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ANINDILYAKWA PHONOLOGY AND MORPHOLOGY

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A dissertation submitted in fulfilment
of the requirement for the degree of
Doctor of Philosophy.

Department of Anthropology

University of Sydney

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In Memory of

TAPINKUTA YANTARRNGA

who preferred non-Aboriginals to call her

MRS. KATIE HERBERT

wife of Edward Herbert and mother of

Betty, Richard, Jessup, Joseph and Terrence.

ACKNOWLEDGMENTS

I am deeply indebted to the Warnindilyakwa people in the Umbakumba township for the free access they have given me to their language and culture. I am grateful to the elders who offered me clan affiliation and placement in a family as sister to one of the (then) matriarchs. Their wisdom in giving me a personal name, the derivation of which is 'father's sister', allowed me easy access to both male and female members of the community.

Many friendships have been forged in my years of residency at Umbakumba. Tapinkuta (Katie) Yantarrnga with whom I worked almost daily for five years was much more than a language assistant--she became my friend, mentor and linguistic colleague. The other Aborigines who deserve special mention are Katie's two sisters, Tapitakuma (Mariya) and Tapinkanga (Elizabeth) Yantarrnga, Tungmalbudiya (Mabuda) Mamarika, Talinjawayina (Stella) Yantarrnga, Wakaba Bara, Tumerrikiringka (Mary) Wurrawilya, Arthur Bara, Narijanga (Alec) BaraBara, Mangkwuta (Jack) Wurrawilya and Phillip Wurrawilya.

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ABBREVIATIONS & CONVENTIONS

:	vowel length in data, between subject and object in derivations, and between literal meanings for stems
+	morpheme boundary
#	precedes the object morpheme
-	precedes the suffix or clitic in gloss
=	extended meaning
[]	encloses phonetic transcription, conjunctive feature specifications in phonological rules, and extra information in translations
/ /	encloses deep structure representation
{ }	encloses disjunctive feature specifications in phonological rules and deleted segment/s in derivations
()	encloses optional segment/s
==>	rewrites as
-----	in charts: obligatory absence
Ø	zero morpheme
ABL	ablative
ACC	accusative
ALL	allative
ALP	alienable possession
ANG	Angurugu communilect
ASSIM	assimilation
ASP	aspect
ASR	adjectiviser
BENE	benefactive
C	consonant
CAUS	causative
CDR	consonant de-rounding
CofR	change of referent
COM	comitative case
comp.act	completed action
cont.act	continuing action
CSL	causal, reason
DIMIN	diminisher
DU / du	dual
EM	empty morph
ENG	English language
ETC	et cetera in the Number suffix
exc(1)	exclusive
fem	feminine
FF	flip-flop rule
GDR	gender
GP	Gupapuyngu language
HAPL	haplology rule
hfem	human feminine
hmasc	human masculine
INALF	inalienable possession
inc(1)	inclusive
inH	inchoative
INTENS	intensifying
KPOSS	possessive case for kinship
LOC	locative case
LPRG	pergressive case for location
MA	modern Anindilyakwa
masc	masculine gender
MK	Makassan language

NCL	noun class / nominal prefix nucleus ???
NEV	negated actual aspect
NG	Nunggubuyu language
n-hfem	not human feminine
NPIP	non-past imperfective aspect
NPTNS	non-past tense
NON-SG / Nsg	non-sg non-singular
NSR	nominaliser
NTR	pause-final or word-medial neutralisation
OBJ	object
ODU	dual object
OPL	plural object
ONsg	non-singular object
PIP	past imperfective aspect
PL / Pl	plural
POSS	possessive case
PRF	perfective aspect
PRIV	privative
PROP	propriative
PTNS	past tense
PURP	purposive case
QM	question clitic
R	rounded
RECP	reciprocal
REDUP	reduplication
REFL	reflexive
SDEL	morpheme-final CV deletion
SDU	subject dual
SF	stem formative
SG/ Sg	singular
SNsg	non-singular subject
SPL	subject plural
TA	traditional Anindilyakwa
TNS	tense
TPRG	pergressive case for time
tri	trial
TRM	terminative
TSR	transitiviser
UK	Umlakumba communilect
V	vowel
VBK	vowel backing
VCL	verb class
VFR	vowel fronting
VLW	vowel lowering
VRD	vowel rounding

Numbers refer to the first, second and third persons or the noun class in the prefixes and to the verb class in the suffixes. For Noun Class 3:1, the absence of any overt marking of number indicates plurality in all prefixation except the object prefix in the verb which is always non-singular. For Noun Classes 3:2 to 3:5, the absence indicates singular.

The deep structure high central vowel phoneme /ɨ/ is represented by i in all data except that between phonetic brackets.

The rewrite arrow ==> between two forms of the same morpheme within the deep structure (enclosed in slash brackets) avoids having to use multiple lines for word derivations.

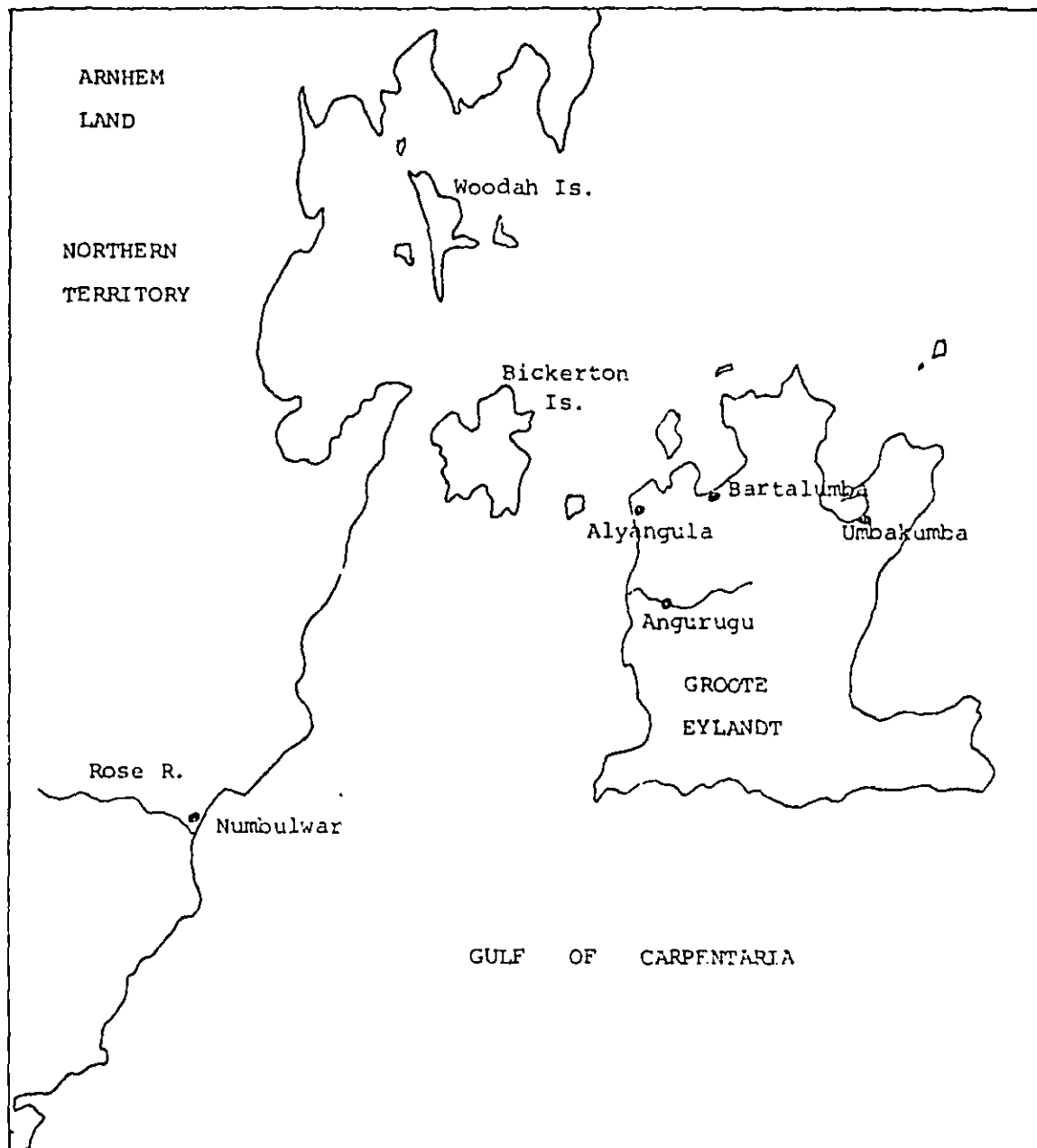
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PHONOLOGICAL RULES

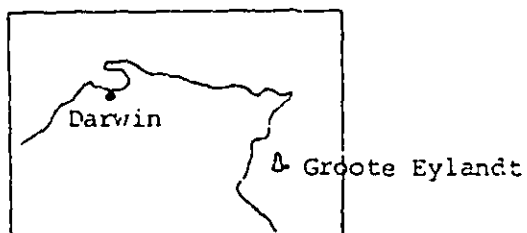
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GROOTE EYLANDT, NORTHERN TERRITORY

(approx. 800 sq. miles)



1.1 Language identification

Anindilyakwa [enintilyakwa] is the language spoken by over 1,000 Warnindilyakwa Aborigines on Groote Eylandt, Northern Territory. In the Australian language families, it is placed in the Groote Eylandt Family (Oates 1970:15) or the Andilyaugwan Family (Wurm 1972:117). As Yallop (1982:40) reports, Anindilyakwa and Nunggubuyu "are similar in grammar and possibly share the distinction of being the most grammatically complex Australian languages. They are diverse in basic vocabulary, however, and are therefore allocated to separate families". My research bears this out but there are many more cognates than previously recognised. The Warnindilyakwa refer to the Nunggubuyu and their language as the Yingkwira. The root of this name refers to the north-west monsoonal trade winds (the direction in which they live), and the prefix indicates a personified masculine being from the Dreamtime. In the traditional story about Yantarrnga or Central Hill (see Text) and other stories, the journeys begin on the mainland to the northwest.

