuwaʔa/	'snake species'
/ɭakattyeʔeʔa/	'seed species'
/aɭakpa/	'leg'
/yampiya/	'throat'
/yaŋɭa/	'nothing'
/menpa/	'eye'
/eminta/	'nose'
/manytya/	'on'
/anka/	'hip'
/kunkwuŋa/	'fish species'
/kaŋpaɭatya/	'armband type'
/amuŋta/	'shoulder'
/maŋtya/	'bee eggs'

CHART 3

WORD-MEDIAL CONSONANT DI-CLUSTERS

1st C \ 2nd C	p	t	k	m	n/ny	ŋ	l	r	w
t	tp	tt							
k	kp								
m	mp								
ŋ									
n/ny	np	nty	nk						
ŋ	ŋp	ŋty	ŋk			ny			
l	lp		lk	lm					
r	rp		rk	rm					
l	lp	lty	lk	lm					
r	rp		rk	rm					
r	rp	rt		rm					

/n̥aŋʈa/	'mother'
/ʈumaŋkinuŋkwuʈa/	'bird species'
/awaŋkaŋnyeʈa/	'naughty'
/mamunpa/	'hair'
/eŋka/	'other'
/enuŋkwa/	'spear'
/maŋma/	'brain'
/kaʈʈaʈtenama/	'I'll make a way through grass'
/yilpa/	'edible root species'
/maʈʈepiʈa/	'empty'
/ʈuwaʈtya/	'snake species'
/aʈkiʈa/	'fish species'
/aʈkwa/	'crab species'
/yimpaʈma/	'shell fish species'
/muwaʈŋaʈa/	'fish species'
/ayiʈpiyiʈpa/	'continuing'
/naʈaʈʈana/	'they crowded'
/ayaʈka/	'hand'
/aʈkwaʈa/	'worm'
/memiʈma/	'nape'
/yaʈŋa/	'leech'
/alyaʈŋwalyilya/	'night'
/awaʈwalya/	'shade'
/nenunqwaʈpa/	'man'
/waʈʈena/	'work!'
/aʈtya/	'digging stick (type)'
/yiŋkaʈma/	'skink species'

Consonant tri-clusters

Examples of consonant tri-clusters which occur only word-medial are ordered horizontally according to Chart 4:

/nuwapalmpaʈana/	'the sand shone'
/ayilpiyilkpa/	'desert'

/nuwapaŋɔ̃takpa/	'they fed on the ground'
/mayaŋka/	'edible root species'
/niɔ̃aʃmpuʃaŋa/	'he shared them'
/amuʃkpaɪya/	'soft'
/naŋɔ̃tiʃŋma/	'it cracked'
/aɔ̃aʃŋkapapuna/	'all'
/muɔ̃aʃŋkwa/	'berry species'

CHART 4

WORD MEDIAL CONSONANT TRI-CLUSTERS

	mp	kp	ŋm	ŋɔ̃	ŋk	ŋkw
ɪ	ɪmp	ɪkp		ɪŋɔ̃	ɪŋk	
ʃ	ʃmp	ʃkp	ʃŋm		ʃŋk	ʃŋkw
ɾ	ɾmp				ɾŋk	ɾŋkw

/yiḷikaɾmpa/	'shellfish species'
/amaɾŋka/	'smile'
/wuniyaŋmaɾŋkwatyina/	'praise him!'

Inter-dentals and alveolars

The distribution of inter-dentals and alveolars in Anindilyakwa is interesting because of their very uneven functional load.

In the inter-vocalic position inter-dentals /t̪/ and /ɹ̪/ occur almost invariably, whereas inter-dental /ŋ/ has been found to occur in six words and their derivatives.

/aŋinga/	'food'
/muŋinga/	'burrawang'
/yinuməŋinga/	'wild apple'
/aŋuma/	'mangrove'
/əmuŋa/	'urine'
/yiŋaŋa/	'nail'
/amaŋiŋa/	'ashes'
/t̪iŋiŋa/	'mosquito species'

The alveolar /n/ is the norm in the inter-vocalic position and is particularly common within prefix and suffix morphemes. Of the few words in which the alveolar phonemes /t/ and /l/ occur in intervocalic position, two have been traced to mainland counterparts.