Ceremonial interaction traditionally involved Aboriginal tribes from Rose River to Elcho Island. Inter-marriage still occurs between the two groups by negotiation but, in the olden days, wives were stolen by raiding parties as far south as Borroloola. Intermittent contact with other nations has occurred for at least two to three centuries. Traders from Macassar, a port in southern Celebes (Republic of Indonesia), used the trade winds to facilitate the collecting of trepang and tortoise shell (MacKnight 1972:283). The Macassan language was probably Bugi (Cole 1971:7) and about forty

words were borrowed and adapted into the Anindilyakwa phonological and morphological systems. The Japanese were also encountered but there seems to be little record of actual trading. Information (personally collected) only involves the exchange of vegetable foods for rice.

Regular contact with Europeans began when Fred Gray settled at Umbakumba in about 1938. He acted as liaison between the Aborigines and the officials at Port Langdon Flying Boat Base, established on the shore of Umbakumba Lagoon. At the request of the Australian government after World War II, Fred and Marjorie Gray operated a school, dispensary and gardens. From 1958-66, Umbakumba was administered by the Church Missionary Society (Anglican). It was then under the jurisdiction of the Department of Aboriginal Affairs until the self-development policy led to the formation of the Umbakumba Community Council in the 1970's. The township of Angurugu began in the 1940's after an earlier settlement at Emerald River where CMS established a home for part-aboriginals from the Roper River area. Their administration extended to meet the needs of the whole community and continued until self-development.

The Warnindilyakwa live primarily in two townships today, viz., Umbakumba with approximately 300 people and Angurugu with approximately 700. A few live at Alyangula (a mining town operated by the Groote Eylandt Mining Company, a subsidiary of Broken Hill Proprietary) and others at Numbulwar and Darwin. In 1922, Norman Tindale (1925/6:64) liberally estimated the population of the Groote Eylandt Archipelago to be little more than three hundred. Of the twelve local groups (Turner 1974: 8), the Mamarika or Amagula are recognised as the "original owners" of the land and the language. The names of the local groups, with some additions, are used as surnames. The five main surnames at Umbakumba are Mamarika, Yantarrnga

(Wurrawakwa), Bara, BaraBara and Wurrawilya. Aboriginal names were used by non-aboriginals until about the 1960's when teachers demanded that English names be given. Not all young Aboriginal parents know their childrens' Aboriginal names nowadays but these are recorded on birth certificates.

The Groote Eylandt Aborigines speak English with varying degrees of competency. Only a small number in the two Aboriginal townships can find work as teachers, health workers, shop assistants, office staff, carpenters, mechanics and labourers. A few others are employed in the mining town in public relations and as equipment operators, as well as some of the above activities.

1.2 Techniques for data collection and analysis

Analysis is based on data collected during about six years of residency between 1974 and 1981 (five and a half years at Umbakumba and the remainder at Angurugu). I was employed by the Northern Territory Department of Education as linguistic adviser in the bilingual education programs on Groote Eylandt and at Numbulwar. My involvement with the Numbulwar language began in 1966 and continued intermittently until 1979. In 1982, I edited the Gupapuyngu dictionary compiled by Beulah Lowe et al.

From the outset, I encouraged the Umbakumba community to teach me what they felt was valuable and to correct any errors. They continue to take an interest in the accuracy and comprehensiveness of my data. While the detailed checking has been done in my own home every effort has been taken to work in their homes and on impromptu trips to more remote areas of the island. As language work has often been done at the instigation of the Aborigines themselves there have been some very late night sessions, especially during the wet season.

Interested Aborigines would gather around whenever I visited the Aboriginal homes and younger English-speakers would act as translators for the more complex cultural or linguistic information being provided by the older generation. The men have been mostly interested in vocabulary items for flora and fauna and in their lexical meaning; the women have offered similar data but took great interest in the linguistic structure and the accuracy of English translations.

Language assistants were encouraged to think of themselves as part of the process of gathering and analysing the data. This led to the documentation of comments which proved invaluable in later analysis and to the discussion of specific linguistic problems. For example, my first assistant (an eighteen-year-old) commented on the habitat of one noun class of plants and this helped me to discern the semantic criterion for the most marked of the two non-personified classes. Another literate, middle-aged assistant was competent in writing consonants but extremely frustrated at having to guess at how to write the four vowel graphemes. I set up a framework for checking high vowel allophones in the stressed penultimate syllables and she converted all vowels to the basic allophone (irrespective of environment) and commented, "See, they're all the same."

Texts used in the research and analysis are traditional, historical or modern narratives recorded on cassette tapes (with or without an audience), original or translated stories hand-written by Aboriginal literates, reports from conferences, expositions, exhortations and news from the local paper. In the traditional stories, narrators usually act as unseen observers of the event or activity and much of the story uses the equivalent of a past continuous tense (apart from specific discourse features). For this reason, there is a high percentage of such structures and somewhat

awkward free English translations in the textual examples. The written texts displayed greater accuracy in syntactic features than did some of the oral texts.

Elicitation was the only technique by which the extensive prefixation could be obtained because relatively few forms occur in the large number of texts. Language assistants were very competent in checking prefix sets in paradigmatic lists using the same root. Translated stories were checked for grammatical acceptance and accurate free translations by at least one person other than the author. I used a question and answer technique for other elicited data whereby language assistants could choose their own answers.

Idiomatic meanings are not always explained throughout the thesis because they are based on detailed cultural information. Most can be observed by comparing the literal gloss with the free translation. The cultural information will be documented in the forthcoming Anindilyakwa Encyclopaedic Dictionary and volume of texts.

1.3 Overview

The theoretical approach in this thesis is eclectic and comes from a background in Tagmemics, Transformational-Generative and, to a lesser extent, Systemic models. The most appropriate model (with modifications) has been chosen in handling different aspects of the analysis, e.g., the Chomskyan transformational-generative model for phonological rules. The thesis is a description of the Anindilyakwa language, rather than a theoretical discussion.

There are two major divisions--the phonological (see Section 2) and the morphological (see Sections 3-8). The morphological system is reduced to the minimal number of allomorphs by the positing of a phonological system with only two deep structure vowels. Without such an analysis, the morphological system is difficult to perceive

because of the number of phonetic variants for each root and affix.

1.3.1 Phonological

The analysis of the Anindilyakwa phonological system in this dissertation supersedes that in the Master of Arts thesis (Leeding 1979). An increased knowledge of the morphological structure provided new insights into the phonology and led to a complete re-write. The morphological information and added data resulted in the establishment of a two-vowel system (identified since 1975 but not adequately attested). The morphophonemic analysis is greatly expanded but the spectrograms in the MA thesis are not reproduced here.

Anindilyakwa has thirty-two consonants which distinguish six points of articulation. The apico-alveolar consonants mostly occur in loanwords or through the loss of retroflexion. The consonants are analysed in terms of peripheral versus non-peripheral, with only the peripheral consonants being rounded. Such rounding is a prerequisite to the positing of only two deep structure vowels. Pre-nasalised stops are analysed as single, complex phonemes. (See Section 2.2.)

The two deep structure vowels are the high central /ɨ/ and the low central /a/. Six phonetic features (high, low, peripheral, laminal, round and tense) separate the large inventory of vowel allophones. The consonants carry a very high functional load and condition the vowel allophones via rules for fronting, rounding, backing and lowering. Generally speaking, a contiguous laminal consonant fronts the vowels and a contiguous rounded consonant backs and rounds the vowels. As the phonological rules for fronting and rounding are iterative vowel harmony often occurs in the longer words. (See Section 2.3.)

The word-final vowel is neutralised to the low vowel /a/.

resulting in almost all words in the language ending with /a/. The word-medial, morpheme-final vowel is neutralised to the high vowel /ɨ/. (See Section 2.1.) Conversely, a low vowel occurs at morpheme boundaries between two similar consonants to prevent deletion of the first syllable (see Section 2.3.2.4).

The distribution of consonants and vowels is described in terms of the syllable. Up to fourteen syllables can occur in a lexical word but there are some restrictions in the positioning of certain syllable types. Loanwords are frequently recognised by their unusual consonant sequences. (See Section 2.4.)

Frequent truncation of the multi-morphemic words in Anindilyakwa does occur even though words average five to eight syllables. Most shortening is systematic and due to the application of the phonological rules for vowel and syllable deletion, coalescence and initial-segment dropping. (See Sections 2.5 and 2.10.) Metathesis of syllables, and to a lesser extent, consonants or vowels, often reduces the number of reduplicated syllables because of the subsequent application of the Haplology Rule (see Section 2.5.2.1). Regressive assimilation of the nasal to the following stop is very common across morpheme boundaries but occasional unsystematic assimilation occurs progressively (see Section 2.7). Fortition of peripheral nasals and laminal consonants to obstruents is conditioned by the preceding consonant (see Section 2.12).

There is a noticeable loss of retroflexion from the nasal /rn/ which has been observed during the last fourteen years. This loss is neutralising some contrasts in lexical words and is increasing the occurrence of the alveolar nasal. Such loss of retroflexion is not occurring with other retroflexed consonants. (See Section 2.11.)

Another very common feature of Anindilyakwa is the

reduplication of roots or stems. It is analysed in relation to the syllable rather than the phoneme because the system is more readily discernible in larger "chunks". Reduplication denotes intensity or plurality depending on the word class. (See Section 2.8.)

A systematic analysis of the suprasegmental features has yet to be undertaken. Syllable prominence (lexical word stress) usually falls on the penultimate syllable but can vary according to its position of the word in the larger phonological unit. Timing/rhythm is more important than word stress and is maintained by deletion or insertion of syllables. (See Section 2.13.)

1.3.2 Morphological

Anindilyakwa is a multiple-classifying prefixing language. It has seven word classes which can be distinguished by their internal morphological structure. These classes are nouns, adjectives, personal pronouns, demonstratives, verbs, adverbs and particles. The distinctions are made by (a) the presence or absence of prefixation, (b) separate sets of roots, and (c) differences in the derivational suffixation or the presence of inflectional case clitics. Concord in the noun phrase is expressed through its nominal prefixation and this is also in agreement with the subject/object prefixation in the verb.

1.3.2.1 Nouns and adjectives

Nouns are distinct from adjectives mainly because of (a) the presence of a nominaliser or possession marker; (b) the restriction in the number of nominalising prefixes; and (c) the affixing of the adjectival modifier and not the noun head within the noun phrase. Both, however, are marked by the same set of nominal classifiers and take the same derivational and inflectional suffixation. (See

introduction to Section 3.)

Within the Nominal Prefix Nucleus, three distinctions for first, second and third persons are marked on all adjectives and common nouns. There are four distinctions for number, viz., singular, dual, trial and plural. The trial number was traditionally paucal. An additional plural number morpheme can optionally follow the nominal nucleus. Gender can be marked more than once in the same word and is frequently redundant for human classifications. The person prefixes incorporate a contrast between human masculine and non-human masculine, versus human feminine and non-human feminine. The additional gender morphemes which follow the nucleus has a change of focus in that it marks human feminine as opposed to all other non-human, feminine animates or inanimates. (See Section 3.3.1.)

One of the most interesting discoveries is the semantic criteria upon which to base the noun classes which are part of an over-all gender system. They fit into a hierarchical system of binary oppositions in which the highest rank is that of Personified (human or classified as human or powerful during the Dreamtime) versus non-personified. The Personified further divide into the grammatical categories of human versus non-human, masculine versus feminine, and singular versus non-singular. The semantic concepts of lustre or luminosity, and visibility are used to distinguish the two Non-personified noun classes. (See Section 3.3.2.)

A second significant discovery is the semantic nature of the noun and adjective roots. Noun Roots are body parts, usually of humans but, at times, more directly related to non-human animates. Shape Adjective roots describe shapes and are related to the shapes of body-parts; and a second set of adjective roots describe the physical characteristics or human attributes. Thus concrete objects

can be described in terms of their appearance, i.e., one or more of their predominant characteristics. The same roots and stems are used for both nouns and adjectives. Three different roots form the maximal number in any given word but the last two roots are always a compound stem; a compound stem consists of two different roots; and the minimal form is a single or a reduplicated root. (See Section 3.1.)

Nouns are divided on the basis of their morphological structure into basic, derived, kinship and adverbial. The derived nouns are formed from verb, adjective or adverb roots by the addition of a preceding nominaliser or possession morpheme. All (except kinship nouns) take a restricted number of nominal classifiers. Proper, common and abstract nouns all can occur in Anindilyakwa. Adjectives are divided into basic, derived and interrogative; all take the full set of nominal classifiers. The derived adjective has an adjectiviser preceding a verb or adverb root. (See Section 3.2.)

Nominal suffixation is restricted to number morphemes which distinguish dual from plural, and possession. The marking of number is frequently redundant with Personified prefixation but marks the non-singular in the Non-personified classes. The possessive suffixation denotes general possession or kinship possession. The seven morphemes for kinship possession distinguish person, number and gender. (Note: It is the Possession nouns that focus on inalienable versus alienable possession). (See Sections 3.4.1 and 3.2.3.3.)

The noun phrase is inflected by five peripheral case clitics but is unmarked for nuclear cases other than Dative. The adjectival modifier takes the case-marking clitic when a noun is the head of the phrase. The peripheral case clitics for Locative, Ablative, Pergressive, Allative, Comitative can be adjoined to all word classes, except particles. The noun phrase is not inflected for Nominative and

Accusative cases and it is therefore controversial as to whether a grammatical case function can be posited. There is no specific Dative case-marker on the indirect object but the noun phrase or pronoun is inflected by other case clitics or purposive mood. Multiple case-marking does occur but its analysis is not included in this thesis, pending further investigation. (See Section 3.4.3).

1.3.2 Pronouns and demonstratives

Personal pronouns are a closed set of twenty-two free forms which differentiate person, number and gender. Pronouns consist of the nominal gender system (analysed as the Nominal Prefix Nucleus) plus a stem formative. (See Section 4.1.)

Demonstratives consist of the nominal prefix nucleus followed by a demonstrative root. Additional number morphemes, resembling those in the verbs, indicate dual versus plural number. These are a closed, but very numerous, set. Semantic parameters for the six demonstrative roots differentiate the realis (visible) from the irrealis (not visible, unseen or hypothetical). Distance from the speaker and/or addressee is indicated in the three realis demonstratives. One irrealis interrogative and some adverbial demonstratives occur. (See Sections 5.1 and 5.2.)

Derivational suffixation for pronouns does not occur in other word classes. There are three suffixes which modify the meaning of the pronoun. Another Change of Referent suffix found only on pronouns indicates a change of dramatic personae in discourses and is also one of the forms used for the indirect object. One of the realis demonstratives indicates anaphoric reference when there is no change in the dramatic personae. The peripheral case clitics are attached to pronouns and demonstratives; the derivational Number morphemes are found only on the demonstratives. (See Sections 4.2 and 5.4.)

1.3.3 Verbs

The Anindilyakwa verbs are very complex morphologically and their internal structure equates with or substitutes for a clause or sentence. The verb root occurs only in the final position in a compound(ed) stem. The noun and adjective roots can precede the verb root in agreement with the object of a transitive verb or the subject of an intransitive verb. The former involves alienable possession of a body part by the patient or goal of the action, not the animate in the subject; the latter involves inalienable possession by the animate/inanimate possessor in the subject. (See Sections 6.1 & 6.2.)

The five stem formatives are the Transitiveiser, Inchoative, Causative, Reflexive and Reciprocal. The Reciprocal is more often marked by the number suffix which indicates non-singularity of the subject or object. There are many pairs of intransitive verb roots which have a transitivised counterpart. The Inchoative and Causative suffixes verbalise an adjective root or compound stem (and very occasionally that of a noun). The Reflexive or Reciprocal stem formatives co-occur with intransitive prefixation. (See Section 6.2.2.)

The deep structure forms of the verb prefixes are very similar to those for nominals. The distinction between human masculine and non-human masculine is, however, neutralised in the verbs. The prefixation is cross-referenced in agreement with the subject and object. A hierarchical system operates within the verb prefixation and results in an object preceding a subject. The descending order of this hierarchy is from (a) first to second to third person, (b) third person non-singular to third person singular, and (c) Personified singular to Non-personified singular. If the subject is not outranked the normal subject-object order prevails. (See Section 6.3.)

Five different sets of verb prefixes indicate Actual, Negated Actual, Potential, Imperative and Hortatory moods. The Infinitive verb is also marked by a distinctive set of nominal prefixes which only show agreement with the subject. The Interrogative mood is distinguished from some of the above only by intonation.

The subject and object prefixes can be followed by morphemes which indicate duality and plurality of an intransitive subject or a transitive object. The number prefix can optionally co-occur with a number suffix indicating non-singularity of the subject or object. A Benefactive morpheme optionally precedes the verb stem and is cross-referenced with the animate in the noun phrase in the indirect object and not the inanimate object of the verb.

Verbs are suffixed for tense and aspect. The combined past and non-past tenses arbitrarily assign a verb root to a particular verb class. Tense is not always marked and some tense distinctions have been neutralised, probably through the loss of retroflexion. Only one verb class follows verb roots affixed by a stem formative and this classification supersedes that of the same (unsuffixed) root. The low functional load for tense is probably due to the fact that the aspect suffixation also incorporates tense. Completive aspect is unmarked, but past non-completive and non-past non-completive morphemes are commonly affixed to the verbs. (Note: Past and non-past participial structures, e.g., 'I saw him sleeping/asleep', occur in Anindilyakwa and appear to be distinguished by the co-occurrence of specific mood prefixes and aspect suffixes. This analysis awaits further investigation.) (See Section 6.4.)

The peripheral case clitics can occur on the verb with the same meaning as for the noun phrase but three of them also function as subordinators. (See Section 3.4.3 and 8.1.2.)

1.3.4 Adverbs and particles

Adverbs are a separate word class from particles because they can take peripheral case-marking. The analysis of particles includes the modal or non-modal clitics. Both word classes are small closed sets. (See Chapters 7 and 8.)

Adverbs are divided into three groups: locative, pergressive and manner/time. The locative and pergressive adverbs are described in terms of binary oppositions which denote a contrast between speaker-oriented and environment-oriented. Many of the words which function as time adverbs have the same morphological structure as nominals (see Section 3.2.6). The derivations of the adverb roots and stems have been difficult to determine and await further field work. Some of the interrogative adverb roots are related to those in the demonstratives and adjectives but do not have any nominal prefixation.

There are six free form particles which indicate co-ordination between independent clauses. The seven subordinating conjunctions are free forms or clitics and conjoin dependent and independent clauses or two noun phrases. Three of the case clitics are used for such subordination. Five free form particles and one clitic modify the action of the verb or convert it into an interrogative. The remaining particles are interjections or are clitics which denote intensification or termination of an episode in the discourse.

Anindilyakwa is one of the few languages in the world that distinguishes only two vowel phonemes by tongue height. Consonants carry a much higher functional load than the vowels but consonant clusters are not frequent or complex when compared with neighbouring Aboriginal languages. Rounding versus non-rounding is distinguished in the peripheral consonants but not the non-peripheral. The rounded and laminal consonants, generally speaking, condition the numerous vowel allophones.

The features which condition vowel allophones could only be posited after morpheme boundaries had been established. The morphological analysis revealed that segments which are the conditioning factors in the deep structure can be deleted in the surface structure of certain words. Neutralisation of the vowel contrast word medially and finally in the surface structure also obscures the identity of conditioning factors in the deep structure. The phonological system most clearly observed in the reduplication of roots or at morpheme boundaries. It is described in terms of deep structure morphemes which always end in a vowel.

A phonological word or unit of vocabulary (apart from a few one-syllable particles) consists of two to fourteen syllables because almost all words are multi-morphemic. Primary stress usually falls on the penultimate syllable. A phonological word can consist of one or more lexical words and is identified by the final vowel /a/.

The main difficulty in analysing the phonology is not in recording the phonetic data but in making decisions within the phonological domain. Even though a few minimal pairs of words occur

for phonetic contrasts in the vowels, phonetic variation in the vowels is extensive. The problem is resolved by focussing on the morphemes, rather than the multi-morphemic words.