/t̪iɾapata/	'spear (type)'	Gupupuyngu	/tyutapata/
/yimaŋala/	'woomera (type)'	Gupupuyngu	/maŋal/
/aɹ̪itaɾa/	'hot'		

Preceding consonants, the stop and lateral phonemes are always alveolar, but both nasal phonemes are found in this position. Although alveolar /n/ is the norm, inter-dental /ŋ/ is found preceding the homorganic stop /t̪/. The resultant inter-dental di-cluster is more common than its alveolar counterpart.

/akiyapittiyina/	'beside the water'
/eminta/	'nose'
/alkwa/	'bait crabs'
/miŋta/	'plant species'

2.2.2 VOWELS

Vowels occur word-initial, word-medial and word-final. Word-initial, only the vowels /a/ and /e/ occur:

/aɾakpa/	'now'
/eʎekpa/	'outside'

There are three exceptions. The conjunction /umpa/ [ɯmpa] 'but (comparison)' has not been interpreted⁴ as /wumpa/ because the initial vowel is never [u]. Wherever /w/ is followed by /u/ the vowel is never central.

The exclamation /inytya/ [+ny'tya] 'come on! get going!' has been similarly interpreted⁴ because the initial vowel is never [i]. Wherever /y/ is followed by /i/ the vowel is never central.

The listing conjunction /iya/ [iya] 'and' has not been interpreted as /yiya/. This is the only example of this kind, apart from nouns and adjectives which have all been interpreted⁴ according to the non-suspect CV pattern. See Section 1.1.1, Semi-consonants.

Word-medial, all vowels occur. Charts 5 and 6 list the co-occurrence restrictions between the vowels and the preceding and following consonants.

Word-final, only the vowel /a/ occurs except in a few words such as /yimi/ [yimi ~ imi] 'faeces' and the emphatic suffix /-pu/ [pɯ]. The following words which end in a high vowel occur only at the end of a phonological phrase:

/kaʃi/	'oh!'
/yawa~yawu~yuwu/	'yes'
/kayi/	'I beg your pardon?'
/tyi~tyayi/	'away!'

In certain intonation patterns a final high vowel is added to carry the intonation at the end of a phonological phrase.

/waɾanytya/ + wu	[waɾanytyɔ ^u]	'hurry!'
/ɲaɲɲa/ + yi	[ɲaɲɲa ^ɪ]	'mother!'
/nuŋkuwa/ + yi	[nuŋkuwa ^ɪ]	'you!'

For further examples see Section 3.1.

CHART 5

VOWEL + CONSONANT SEQUENCES

ip	ep	ap	up
iɸ	eɸ	aɸ	uɸ
it		at	ut
ity	ety	aty	uty
iʈ		aʈ	uʈ
ik	ek	ak	uk
ikw	ekw	akw	ukw
im	em	am	um
iŋ	eŋ	aŋ	uŋ
in	en	an	un
iny	eny	any	uny
iŋ		aŋ	uŋ
iŋ	eŋ	aŋ	uŋ
iŋw		aŋw	uŋw
iɹ	eɹ	aɹ	uɹ
ir	er	ar	ur
ily	ely	aly	uly
iɹ		aɹ	
iʃ	eʃ	aʃ	uʃ
iʒ		aʒ	uʒ
iw		aw	uw
iy		ay	

CHART 6

CONSONANT + VOWEL SEQUENCES

pi	pe	pa	pu
ṭi	ṭe	ṭa	ṭu
ti*		ta	tu*
tyi	tye	tya	tyu
ṭi	ṭe	ṭa	ṭu
ki	ke	ka	ku
kwi	kwe	kwa	kwu
mi	me	ma	mu
ṅi		ṅa	ṅu
ni	ne	na	nu
nyi	nye	nya	nyu
ṅi		ṅa	ṅu
ŋi	ŋe	ŋa	ŋu
ŋwi	ŋwe	ŋwa	ŋwu
li	le	la	lu
		la	
lyi	lye	lya	lyu
li		la	lu
ʃi	ʃe	ʃa	ʃu
ri	re	ra	ru
wi	we	wa	wu
yi	ye	ya	yu

* ti and tu are only found in loan Macassan words as follows:

/ṭuṭitya/	'iron'
/ṭuṭula/	'bell'

3. VARIATION

3.1 SYLLABLE REDUCTION

Syllable reduction occurs frequently in Anindilyakwa, in many instances possibly because of the long words. There are few minimal and near-minimal contrastive pairs of words so that syllable reduction does not normally involve loss of functional contrast. In most examples the stress pattern remains unaltered.