In linguistic literature where phonological systems with vowels distinguished only by tongue height have been discussed, the languages of the North-west Caucasus have been a focal point in linguistic literature for many years. Trubetzkoy, in his 1939 analysis of Adyghe (and possibly Abkhaz and Ubykh), posits that three short vowels are rounded or fronted by labialised or palatalised consonants, respectively; and that variations are dependent on the environment and not a part of the vowel itself (Hockett 1955: 84ff). Anderson (1978: 49) reports that "the reduction of the short vowel system to two elements, /a/ and /ə/ defined essentially as by Colarusso, is agreed on by virtually all investigators". The analysis in this paper shows that Anindilyakwa has a similar phonological system.

Some languages in Papua New Guinea and Nigeria also have vowel systems which distinguish three vowels on the basis of tongue height. Pike (1964:31) states that the predominant conditioning factors of these three vowels are palatalised or labialised consonants. Allophones of the high vowel as opposed to a composite non-high (i.e. mid and low) vowel correlate with those of the two vowels in Anindilyakwa. The feature of reduplication which is crucial in identifying rounded consonants and neutralised vowels in Anindilyakwa is stated to be one of the criteria for establishing labialised peripheral consonants in Dobu (Lithgow 1977: 75-79). The Nigerian language, Higi, is said to have a three-vowel system with allophones across the vowel chart, conditioned by complex rounded or laminalised consonants (see Mohrlang 1972) but these vowels can be further reduced to two by morphological rules.

In Australia, there is at least one other language family which distinguishes only two phonemic vowels by tongue height, viz., the Arandic dialects in the Alice Springs area (see Koch 1984: Kaytej, Morris (personal communication): Alyawarra). From my own experience (supported by Breen 1979), it is also probable that Tiwi (Bathurst Island) has or had a two-vowel system. Kaytej has a contrast between rounded and unrounded for all consonants; Anindilyakwa has the same contrast between peripherals only; and Tiwi has the contrast in peripheral consonants but with traces of the system for non-peripheral consonants. These languages, together with Anindilyakwa, are in three different geographical areas and are separated by intervening languages which do not have two-vowel systems.

Anindilyakwa has minor communict differences between speakers who reside at Umbakumba or Angurugu (see Section 2.2.3.1). With intermarriage and movement because of employment, regional variants are now found in both communities. The Aborigines, however, still associate the variants with the specific community. The older generation also still identifies words which originated in Makassarese or Nunggubuyu. Segments that did not occur in Traditional Anindilyakwa were assimilated into the phonological and morphological systems but, in the last decade or so, later borrowings from English vary from the original to assimilated pronunciations (Leeding 1984b). Nunggubuyu loanwords are often not assimilated at Angurugu where the language co-exists with Anindilyakwa.

2.1 THE PHONOLOGICAL WORD

A phonological word can consist of one or more lexical words. The pause-final demarcative feature (NTR.2) of the phonological word is the neutralisation of the final high or low vowel to the low vowel

/a/.¹ A lexical word can be the minimal representation of a phonological word. Examples of the Pause-final vowel neutralisation in the phonological word consisting of more than one lexical word are as follows:

narrikpa nakina
[nefɪkpinakina]
'He threw it.'

yimwarntakɪwapwa yakina
[yim^wan^tak^wuap^wiyakina]
'that blue-tongue lizard'

arakpwiwiya akina apwirtha alharrkpwiłhalhaka
[arakp^wuwiyakina^warta (pause) ala^rk^wu^lal^wka]
'A long time ago that whale was very thin.'

The citation or surface forms of almost all lexical words in Anindilyakwa end in /a/. The very limited number in which the word-final vowel is not neutralised to the low vowel fall into the following categories:

(i) interjections and vocatives

yakayɪ	[yakáʔɪ]	'ouch!'
kartɪyɪ	[katɪʔɪ]	'watch out!'
ngwayɪ	[ngwɛʔɪ]	'stop staring!'
ngarntayɪ	[ŋan ^t taʔɪ]	'mother!'
naratjawɪ	[na ^r atja ^v ɪ]	'Naratja!'

(ii) shortened forms of personal names

thalhi	[t ^l alɪ]	'Talɪpiyantja'
napi	[nepɪ]	'Napingkikalkuma'

Footnote 1: Hale (1973:422) proposes a lowering rule to handle a corresponding difference in a word-medial /u/ and a word-final /a/ in Lardil which is spoken in the islands east of Groote Eylandt. A final high vowel or the absence of any vowel can, however, occur word-finally in Lardil.

(111) loanwords

tjingkwilili NG tjingkwurlirli 'Carissa shrub'

tingkiyi ENG dinghy 'small boat'

(112) baby talk

yimi for yima 'excreta'

amimi for angamwina 'breast milk'

tjitjitji for wirratjitja 'bird (gen.)'

The pause-final neutralisation to the low vowel /a/ can also be clearly seen in word-final position in comparison with cognates in other neighbouring languages.

arrirra	NG	ariri	'wind'
tjiwirra	MK	tjorra	'book'
thingaya	NG	ngayi	'widow'
ngaya	NG	ngaya	'I'
ngarnta	GP	ngaarnti	'mother'
angwira	NG	ngura	'fire'
anitja	MK	anisi?	'alcohol'
lipwanga	MK	lipangi	'bait'
awirikwa	NG	wuruku	'swamp'
mwalhamwikwa	GP	thamukku	'canoe'
mwikayiwa	GP	kay?wu	'dillybag'

The word-medial demarcative feature (NTR.1) is the neutralisation of the morpheme-final vowel to the high vowel /ɨ/ (except for a high vowel fronted by Vowel Fronting Rule 1). In the deep structure (underlying representation), a morpheme always ends in a vowel, not a consonant. The following examples show this neutralisation in words with reduplicated roots or in the contrast

between a citation and a suffixed form of a word.

angalya	/a + ngalya/	'home country'
angalyiwa		'to home'
yikwithikwitha	/yi + kwitha + twitha/	'chest'
yikwithikwithimwantja		'on the chest'
thimwarrngimwarrnga	/tha + mwarrnga + mwarrnga/	'cricket'
thimwarrngimwarrngilhangwa		'cricket's'
mwiyarrrmiyarrrma	/mwa + yarrmi + yarrmi/	'thin [rope]'
mwiyarrrmiyarrrmikwiya		'two thin [ropes]'

2.2 CONSONANTS

In Modern Anindilyakwa (MA) there are thirty-two contrastive consonants: eight stops, eight nasals, eight homorganic pre-nasalised stops, four laterals, two rhotics and two semi-vowels, as shown on Table 1. The unrounded consonants contrast at six points of articulation but the rounded consonants contrast at only two points. Non-peripheral consonants are unrounded but peripheral consonants divide into two symmetrical sets on the basis of rounding.

In Traditional Anindilyakwa, the alveolar series was not part of the phonological system. The alveolar phonemes /t/, /n/, /nt/ and /l/ occur only in loanwords; the phoneme /n/ also occurs in affixes where there is evidence of a loss of retroflexion (see Section 2.11.2). Flap /rr/ usually has an apico-alveolar articulation but, in the operation of phonological rules, functions as a member of the laminal series. The retroflexed lateral /rl/ occurs in only one loanword at Umbakumba and in about six loanwords at Angurugu.

TABLE 1: CONSONANT CONTRASTS

	PERIPHERAL				NON-PERIPHERAL			
	LABIAL		DORSAL		APICAL		LAMINAL	
	bilabial		velar		alv	retr	dent	pal
	+R	-R	+R	-R				
Stops	pw	p	kw	k	t	rt	th	tj
Nasals	mw	m	ngw	ng	n	rn	nh	ny
Pre-nasalised stops	mpw	mp	ngkw	ngk	nt	rnt	nth	ntj
Laterals					l	rl	lh	ly
Rhotics and Semi-vowels	w					r	rr	y

Peripheral consonant contrasts

apwarta	'agile'
apa	'any?'
amwalya	'body fat'
amapa	'song'
ampwaka	'later on'
amwamparrkwa	'ten'
akwalya	'fish (gen.)'
akalya	'untrue'
angwalha	'Mud Crab'
angapwa	'that'
angkwapwikwapwa	'taboo'
angka	'other'
awa	'liver'

Non-peripheral consonant contrasts

thirrapwata	'blade spear'
amwarta	'grass'
mwatha	'ear'
yaratja	'Gould's Goanna'
anana	'this'
amwakarna	'spear shaft'
yinhanha	'fingernail'
anyarrngwa	'tame'
nipwalanta	'white man'
angwarnta	'stone'
thilhantha	'Little Rock-wallaby'
alhikwantja	'dance'
thimpwala	'cloth'
mwarliwiya	'Emu'
akwalha	'several'
alya	'slime'
arakpwa	'already'
arrakpa	'outside'
ayakwa	'speech'

In Traditional Anindilyakwa, very little free variation occurs between consonant phonemes within morphemes, especially those that carry the lexical meaning. It seems to me that this is a necessary correlate of the high functional load for consonants. In MA, such variation occurs in loanwords because some of the younger generation do not assimilate foreign sounds into the Anindilyakwa phonological system.

2.2.1 Consonant features

Feature oppositions for consonants are modifications of those proposed by Dixon (1980: 180ff). His terms proved to be a concise way of identifying the consonants but extra terms have been added where necessary. Table 2 lists the phonological features for each consonant.

Five features for point of articulation and one for manner of articulation are the only ones necessary for the operation of vowel allophony rules because the vowels are fronted or backed primarily by the tongue or lip position of the contiguous consonant. The six features are as follows:

- ± peripheral
- ± laminal
- ± retroflex
- ± dental
- ± round
- labial/dorsal

The following features for the manner of articulation are used in the morphophonemic rules:

- ± obstruction
- ± partial passage of air
- ± side passage of air
- oral/nasal

The term rounding is used in this paper in preference to labialisation so that one term covers the same feature in both consonants and vowels. Labio-velar is used to distinguish rounded and unrounded velar consonants. This adopts Ladefoged's suggestion (1971:59ff) that, in cases of double articulators with two equal

TABLE 2: CONSONANT FEATURES

	pu	p	mb	m	mpu	mp	ku	k	ngu	ng	ngku	ngk	t	nt	rt	rnt	th	nth	tj	ntj	o	rn	nh	ny	l	rl	lh	ly	r	rr	u	y
± obstruction	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
± peripheral	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
± laminal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	-	-	+	+	-	-	+	+	-	+	+	
± retroflex	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	+	-	-	-	+	-	+	-	+	+	
± dental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	+	-	-	-	-	-	-	-	+	
± partial passage	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	
± side passage	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	
± round	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	
oral	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	
nasal	-	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	
labial / dorsal	l	l	l	l	l	l	d	d	l/d	d	l/d	d	l/d	d	l/d	d	l/d	d	l/d	d	l/d	d	l/d	d	l/d	d	l/d	d	l/d	d	l/d	

degrees of stricture, the action of the lips be regarded as secondary articulation and an additional place of articulation added.

2.2.2 Obstruents

2.2.2.1 Stops

Stop phonemes (other than pre-nasalised stops) are usually voiceless and unaspirated. Spectrograms (Leeding 1979: 56-61) indicate, however, that word-medial stops following a vowel or nasal can be voiced up to a maximum of 40% of their duration. The stop in the pre-nasalised stop complex can also be voiceless or have a voiced onset.

The unrounded labial stops occur phonemically only as the last consonant in a morpheme in the deep structure. In the surface structure, phonetic realisations are created by the Consonant De-rounding Rule (see Section 2.5.3).

Any variation between an obstruent and another consonant is rare, occurring mostly in regional variants or in loanwords. In the latter, the consonant varies between the original pronunciation or one which has a feature of the original.

mwithiyalya	~	ANG	mwitjiyalya		'beach'
mirritjina	~	ANG	mititjina		'medicine'
pwirrpwila	~	ANG	pwitpwila	ENG football	'ball'
thilingana	~	ANG	yilingana	MK tje?la	'salt'
rtakirtaka	~		takitaka		'duck'

A sequence of two identical stops occurs in a few words, most of which are unassimilated loanwords. The first consonant is unreleased and triggers the fortis articulation of the second. In both Traditional and Modern Anindilyakwa, the sequence [ppw] can

freely vary with the heterorganic di-cluster /kpw/, i.e., the first consonant assimilates to the point of articulation of the second. Some Warnindilyakwa speakers are aware of the variation between [kpw] and [ppw]. The di-cluster can be pronounced as a single stop [pw] by younger speakers who are unaware of the reduction.

napipa [nepipa ~ ne^ppi^ppa] 'mother's brother'

NG napipa GP ngappipipi

yakayi [yaka:^ɪ ~ ya^kka:^ɪ] 'ouch!'

GP yakkayi

thakatjarrarra [t̪akatjaʔaʔa ~ taka^{t̪}tjaʔaʔa] 'nut sp.'

yilharrpa [yileʔpa ~ yile^ʔp̪pa] 'Liviston Palm'

Compare:

athikwalyi(k)pwa [at̪w̥kalyik̪p̪wa ~ at̪w̥kalyi^pp̪wa] 'Crinum Lily'
/a + thik{w}i + alyi(k)pwi/
3:4 lips eat

nalyipwarna [nalyup̪wana] 'he ate'
/n{i} + alyi{k}pw{i} + arni/
3:3 eat TNS

2.2.2.2 Prenasalised stops

There is some evidence for analysing pre-nasalised stops as two consonants: (a) heterorganic di-clusters do occur within morphemes and as the first CC of a reduplicated stem; (b) a morpheme break occurs between the nasal and the stop where Vowel Deletion and Nasal Assimilation Rules generate a homorganic nasal-stop sequence; and (c) a pre-nasalised stop does not usually occur in word-initial position as in Alawa (Sharpe 1972: 16) because the nasal elides.

The decision to analyse the prenasalised stops as single complex phonemes is, therefore, somewhat arbitrary but it emphasises the special nature of these segments. It is based on the following:

(i) the correlation of the single and pre-nasalised stops in the syllable-onset position: A root begins only with a single consonant or a homorganic nasal-stop sequence but not with a heterorganic di-cluster. The latter do occur at the beginning of a reduplicated stem but only as a result of the operation of the Syllable or Vowel Deletion Rules, e.g., -ngpwatja in Section 2.8.4.

(ii) the simplification of the phonological rules: The rules for allophony, distribution, haplology and reduplication would be much more complex if the nasal closure of the syllable had to be specifically noted. Under the present analysis, the prenasalised stops simply fit into the onset of the statistically-frequent CV syllable.

(iii) the occurrence of word-initial prenasalised stops: The complex unit can occur in word-initial position when a syllable is deleted. The nasal is syllabified. Such occurrences are, however, very rare.

yinthiyi	[yɪnt̪i. ~ nt̪i]	'oh, I'm sorry!'
yintha	[yɪnt̪a ~ nt̪a]	'let me see!'
yintja	[yɪnt̪ja ~ nt̪ja]	'it's my turn!'
wimpwa	[ump ^w a ~ mp ^w a]	'but'

(iv) the absence of an epenthetic (non-phonemic) vowel: There are no instances of an epenthetic vowel intervening between the nasal and the stop of a prenasalised stop owing to a change in the stress/rhythm pattern. This is in contrast with a quite frequent insertion of an epenthetic vowel between heterorganic consonants consisting of a continuant and stop, e.g.,

ayilhkpwiyilhkpa [a^ɪ yilkp^wiyilkp^wa ~ a^ɪyil(ɪ)p^wiyilukp^wa]
 'dry country'. (Note: In TA, the alveolar precedes a consonant
 and the lamino-dental occurs between vowels.)

- (v) the syllabification of words: Some native speakers place the
 homorganic nasal-stop sequence within a morpheme as a unit in
 the syllable-onset but insert a syllable break in between two
 heterorganic consonants. This distinction was very obvious in
 literacy classes.

Variation does not occur between a prenasalized stop and its
 nasal counterpart. Free variation is, however, recorded in precise
 speech between a prenasalised stop and its stop counterpart. Some
 Aborigines only accept the longer form as correct for literature.

mwamwintjawitjawa	[m ^w am ^w i(ŋ)tja ^w itja ^w wa]	'Striated Pardalote'
angkapwirra	[a(ŋ)kapwu ^r ra]	'who?'
mwiyampwana	[m ^w iya(m)p ^w ana]	'what?'

2.2.3 Continuants

2.2.3.1 Laterals and rhotics

The flap /rr/ usually has apico-alveolar articulation but it
 can be lamino-dental when conditioned by a lamino-palatal consonant,
 e.g., [lyi^rilyi^ra] 'tasselled'. The flap is regarded as a laminal
 consonant for two reasons: (i) the flap functions with laminal
 consonants in its conditioning of vowel allophones; and (ii) in TA,
 there was no set of apico-alveolars.

In Traditional Anindilyakwa, the lamino-dental lateral has two
 allophones: lamino-dental [lh] in the syllable onset and apico-
 alveolar [l] in the syllable-coda.

lhaka	[_h laka]	'is it ready?'
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angwalha	[aŋwa _l a]	'Mud Crab'
apwalhkaya	[ap ^w alka ^h ya]	'upwards'

In Modern Anindilyakwa, the lamino-dental /lh/ contrasts with its alveolar counterpart because of the introduction of unassimilated consonants in loanwords. The alveolar /l/ occurs in both the syllable-onset and the syllable-coda but contrasts with the lamino-dental in only syllable-onset position.

alha	[a _l a]		'an itch'
apwalkaya	[ap ^w alka ^h ya]		'upwards'
kwilinga	[kwulɪŋa]	MK guling	'rudder'
napwalitja	[nap ^w alitja]	NG naapalitjung	'owner'
yilkwa	[yulkwa]	NG yirlku	'Toad-fish'

Regional variation between the two laminal laterals, /lh/ and /ly/, is not systematic but only seems to occur in the initial syllable of some of the first roots in the compound stem. The contrast between the two laminals is maintained in all other data. The Umbakumba community now uses both pronunciations in almost every instance but will still identify the phonemes as belonging to one of the two Groote Eylandt communities.

alyingatjirrira	ANG	alhingatjirrira	'long'
alyarrathatha	ANG	al'harrathatha	'dusk'
thilyapwirnta	ANG	thilhapwirnta	'frog'
alyarrngwalyilya	ANG	alharrngwalyilya	'night'
alyimwilyimwintjirratha	~	alhimwilhimwintjirratha	'Black-tipped Cod'

Retroflexed /rl/ occurs in one loanword at Umbakumba and in a few other loanwords at Angurugu. In cases where the original segment is not used, there is a choice between one of its major features,

i.e., an alveolar /l/ or retroflex /r/, often in free variation.

amwarrala ~ amwarrara ~ AN	mwarrarila			'Large Egret'
	GP	marrarila		
lamwa ~ ramwa	NG	rlama	GP lama	'blade spear'
~ tja	NG	arltja	GP tjaarila	'Freshwater Snake'
mwarliwya			GP marliwa	'Emu'

The laterals vary from their nasal counterparts in at least two ways.

a.himwa ~ anhimwa		'mangroves'
apwilyirra ~ amwinyirra		'smooth'

The variation between the lateral or rhotic phonemes and the lamino-palatal consonant /y/ in the following words is baby talk:

[yitja ¹ ya]	for yitjarra	'Silver Gull'
[a ¹ yukwutjila]	for ayikwutjiya	'small'

2.2.3.2 Nasals

There is some evidence that, in traditional Anindilyakwa, the allophones of the lamino-dental nasal were similar to those of the lamino-dental lateral. The dental nasal only occurs in the syllable-onset and only the alveolar nasal occurs in the syllable coda preceding a stop.

anhimwa	[an ^h um ^w a]	'mangroves'
mwanpwa	ARCHAIC mwanimpwa	'eye'

In Modern Anindilyakwa, the apico-alveolar retains its pre-consonantal position but contrasts with the lamino-dental nasal in the syllable onset. The most unusual feature is that the apico-alveolar

nasal does not occur in lexical roots. In the suffixation and in the word-medial gender morphemes, the alveolar is the result of a loss of retroflexion and can freely vary with the retroflexed nasal /rn/. The loss of retroflexion in the last five years has accelerated and is causing increasing variation between the retroflexed nasal /rn/ and the apico-alveolar nasal /n/ (see Section 2.11.2). In TA, the word-initial nasal may not have been retroflexed as is the case in other Aboriginal languages (e.g. Warlpiri) where neutralisation occurs. The following examples illustrate the alveolar nasal word-initially and in the affixation.