3.1.1 LOSS OF VOWEL ONLY

The sequences /kuw/ and /ɲuw/ sometimes reduce to [kw] and [ɲw] respectively.

/nuŋkuwa/	[nuŋkuwa~nuŋkwa]	'you'
/ayakuwaʃa/	[ayakuwaʃa~ayakwaʃa]	'across the water'
/t̥akuwaʃkuwaʃka/	[t̥akuwaʃkuwaʃka~t̥akwaʃkwaʃka]	'spider'
/nuŋ-u-waɽa/	[nuŋuwaɽa~nuŋwaɽa]	'I do not want'

Because of the above reduction there is an overlap within the phonemic system where two contrasting phonemic items result in the same phonetic manifestation. The phoneme /kw/ exists in contrast with /k/ (see Section 1.1.2 for examples). In those examples /kw/ cannot be expanded to /kuw/ and is therefore in phonemic contrast with /kuw/ [kuw~kw]. Although the contrast between /kw/ and /k/ is lost preceding /u/, [ku~kwu] can never be expanded to [kuwu] (see Section 1.1.3). The phonetic manifestation of [ɲw] functions in a similar way to [kw].

When a high vowel and its counterpart semi-consonant follow a stop or nasal articulated at the same point, the vowel may be omitted and the semi-consonant articulated as an offglide of the stop or nasal.

/mityiyaŋa/	[mityiyaŋa~mity ^y aŋa]	'boat'
/t̥at̥upuwakita/	[t̥at̥upuwakita~t̥at̥up ^w akita]	'silly'
/amuwaɽa/	[amuwaɽa~am ^w aɽa]	'wire'

When /ɾ/ and /ʃ/ are followed by a high vowel and a nasal, the high vowel may be omitted. In each case there is a grammatical reason for positing the full form. In the first example the retroflex ɾ has coalesced with the nasal to give [ɲ].

/alyupaɽina/	[alyupaɽina~alyupaŋa]	'eat!'
/nampaʃiŋa/	[nampaʃiŋa~nampaʃŋa]	'he sat down'

When a vowel plus /l/, /r/ or /ʃ/ follows a stop, the vowel may be omitted. There are no non-suspect examples of the di-clusters formed in this way.

/kiɾipa/	[kiɾipa~kɾipa]	'wild passionfruit'
/yipurata/	[yipurata~yipɾata]	'wallaby'
/aɬiʃuŋwana/	[aɬiʃuŋwana~aɬiʃuŋwana]	'big'
/papulikena/	[papulikena~paplikena]	'corrugated iron'

3.1.2 LOSS OF VOWEL + CONSONANT

In a closed syllable, between a nasal and a stop, the vowel and following consonant may be elided.

/amuŋtakakina/	[amuŋtakakina~amtakakina]	'those'
/tumaŋiŋtaŋwa/	[tumaŋiŋtaŋwa~tumaŋtaŋwa]	'stingray'

3.1.3 LOSS OF CONSONANT + VOWEL

There are some examples where a syllable consisting of a semi-consonant and vowel is lost.

/aɾtyiyiŋa/	[aɾtyiyiŋa~aɾtyiŋa]	'stand up!'
/ɬakilyiŋaʃityaŋa/	[ɬakilyiŋaʃityaŋa~ɬakilyiŋatyŋa]	'star'
/yukwuʃiʃiŋtaŋwa/	[yukwuʃiʃiŋtaŋwa~yukwuʃiŋtaŋwa]	'saw-fish'
/wuʃiŋampilyuma/	[wuʃiŋampilyuma~wuŋampilyuma]	'two (females)'

The first of two CV syllables may be elided when the consonants are the same.

/aɬaɬipina/	[aɬaɬipina~aɬipina]	'on this side'
/aɬaɬupatya/	[aɬaɬupatya~aɬupatya]	'beyond'
/wuʃiki kamaʃa/	[wuʃiki kamaʃa~wuʃikamaʃa]	'they do not know'
/apupuŋwuʃa/	[apupuŋwuʃa~apuŋwuʃa]	'drunkenness'
/aŋaɬaɬupa/	[aŋaɬaɬupa~aŋaɬupa]	'yonder'
/alyaʃŋwalyi ya/	[alyaʃŋwalyi ya~alyaʃŋwalya]	'night'

Two further examples of syllable reduction are as follows:

/ɬiŋinytyapena/	[ɬiŋinytyapena~ɬinytyapena]	'dolphin'
/yiniŋumampalpa/	[yiniŋumampalpa~yinumampalpa]	'bat'

When the suffix /-wiya/ is added to a stem-final /pa/, the full phonetic form may vary with a reduction in which the /awi/ is manifested as the mid back glide [ɔʷ]:

/aʀakpawiya/	[aʀakpawiya~aʀakpɔʷya]	'long ago'
/eniŋapawiya/	[eniŋapawiya~eniŋapɔʷya]	'good ones'

When /yi/ and /wu/ are added to a word to carry the intonational pitch at the end of a phonological phrase, a glide results:

/t̥iyapaʀka + yi/	[t̥iyapaʀkaʷ]	'sister!'
/mupukwaya + wu/	[mupukwayɔʷ]	'it is coming!'
yaŋkwuʀaŋwa + wu/	[yaŋkwuʀaŋwɔʷ]	'here!'

3.2 PHONEMIC VARIATION

Sections 1.1.4 and 2.2.2 indicate the extent of variation within phonemes. Without necessarily being exhaustive, this section illustrates that there is also extensive variation between phonemes. Phonemic variation between velars and labio-velars has already been considered in Section 1.1.3. In each of the following sets of consonant and vowel variants, individual and community preferences for one form or the other vary from word to word.

3.2.1 CONSONANT VARIATION

The inter-dental phonemes /t̥/ and /ɭ/ have been found to vary with the lamino-palatals /ty/ and /ly/ and with the semi-consonant /y/ in certain words:

/mit̥iyalya~mityiyalya/	'beach'
/mamukiyaɭiɭa~mamukiyaɭiya/	'crab species'
/aɭaʀŋwalyilya~alyaʀŋwalyilya/	'night'
/t̥iɭapun̄ta~t̥ilyapun̄ta~t̥iyapun̄ta/	'frog'

The palatal /y/ alternates with the lamino-palatals /ny/ and /ly/ in certain words:

/awiyempa~awinyempa/	'anger'
/mayiʀmilya~malyiʀmilya/	'lorikeet species'
/yalyya~yalyyilya/	'flying-fox species'

The palatal /y/ has also been found to vary with flap /ʀ/.

/yayeʀiɭaŋwa~yeʀeʀiɭaŋwa/	'snake species'
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The alveolar flap /ʃ/ varies with alveolar /t/ before a stop in the following words:

/ṭukwiřpuṛa~tukutpuṛa/	'bird species'
/miřityina~mitityina/	'medicine'

The retroflex /ŋ/ has been found to vary with the alveolar /n/ in certain words:

/apuṇuwa~apunuwa/	'they two (masculine)'
/nuṅkwuṇuwa~nuṅkwunuwā/	'you two (masculine)'
/amawuřina~amawuřina/	'spirit'
/paṅampu la~panampula/	'woollen clothing'

The velar /ŋ/ has been found to vary with /k/ in the following word:

/eṅpuṛiṅka~ekpuṛiṅka/	'dry'
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In a few words there is free variation between /kwa/ and /ka/ and between /ṅwa/ and /ṅa/:

/wulkwa~wulka/	'except'
/muṅkwaṭina~muṅkaṭina/	'dig!'
/-ḷaṅwa~ḷaṅa/	'from'
/yinupuṅwaya~yinupuṅaya/	'turtle species'

The labial /w/ alternates with the labio-velar /ṅw/ in the following word:

/awaṅṭa~aṅwaṅṭa/	'stone'
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There is contrast between the stops /p/, /ṭ/, /ty/, /k/ and /kw/ and their nasal counterparts:

/kapa/	'be quiet!'	/kampa/	'then'
/-yaṭa/	'purpose'	/yaṅṭa/	'only'
/matya/	'shark species'	/-manytya/	'on'
/waka/	'other'	/waṅka/	'fetch it!'
/amukwuřa/	'cheek'	/amuṅkwuřa/	'face'

However, these stops are in free variation with their nasal counterparts in certain words:

/miyepena~miyempena/	'what?'
/aṭinupa~aṭinumpa/	'soon'
/ayaŋkwulyumuṭa~ayaŋkwulyumuṇṭa/	'mainland'
/yukwuřiriřitaŋwa~yukwuřiriřiṇṭaŋwa/	'saw-fish'
/makapaṛama~maŋkapaṛama/	'ray species'
/aṇṭenuŋkwunukwa~aṇṭenuŋkwunuŋkwa/	'berry species'
/wuřumilyitya~wuřumilyinytya/	'butterfly'
/ampumatya~ampumanytya/	place name

Other place names which incorporate the suffix /-manytya/ 'at' show the same variation but otherwise this suffix is normally /-manytya/.