nirikpwitjina	'he jumped'
naningwapwa	'good [man]'

Variation between the retroflexed nasal /rn/ and an apico-alveolar nasal /n/ also occurs in the syllable-coda in loanwords. With the loss of retroflexion, the alveolar nasal sometimes assimilates to the point of articulation of the following consonant.

kwirnkwirna ~ kwinkwirna	NG kirnkirn	'Turrum Fish'
	GP kirn?kirn	(NG: catfish)
yiwirnpwirna	NG yiwurnpirna	'Silver Bream'
yirntjirra ~ yintjirra	NG wirntjitu	'Golden Trevally'
yimpwalmwa	NG yurnpalmi	'Turban Shell'

The assimilation of nasals to the point of articulation of the following stop is a common feature between morphemes (see Section 2.7.1). The assimilated nasal can vary with the unassimilated phoneme. Some Aborigines consider only the unassimilated form as correct for literature even though they may use both. Some of the

younger generation are aware of only the assimilated variant. Both variants are, however, considered to be phonemic in this analysis.

alyingpilyingpwarnga	~ alyimpilyimpwarnga	'lungs'
mwaningpwatja	~ mwanimpwatja	'seaweed sp.'
nanikwimarntjarrka	~ nanikwimantjarrka	'younger brother'

The apico-alveolar /n/ frequently occurs in the syllable-coda as the shortened form of the sequence /rrng/ or /rng/. See Cerebralisation (Section 2.5.2.3) for a fuller discussion.

2.2.4 Rounded consonants

Lip rounding may be sequential (long) or simultaneous (very short), the latter being easy to see but hard to hear. (See Leeding 1979: 64-78 for spectrograms.) Sequential rounding occurs consistently when the next syllable begins with an unrounded consonant; simultaneous rounding usually occurs when the next syllable begins with a rounded consonant but is found elsewhere. The rounding of labials is probably simultaneous because both the consonant and its rounding have the feature 'labial'. (The symbol [w] is written on the line for sequential rounding and above the line for simultaneous.)

ampwimwa	[amp ^w um ^w a]	'bland'
akwingwa	[ak ^w uŋwa]	'fresh water'

Very few minimal pairs exist for the rounded versus unrounded peripheral consonants because of the multi-morphemic nature of lexical items. Compare the following pairs of examples in which the minimal contrast is often in the morphemes, rather than the words.

m ^w amw ^u ikwa	[m ^w am ^w ukwa]	'spirit's eye'
m ^w amw ^u ika	[m ^w am ^w u ka]	'bandicoot's nest'
angwirnta	[aŋwun̥ta]	'ankle'
angirnta	[aŋɪn̥ta]	'chin'
akwalya /a kw{1} + alya/ 3:4 NSR eat	[akwalya]	'fish (gen.)'
akalya /a + {k1} + kalya/ 3:4 ASR tell a lie	[æ ^ɪ kalya]	'untrue'
angkwilyimwitha /a + ngkw1 + lyimwitha/ 3:4 NSR complete	[aŋkwilyim ^w ɪt̥a]	'complete'
angkipwarrngwarrngwa /a + ngki + pwarrng{w1} + warrngw1/ 3:4 ASR REDUP heavy	[aŋkip ^w aŋwaŋwa]	'heavy'
nirakiwirrana /n1 + raka + wirr{a} + an1/ 3:3(1) neck-shaped throw + TNS	[nɪrak ^w uwurena]	'he threw it [fish]'
nirakiwirrana /n1 + rak1 + wirr{a} + an1/ 3:3(1) elongated throw TNS	[nɪræ ^ɪ kuwurena]	'he threw it [rope]'
nipwatjanga /n1 + Ø + pwatj{a} + anga/ 3:3(1) 3:4 hit TNS	[nup ^w atjana]	'he hit it'
nipakina /n1 + Ø + p{1} + aka + n1/ 3:3(1) 3:4 drink CAUS TNS	[nɪpæ ^ɪ kina]	'he drank it'

The contrast between the pronunciation of labial stops in English and their pronunciation in loanwords assimilated into the Anindilyakwa system is obvious even to native English speakers with no linguistic training.

pwayi	[p ^w oi]	'boy'
pwapwa	[n ^w ɒp ^w a]	'Bob'

pwəl	[p ^w ol]	'ball'
ɪpwayanthana	[kup ^w aɪyentəna]	'he will buy it'

Assigning rounding as the feature of the consonant rather than the vowel is based on the fact that it is the vowel that varies within the morpheme and not the consonant. (See Section 2.3.2 for rules conditioning vowel allophones.)

yipwɪratha	[yɪp ^w urɪt̪a ~ yup ^w ɪrɪt̪a]	'Agile Wallaby'
athalyɪmwa	[at̪alyum ^w a ~ at̪alyɪm ^w a]	'river'
apwapwɪrna	[ap ^w ap ^w uɾ̪a ~ ap ^w ap ^w ɪɾ̪a]	'many'
amwɪrt̪ɪmwɪrɪra	[am ^w at̪ɪm ^w uɾ̪a ~ am ^w at̪um ^w ɪɾ̪a]	'with grass'
akwarrɪrɪkpa	[akweɾ̪eɪɪkpa ~ akwaɾ̪eɪɪkpa]	'turtle pole'
nɪwarrwɪr̪θana	[nuweɾ̪wɪr̪θena ~ nuwaɾ̪wɪr̪θena]	'he liked work'
angampa	[aŋɛmpa ~ aŋɛmpa]	'(place) named'
yathɪr̪r̪ŋwɪrna	[yɪt̪ɪɾ̪ŋwɪɾ̪a ~ yɪt̪ɪɾ̪ŋwɪɾ̪a]	'big'

It has been suggested by linguists in the Arandic area that, historically, rounded consonants have been generated by the vowel [u]. While such analysis is not in focus in this thesis some linguists may be interested in the fact that (a) whereas all consonants have rounded and unrounded counterparts in the Arandic languages (and possibly traditional Tiwi), only the peripheral consonants are rounded in Anindilyakwa; and (b) the deep structure vowel /a/ is often contiguous to a rounded peripheral consonant within a morpheme; and (c) there is an absence of the phonetic allophone [u] between unrounded consonants. It would, therefore, appear to be more difficult in this language to account for an historical absence of /u/ between unrounded non-peripheral consonants, the presence of a rounded peripheral stop preceding an unrounded low vowel, and the strange distribution of the proto-phoneme ,

2.2.5 Prosody of rounding

The rounded peripheral consonants in Anindilyakwa can be clearly shown to contrast within the morphemic unit. The following sets of examples list the co-occurrence of rounded and unrounded consonants which are common throughout this language. The presence or absence of rounding on these consonants in citation is always consistent.

mwamwika	'bandicoot's nest'
mwamwikwa	'spirit's eye'
mwamwarika	'SE trade wind'
mwamwirikwa	'road'
mwangwiyiwanga	'shark (gen.)'
yapwangwa	'water snake sp.'
ayangiyanga	'Jungle Shrub'
amwanthangwa	'truly'

There is, however, evidence of an additional prosodic feature of rounding which is not considered to be phonemic. Such rounding occurs only in a syllable with an initial velar consonant, /k/ or /ng/. The rounding of the whole syllable is conditioned regressively by a following, not a preceding, rounded consonant.

A morpheme-initial rounded peripheral consonant can optionally round the preceding morpheme-final syllable consisting of a velar consonant and high vowel. The rounding of the consonant is simultaneous. Most speakers vary in their pronunciation and this is reflected in their spelling. Even though the contrast between a unrounded velar and its rounded counterpart is neutralised in the surface structure the deep structure form is readily identified in paradigms. The following pairs of examples contrast the prosodic

feature of rounding with its absence.

nawirrakirithana	[nawuʔak ^h ɪɾɪtəna]	'they cut it'
nawirrakiwartanga	[nawuʔak(w)uwaɾaŋa]	'they killed it'
anganthingilhangwa	[aŋaŋtɪŋɪlɪŋwa]	'from a sharp [axe]'
anganthingimwirra	[aŋaŋtɪŋ(w)umwuɾa]	'with a sharp [axe]'
mwaihamwikwiwa	[mwa ^h amwuk ^h uwa]	'towards the canoe'
alikiwa	[a ^h uk(w)uwa]	'towards the foot'

Within the morpheme, very few words have the necessary sequence of two peripheral consonants separated by a high vowel. In almost all the data, the presence of a rounded vowel or offglide indicates that the velar consonant is rounded in the deep structure. There are, however, two words in which this rounding has not been recorded before a velar stop. The first velar is tentatively analysed as unrounded with prosodic rounding. (Note that there is no way to do a similar test for velar nasals because the offglide does not precede that consonant.)

angakipwa	[aŋak(w)upwa]	'over there'
nakimwarna	[nak(w)umwa ^h na]	'he put it down'

A prosodic feature of rounding can occur at morpheme boundary when the intervening vowel is a low vowel and the following consonant is usually /w/. In contrast with the above, not all speakers seem to use this feature.

arngkawira	[aɾŋka ^h wuɾa ~ aɾŋk ^h ɒwuɾa]	'forever'
mwakawilyapwa	[mwa ^h ka ^h wilyapwa ~ mwa ^h k ^h ɒwilyapwa]	'steps'
pwingkawa	[p ^h wuŋka ^h wa ~ p ^h uŋk ^h ɒwa]	'boss'
ngawa	[ŋa ^h wa ~ ŋ ^h ɒwa]	'enough'

ngangwa	[ŋaŋwa ~ ŋ ^w ɔŋwa]	'father'
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2.2.6 Approximation of articulation

An approximation of the lamino-palatal /ly/, labio-velar /ngw/ results in phonetic variants /y/ and /w/, respectively. These variants retain the features of laminalisation and rounding that condition the contiguous vowels. In word-initial position, /y/ and /w/ are very frequent but /ly/ and /ngw/ only occur in the imperative mood of a verb and in loanwords. Such approximations are not found in precise recorded speech and are, therefore, not considered to be phonemic.

lyangkiwamwina	[lyaŋkuw ^w mina ~ yaŋkuwam ^w ina]	'nod your head!'
lyalyinga	[ly ^w lyiŋa ~ y ^w lyiŋa]	'knife'
ngwirrkwiya	[ŋ ^w u ^r kwiya ~ wu ^r kwiya]	'go hunting!'

The word-initial /w/ is often only an approximation when the next consonant is round and the intervening vowel is high. The language speakers are consistent in saying that this consonant is articulated and is therefore always written.

wipwirra	[(w)up ^w u ^r ra]	'like'
wikwara	[(w)ukwa ^r ra]	'hook it!'
wimwiya	[(w)um ^w iya]	'pick it up!'
wiwirtana	[(w)uwu ^r tana]	'climb it!'
wingwirthana	[(w)uŋwu ^r tana]	'swallow it!'

Other approximants appear to have achieved phonemic status because both forms occur in precise speech and are acceptable to Aborigines for literature.

angwarnta ~ awarnta	[a(ŋ)waŋta]	'stone'
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warnantja ~ warantja	[waɾ(n)aɳtja]	'quickly'
aninthilyakwa	NG nuntirila:ku	(language name)
ayakwa		'speech'

2.3 VOWELS

There are two deep structure phonemic vowels, a high central /ɪ/ [ɪ] and a low central /a/, distinguished by only tongue height. Each of the two phonemic vowels has a rich inventory of allophones.

angwarnta	[aŋwaɳta]	'stone'
angwirnta	[aŋwɪɳta]	'ankle'
angwarra	[aŋwaɾa]	'smoke'
angwirra	[aŋwɪɾa]	'strongly'
akana	[akena]	'but'
akina	[akina]	'that [fish]'
yaya	[yɛɪya]	'footstep'
yɪya	[yɪya]	'and the next'
mwamwangpwalha	[mʷamʷaŋpʷaɭa]	'five [canoes]'
mwamwingpwa	[mʷamʷɪŋpʷa]	'hair'
mwakarra	[mʷakaɾa]	'thigh'
mwikirra	[mʷikiɾa]	'Rush Spike root'
thangapwa	[tʰaŋapʷa]	'that [woman]'
thingaya	[tʰɪŋaɪya]	'widow'

A contrast exists between a high vowel, a low vowel and the absence of any vowel. It is not possible, therefore, to reduce the vowel system to one phoneme as has been suggested for other two-vowel languages (see Anderson 1978 and Breen 1977).

narringka	[naŋŋka]	'it saw'
arrangkwirra	[aŋŋkwuŋa]	'grass sp.'
arrngka ~ anka	[aŋŋka ~ anka]	'hip'
amwaringka	[am ^{wa} ŋŋka]	'edible root'
thirangka	[t _h ɪŋŋka]	'Spotted Tree'
amwarngka	[am ^{wa} ŋŋka]	'a laugh'
alhitha	[a _h ɪt _h a]	'prepared paint'
nilhathana	[ni _l at _h ena]	'he was sated'
alhthapirra	[a _h l _h tepiŋa]	'empty [grass]'

2.3.1 Vowel features

The feature oppositions presented by Dixon (1980:184ff) are adopted with some modifications because of the nature of this language. The features [+peripheral] and [+laminal] are used for [+back] and [+front], respectively, and are preferred because they highlight the close association between consonants and vowels. A consonant and a vowel allophone within a syllable often share the same feature, e.g., [+laminal], [+peripheral] or [+round]. The feature could, therefore, be considered to be a prosody of the syllable rather than a property of each segment.

TABLE 3: FEATURES OF VOWEL ALLOPHONES

	i	ɪ	æ	e	ɛ	ə	a	ɤ	u	o	ɔ
± high	+	+	-	-	+	-	-	+	+	-	-
± low	-	-	+	-	-	-	+	-	-	-	+
± peri	-	-	-	-	-	-	-	+	+	+	+
± lamin	+	+	+	+	-	-	-	-	-	-	-
± round	-	-	-	-	-	-	-	-	+	+	+
± close	+	-	-	+	-	-	-	-	-	+	-

The vowel allophones [e] and [i] can be tensed in stressed syllables between lamino-palatals, i.e., they are of slightly longer duration than other vowels.

Vowel allophones are posited on the basis of four types of rules which operate within the morpheme and across morpheme boundaries:

FRONTING

ROUNDING which also adds the feature [+ PERI]

BACKING

LOWERING

The allophones are conditioned by similar environments on two different parameters:

- (a) regressive conditioning by the following syllable or consonant
- (b) progressive conditioning by the preceding consonant within the syllable.

Regressive conditioning takes precedence over the weaker progressive conditioning. The term, progressive, indicates that the conditioned segment follows the conditioning element; regressive means that the conditioned segment precedes it (Gleason 1975:83). The term, basic, refers to the allophones [a] and [ɪ].

The range of allophones for any one phoneme extend from front to back and segmentation into only three positions (front, central or back) is difficult. For example, the low vowel contiguous to /y/ varies between the low central [a], the low and mid front [æ] and [e] but is frequently articulated between these three cardinal vowel allophones [æ̞]; the high back unrounded vowel [ɯ] varies from the

back position to one closer to the central [ɨ]. Segmentation is further complicated by the fact that phonetic transcription for a vowel that occurs between an unrounded and a rounded consonant depends on a rather subjective impression of what is the peak of the vowel nucleus. Too many phonetic distinctions lead to too much complexity in allophonic rules and too few lead to an inability to assign phonemic versus phonetic status to a vowel.

For ease of identification, only the allophones in focus are included at each stage of the discussion. The allophonic variants are discussed in Section 2.6.1 Interaction of Rules. The feature [-high] implies [+low] unless otherwise stated; the omission of brackets indicates a deep structure form.

2.3.2 Vowel allophony

Vowel allophones are generated by phonological rules for Fronting, Rounding, Backing and Lowering. The most "powerful" of these rules are those for fronting and rounding.

2.3.2.1 Fronting

The fronting rules operate on the deep structure vowels, /a/ and /ɨ/ and produce the fronted allophones [æ] and [ɪ], respectively. Two of the rules function within the morpheme and across morpheme boundaries but the third rule is restricted to the morpheme-final vowel.

The High Vowel Fronting Rule 1 affects the deep structure morpheme-final vowel except when the last consonant is a rounded peripheral or a retroflexed consonant. The rule is obligatory and can operate only the once. All deep structure morphemes end in a vowel.

HIGH VOWEL FRONTING RULE 1: MORPHEME-FINAL /ɨ/ ==> /i/

$$\begin{array}{c} V \\ [+high] \end{array} \Rightarrow \begin{array}{c} C \\ [-round] \\ [-retro] \end{array} / +$$

i.e., a high vowel is fronted preceding a morpheme break when the preceding consonant is not rounded or retroflexed. The morpheme break can occur within or at the end of a word.

The first three examples illustrate the occurrence of the fronted allophones in the few Anindilyakwa words that end in a high vowel. The final examples contrast the non-fronted and fronted allophones word-medial positions.

kartiyɨ	[kaɾi:]	'watch out!'
thalɨ	[taɪ]	(personal name)
tjɪŋkwɪlɪɪ	[tjɪŋkwɪlɪ]	'Carissa Shrub'

Compare the following pairs:

yɨwamwɪtha /yɨ + wamwɪ + tha/	[yuwamʷuɾa]	'fly sp.'
yɨmwɪrntarrmɪtha /yɨ + mwɪrnt{aka} + arrmɪ + tha/	[yumʷuntɛrʷmɪɾa]	'land snail sp.'
arəkpɪwɪtha /arəkpɪ + tha/	[arəkpʷuɾa]	'already'
yɨwəpɪtha /yɨ + wəpɪ + tha/	[yuwepɪɾa]	'ant sp.'

Vowel Fronting Rule 2 generates the high front allophone [ɪ] and low front allophone [æ] which are conditioned by the following syllable with a high front vowel created by the High Vowel Fronting Rule 1. The rule is obligatory and iterative within the morpheme but is optional (though common) across a morpheme boundary to preceding syllables. (Note: A front vowel is tensed, not fronted, by st

VOWEL FRONTING RULE 2: /ɪ/ ==> [i]; /a/ ==> [æ]

V ==> [+lamin] / $\begin{matrix} C \\ (C) \begin{bmatrix} -round \\ -retro \end{bmatrix} \end{matrix} \begin{matrix} V \\ \begin{bmatrix} +lamin \end{bmatrix} \end{matrix}$

i.e., a vowel is fronted when the following syllable consists of an unrounded consonant, other than retroflexed, and a front vowel.

thimwirra [t̪imɪʔa] 'Torres Strait Pigeon'

DEEP STRUCTURE ==> tha + mwirri
VFR.1 ==> tha + mwirri
VFR.2 ==> tha + mwirri
CDR ==> tha + m{w}irri
NTR.1 ==> thɪ + mirri
VFR.2 ==> thɪ mirri
NTR.2 ==> thɪ mirra
3:2(11) fat

amwapa [emepa] 'song'

DEEP STRUCTURE ==> a + mwapɪ
VFR.1 ==> a + mwapɪ
VFR.2 ==> a + mwepɪ
CDR ==> a m{w}epɪ
VFR.2 ==> e mepɪ
NTR.2 ==> e mepa
3:4 sing

yilharrpa [yilɛʔpa] 'Liviston Palm'

DEEP STRUCTURE yi + lharrpi
VFR.1 ==> yi + lharrpi
VFR.2 ==> vi + lherrpi
NTR.2 ==> yi lherrpa
3:3(ii) visible

The following pairs of examples show the contrast between a non-fronted allophone and a fronted allophone. Note the effect on the second word in each pair by the Vowel Fronting Rule 1 operating on the final deep structure vowel.

ngantjikwapwa /ngantja + kwapi/	[ŋa'ntʃukwapwa]	'me, too'
wirriwapa /wirra + wapi/	[wuʀuwepa]	'Red-winged Parrot'
amwiramwa /a + mwiramwi/	[am ^w u ^r amwa]	'whispered'
akwantjirama /a + kw{i} + antjirami/	[akwaŋtʃi ^r ema]	'gum from a tree'
apwirra /apwirra/	[ap ^w u ^r a]	'the, '
apwirra /a + p{w}irri/	[epi ^r a]	'raincloud'
thimwantha /tha + mwantha/	[t ^m u ^w anta]	'Great-billed Heron'
yimwantha /yi + m{w}anthi/	[yiment ^a a]	'turtle (gen.)'
thimwakwpilha /tha + mwakw{i} + pwilha/	[t ^m u ^w akwp ^w u ^a a]	'Australian Pelican'
thimwakpa /tha + m{w}akpi/	[t ^m imekpa]	'generous'
angwarrihangwa /{a} + angwarra + hangwi/	[aŋwa ^r i ^a aŋwa]	'from smoke'
aningwarripwirra /{a} + ani + ngw{i} + arri{ki} + p{w}irri/	[aŋ ^w we ^r ipira]	'anything'

The contrast between the non-fronted allophone preceding a retroflexed nasal and the fronted allophones preceding an alveolar nasal is often very obvious in words where the two consonants freely vary.

athirrngwana ~ athirrngwana 'big'
 [at̪ɪŋwapa ~ at̪ɪŋwena]
 {a} + athirr{ka} + ŋgwa(r)ni/

Most of the fronted allophones result from the operation of vowel Fronting Rules 1 and 2 but both the high and low vowels can be fronted in restricted environment preceding a syllable consisting of a laminal consonant and low vowel. The fronting of the low vowel in such environments is rare.