The nasalised stop /mp/ has been found to vary with the labials /m/ and /p/ or with /m/ in the following words:

/mampilyiŋařa~mamilyiŋařa~mapilyiŋařa/	'tree species'
/mempir̄kwuṛa~memir̄kwuṛa/	'edible root species'

The velar /ŋ/ is sometimes deleted preceding the labial /m/ and the velar /k/ in the following words, with a vowel change as well in the first example:

/mařiqmuṇumuṇa~mařumuṇumuṇa/	'berry species'
/yiqmuṇmaṇṭa~yimuṇmaṇṭa/	'turtle species'
/yiqkaṛma~yikaṛma/	'skink species'

The retroflexes /ṇ/ and /ṛ/ are sometimes deleted as in the following words:

/aṇṭiṛpa~aṭiṛpa/	'edible root species'
/aṛtyiyiŋa~atyiyiŋa/	'stand up!'
/waṛtyiṛena~watyiṛena/	'wash it!'
/wuṇwuṛtaŋmatyiya~wuṇwuṭaŋmatyiya/	'open it!'

The velars /k/ and /ŋ/ have been found to vary with the di-clusters /ʎk/, /ʎŋ/ and ɾŋ/ in certain words:

/ampukiɬaʎpa~ampiʎkiɬaʎpa/	'squat'
/mamuɬaŋkaŋwura~mamuɬaʎŋkaŋwura/	'hibiscus species'
/ɬumuŋaŋiyayɬa~ɬumuɾŋaŋiyayɬa/	'dragonfly'
/aŋkityukwuʎa~aɾŋkityukwuʎa/	'berry species'

The tri-cluster /ʎkp/ has been found to vary with /ʎp/ in the following word:

/maŋkaʎkpa~maŋkaʎpa/	'wild plum'
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In the following word three alternatives have been found:

/aŋkawura~aɾŋkawura~ankawura/	'once'
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The tri-cluster /lŋk/ has been found to vary with /ŋk/ and /nk/ in certain words:

/ɬapaŋkiyatya~ɬapaŋkiyatya~ɬapankiyatya/	(personal name)
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As many as six alternatives have been found in the following word:

/awankanyeʎa/	'naughty'
/awankaŋnyeʎa/	
/awaŋkanyeʎa/	
/awaŋkaŋnyeʎa/	
/awaɾŋkanyeʎa/	
/awaʎŋkanyeʎa/	

The alveolar stop /t/ is sometimes inserted following the nasal /n/ in the following word:

/niŋeniʎiŋka~niŋentiʎiŋka/	'I saw him'
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In some instances consonants assimilate to the same point of articulation as the preceding adjacent consonant. Others assimilate to the same point of articulation as the following contiguous consonant and others partially assimilate to the following consonants.

/ɬakaka~ɬaɬaka/	'this'
/yakaka~yayaka/	'this'

/t̥eniŋapa~t̥aŋiŋapa/	'good'
/t̥enikaŋuwa~t̥aŋikaŋuwa/	'new'
/nenikumaŋtyaʔka~nenikumaŋtyaʔka/	'my young brother'
/akwaŋtyiʔema~akwaŋtyiʔema/	'gum'
/waŋanytya~waŋanytya/	'quickly'

3.2.2 VOWEL VARIATION

The high front vowel /i/ varies with the low front vowel /e/ preceding a high vowel in the following word:

/emiʔuwa~emeʔuwa/	'berry species'
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The high vowels /i/ and /u/ vary with the low vowel /a/ to harmonise with /a/ in the syllable following:

/amiŋtaŋwa~amaŋtaŋwa/	'truly'
/namilyaŋkena~namaŋkena/	'they play'
/yimamuŋikatyina~yimamuŋakatyina/	'help me!'
/t̥aŋiyuwaŋkwa~t̥aŋiyawaŋkwa/	'old woman'
/maŋiyuwaŋa~maŋiyawaŋa/	'shark species'

A further variation between high and low vowels occurs across morpheme boundaries, especially before common suffixes such as /-wa/ 'to' and /-manytya/ 'on'.

/aŋalyu-wa~aŋalya-wa/	'(to) home'
/waŋ-amamalya~waŋ-umamalya/	'people'

Some variation between the high vowels has already been discussed (see Section 1.2.2). Some further examples of variation between phonemes follow.

/aŋikwa~aŋukwa/	'raw'
/mamuŋikwa~mamuŋukwa/	'road'
/t̥ukwuŋiŋuwawa~t̥ukwuŋuwawa/	'lizard species'

The first two examples show an unusual case of /i/ preceding /kw/.

Variation may occur across the low vowels, resulting in a continuum, which makes it difficult to assign the vowel in question to one phoneme or the other.

[mityiyɛlyɑ~mityiyælyɑ~mityiyʌlyɑ]	'beach'
[enɛtyɑ~enætyɑ~enʌtyɑ]	'he'
[ɛmɛpɑ~æmɛpɑ~ʌmɛpɑ]	'song'
[ɛnuŋkwuɾakpɑ~ænuŋkwuɾakpɑ~ʌnuŋkwuɾakpɑ]	'old'

3.3 CONSONANT/VOWEL SEQUENCE VARIATION

Both consonant and contiguous vowel may vary. The change in the vowel is conditioned by the consonant. This variation is found frequently because of its occurrence in grammatical constructions.

/yiniyeʃuwnɑ~yiniyeʃuwnɑ/	'native cat'
/niŋɛnɑ~niŋɑ/	'I, me'
/yineʃpɑ~yiŋɑʃpɑ/	'gum tree species'
/yiniŋakɑʃɑ~yinuŋwakɑʃɑ/	'sea-eagle' (literally 'belonging to the sea')
/eniŋi~yeɹakwɑ~enuŋwi~yeɹakwɑ/	'belonging to this place'
/nen~ukwu~ɹika~nen~iki~ɹika/	'(for) him to go (infinitive)'

3.4 SYLLABLE SEQUENCE VARIATION

In a few words there is alternation in the sequence of two contiguous syllables:

/ŋinekiʃaɹɑ~ŋinekiɹaʃɑ/	'kneel!'
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In the following examples involving high vowels, the low vowel /a/ maintains its position:

/apuɹuwaka~apuɹuɾaka/	'take it off!'
/niŋiɹukwuɹuwakatyuwa~niŋiɹukuɹuwakatyuwa/	'I stirred it'

4. ORTHOGRAPHY

The practical orthography that has been proposed is as follows:

Phoneme	Allophones	Practical Orthography
/p/	[p]	b
/t/	[t̥], [t]	d

Phoneme	Allophones	Practical Orthography
/t/	[t]	d
/ty/	[ty], [ty ^ə]	j
/t̥/	[t̥]	rd
/k/	[k]	k
/kw/	[kw]	kw
/m/	[m]	m
/ŋ/	[ŋ̥], [ŋ]	n
/n/	[n]	n
/ny/	[ny]	ny
/ŋ̥/	[ŋ̥]	rn
/ŋ/	[ŋ]	ng
/ŋw/	[ŋw]	ngw
/l̥/	[l̥], [l]	l
/l/	[l]	l
/ly/	[ly], [ly ^ə]	ly
/l̥/	[l̥]	rl
/w/	[w]	w
/r̥/	[r̥], [r̥̄], [r̥ ^ə]	rr
/y/	[y], [y ^ə]	y
/r̥/	[r̥], [r̥ ^ə]	r
/i/	[i], [i̥], [ī̥]	i
/u/	[u], [u̥]	u
/e/	[e], [æ], [e ^l]	e
/a/	[a], [æ], [ə], [ɔ], [a ^l], [a ^u], [æ ^l], [ɔ ^l], [ɔ ^u]	a

Spelling Conventions

Initially the series dy, ny, and ly was used, but because of the length of words j has replaced dy.

The early series d, n and l and the series ŋ and ŋw were changed to rd, rn, rl, ng and ngw in 1973 because of the aim to have greater uniformity between the languages of the Northern Territory, in spite of the resultant increase in word length (Leeding and Gudschinsky 1974).

Initially b, d and g were used, but k has replaced g in order to give words a better visual contrast in shape, especially in the sequence ngk. This change, suggested by Miss Velma Leeding, also obviated the necessity to write n.g for /nk/.

When the lamino-palatal /ny/ precedes the lamino-palatal /ty/ the symbolisation is nj.

When the retroflex /ŋ/ is followed by the retroflex /ɟ/ the symbolisation is rnd.

When the retroflexes /r/ and /ŋ/ are followed by inter-dental /ɟ/ a full stop is used to differentiate r.d and rn.d, which are not common, from the frequently occurring rd and rnd.

Spelling rules are required where variation occurs, but these are still being tested.

FOOTNOTES

1. The material in this paper has been gathered at intervals since 1952.

The writer is greatly indebted to a number of people, the first of whom was Mrs John Upton, then Miss Mary Moody, whose work on this language in 1950 formed a solid foundation for further investigation. Dr A. Capell, formerly Reader in Linguistics at the University of Sydney, had already visited the island for a short time and recommended the use of b, d, g for the voiceless unaspirated stops.

In 1967 I attended the Summer Institute of Linguistics course held in Brisbane, and received help from Dr A. Healey. Attendance at this course was made possible by a grant from the Australian Institute of Aboriginal Studies.

In 1971 I received help from Miss Velma Leeding, who was then a member of the Summer Institute of Linguistics. Until that time I had followed Mrs Upton's analysis of a five vowel system. With a much wider knowledge of other Aboriginal languages now available, I accepted Miss Leeding's suggestion of a four vowel system, assigning the previously analysed fifth central vowel to either the high back or the high front vowel.

During 1979 and 1980 I have received consultant help from Dr Bruce Sommer of the Northern Territory Department of Education and am grateful to him for his advice in the final presentation of this paper.

I would also like to record my appreciation of the help given me recently by Miss Julie Waddy, a grantee of the Australian Institute of Aboriginal Studies working on Groote Eylandt.

The main Anindilyakwa speakers who helped me in the early stages were Danambana, a woman now deceased, who was also Mrs Upton's chief informant, and Gula, a man now fifty-eight years old. More recently, many others have given valuable assistance from time to time and I wish to record my appreciation of their patience and advice.

Phonetically the language name is [æniŋtilya^ukwa]. Alternate spellings include Andilyaugwa, Anindiljaugwa, Enindiljaugwa, Wanindilyaugwa. More recently the spelling has been changed to Anindilyakwa. This spelling is still in current use at this stage, although the present analysis indicates that the [æ] is an allophone of /e/ and not of /a/.

The Rose River people refer to the language as Ingura. (See Oates and Oates 1970).

2. The Warnindilyakwa clan is believed to have been the first to inhabit Groote Eylandt. Their language, Anindilyakwa, was adopted by later settlers coming to the island from the mainland. Presumably this original clan also came from the mainland, and their language developed from Nunggubuyu, which it still resembles structurally. However, Anindilyakwa and Nunggubuyu are two distinct languages today. Because of close contact and inter-marriage, both languages are understood by many at Rose River and on Groote Eylandt.

When Groote Eylandt Aborigines kept to their tribal areas, differences in pronunciation indicated the various clans living in different parts of the island. Now that they are living in settled communities with a mixture of clans in each community, most of the younger generation are probably unaware of the origin of these differences, but innumerable alternative pronunciations exist.

When women were very strictly segregated under tribal law, there were certain differences between men's and women's vocabulary for some common words. These differences, no longer observed, gave rise to alternative forms of certain words while others fell into disuse. In addition, there are secret forms of words known only to older men, and these are never used in the presence of women and children.

Contacts with Macassan traders covered a long period before this century, resulting in the introduction of some Macassan words into the local vocabulary. Apart from names of introduced objects, such as terminology connected with sailing dug-out canoes and alternative names for a few places and some old men, the only Macassan words that really were adopted are the names of the trade winds that brought the Macassan traders to the island and carried them away. Today both the Macassan and Anindilyakwa names for these winds are used.

Although a mission for half-castes brought from the mainland was established in 1921, close contact between Aborigines and Europeans and the separation of the Aborigines in the two communities of Umbakumba and Angurugu did not come until later.

Contact with Europeans has increased continually over the years, accelerated at first by the presence of an Air Force base on the island during the Second World War, and then by the establishment in 1964 of the Groote Eylandt Mining Company, a

subsidiary of The Broken Hill Proprietary Company Limited. Contact with other Aboriginal groups has also increased, especially during the last few years.

3. The Warnindilyakwa people recognise these words as being of Macassan origin.
4. D. Zorc (personal communication) has discovered in his work on functors in the Philippines and Australia that such words can be expected to follow a slightly different phonemic system from contentives. Hence such a phonemic interpretation is justifiable.

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