The morpheme-final high vowel can be fronted preceding a lamino-palatal consonant. There is only one word, to date, where this rule is applied preceding /y/ within a three-syllable morpheme. It is regarded as an exception until further data is found or possible re-analysis of the morpheme.

HIGH VOWEL FRONTING RULE 3: /ɪ/ ==> [ɪ]

$$\begin{array}{c} V \\ [+high] \end{array} \Rightarrow \begin{array}{c} [+lamin] \\ / \end{array} \begin{array}{c} C \\ [+lamin] \\ [-dental] \end{array}$$

i.e., a morpheme-final high vowel is fronted preceding a morpheme-initial lamino-palatal consonant.

thakwilyanthatha	[takwilyant̪at̪a]	'feathers'
/tha + kwi + lyanthatha/		
mwinyathirra	[m(w)ɪn̪at̪ɪr̪a]	'bitumen, tar'
/mwi + nyathirra/		
thitjariwa	[t̪it̪jaɾuwa]	'Little Friar Bird'
/tha + tjariwa/		
thathiyara	[t̪at̪iyara]	'girl'
/th{a} + atha + yara/		
angwiyangkitharrpwa	[aŋwiyank̪it̪aɾp̪wa]	'short arm'
/a + ngwiyangka + tharrpwi/		

The fronted low vowel allophone [æ] can occur in free variation with [a] preceding a laminal consonant and low vowel but only when the preceding consonant is laminal or alveolar. This

allophone is found frequently between two lamino-palatal consonants but is optional and rare elsewhere. It occurs both within the morpheme and across morpheme boundaries.

LOW VOWEL FRONTING RULE 4: /a/ ==> [æ]

$$\begin{matrix} V \\ [+low] \end{matrix} \Rightarrow \begin{matrix} [+lamin] \end{matrix} / \begin{matrix} C \\ [-per] \\ [-retro] \end{matrix} \begin{matrix} C \\ [+lamin] \end{matrix}$$

i.e., a low vowel is fronted between a laminal or apico-alveolar consonant and a laminal consonant.

yinhanha	[yɪnæŋa ~ yɪnana]	'fingernail'
athalyimwa	[atɔlyɪmwa ~ atɔlyumwa]	'river'
ayarrka	[aʲyɔrka ~ aʲyərka]	'hand'
thakatjarrarra	[takatjæɹɹa ~ takatjaɹa]	'nut sp.'
nathirrapwa	[nætɪrɔpwa ~ natɪrɔpwa]	'some [men]'
anatja	[enætja ~ enatja]	'he'

The Low Vowel Fronting Rule 5 generates a transitional high front offglide when the low vowel precedes a lamino-palatal consonant (irrespective of the following vowel). It is obligatory only when preceding /y/ but is rare preceding /tj/, /ly/ and /ny/.

LOW VOWEL FRONTING RULE 5: FRONTED OFFGLIDE

$$\begin{matrix} V \\ [-high] \end{matrix} \Rightarrow \begin{matrix} V \\ [-obst] \\ [+lamin] \end{matrix} / \begin{matrix} C \\ [+lamin] \\ [-dental] \end{matrix}$$

i.e., a high front offglide co-occurs with a low vowel preceding a lamino-palatal consonant.

angalhatja	[aŋaɭaʲtja ~ aŋaɭatja]	'it'
mwiyatja	[mʷiyæʲtja ~ mʷiyætja]	'oar'
-mwantja	[mʷaɹɲtja ~ mʷaɲtja]	(locative)

thiwalya	[tuwa ^ɪ lyə ~ tuwalyə]	'Bush Stone Curlew'
ayarrka	[a ^ɪ yaɾka]	'hand'

Regressive fronting also occurs as a high front offglide of the low vowels [a] and [æ/e] which vary with [a^ɪ] and [æ^ɪ/e^ɪ], respectively. The offglide occurs in the same environment as in Vowel Fronting Rule 2.

apwina /a + pwini/	[e ^ɪ pina ~ epina]	'it's not here'
aka /{a} + aki/	[e ^ɪ ka ~ eka]	'tree (gen.)'
angka /a + ngki/	[æ ^ɪ ŋka ~ æŋka]	'other'
ana /{a} + ani/	[e ^ɪ na ~ ena]	'this'
athirra /{a} + athirri/	[e ^ɪ t̪iɾa ~ et̪iɾa]	'hole'

The offglide has also been recorded at lexical word boundaries within the phonological word.

thikwirirrkwa yingirakpwinimwa
[t̪ukwuriɾkwa^ɪyɪŋɪɾakpwinimwa]
'The brolga played the didjeridu.'

2.3.2.2 Rounding

There are four vowel rounding rules. The first and second rules round the contiguous high vowel; the third rule rounds the low vowel; and the fourth rule generates a rounded offglide on the low vowel. Generally speaking, the high vowel is rounded by one contiguous rounded peripheral consonant but the low vowel is rounded only when both contiguous consonants are rounded.

The High Vowel Rounding Rule 1 generates regressive rounding of a vowel by a rounded peripheral consonant.

HIGH VOWEL ROUNDING RULE 1: /ɪ/ ==> [u]

$$\begin{matrix} V \\ [+high] \end{matrix} \Rightarrow [+round] \quad / \quad \begin{matrix} C \\ (+) [+round] \end{matrix}$$

i.e., a high vowel is rounded when it precedes a rounded peripheral consonant. An intervening consonant can also co-occur.

athinipwa	[a _ɪ inup ^w a]	'soon'
athalyimwa	[a _ɪ ɔlyum ^w a]	'river'
thikwa	[t _ɪ ukwa]	'maybe'
	[enika _ɪ tuwa]	'new'
wirriwari wari	[wu ^ɪ ruwa _ɪ wa _ɪ]	'Beach Spinifex'
yimwirngwa	[yum ^w u ^ɪ ŋwa]	'Wild Prune'
yilhkwa	[yul _ɪ kwa]	'Coulal Pheasant'

High Vowel Rounding Rule 2 rounds the non-fronted high vowel which follows a rounded consonant. Attempts to unite Vowel Rounding Rules 1 and 2 revealed that such a rule would be too strong and would generate a rounded vowel where it does not occur, e.g., angwiyangka [aŋwiyangka] 'lower arm'; awitja [a^uwitja] 'mist'. If only one rule is posited the deep structure high unrounded vowel would be rounded and then need to be de-rounded again by re-iteration of Fronting Rule 3. This seems to me to be unnecessary and uneconomical when the additional feature [-front] in the Rounding Rule 2 blocks any further operations. Rounding rules are ordered after those for fronting.

HIGH VOWEL ROUNDING RULE 2: /ɪ/ ==> [u]

$$\begin{matrix} V \\ [+high] \\ [-front] \end{matrix} \Rightarrow [+round] \quad / \quad \begin{matrix} C \\ [+round] \end{matrix}$$

i.e., a high non-fronted vowel is rounded when it follows a rounded peripheral consonant.

angpwirtha	[aŋp ^w ur̥t̥a]	'White Waterlily'
mwamwika	[m ^w am ^w u ^k a]	'bandicoot's nest'
apwirimpwa	[ap ^w ur̥ump ^w a]	'blister'
a ^k withangwa	[a ^k wu ^{t̥} aŋwa]	'near'
angwirnta	[aŋwu ^{n̥} t̥a]	'ankle'
yiningkwirra	[yinuŋkwu ^{r̥} a]	'Fern-leaved Grevillea'
awirikwa	[awu ^{r̥} ukwa]	'swamp'

The Low Vowel Rounding Rule 3 differs from the above rule in that a low vowel is rounded only when both contiguous consonants are rounded peripherals.

LOW VOWEL ROUNDING RULE 3: /a/ ==> [ɐ]

$$\begin{matrix} V \\ [-high] \end{matrix} \Rightarrow \begin{matrix} C \\ [+round] \end{matrix} / \begin{matrix} C \\ [+round] \end{matrix} \begin{matrix} C \\ [+round] \end{matrix}$$

i.e., a low vowel is rounded when it occurs between two rounded consonants.

The allophone [ɐ] most commonly occurs within a morpheme but, in some cases, varies with [a] at morpheme boundaries.

ngantjikwapwa	[ŋa ^{n̥} t̥ju ^k ɐp ^w a]	'me, too'
a ^k wingwawa	[a ^k wu ^{n̥} ɐp ^w a]	'to the water'
yi ^w amwa	[yu ^w ɐm ^w a]	'house fly'
apwapwirna	[ap ^w ap ^w una ~ ap ^w ɐp ^w una]	'many'
yimwawira	[yim ^w a ^u wu ^{r̥} a ~ yim ^w ɐ ^u wu ^{r̥} a]	'moon'
mwawirnakaya	[m ^w a ^u wu ^{n̥} aŋka ⁱ ya ~ m ^w ɐ ^u wu ^{n̥} aŋka ⁱ ya]	'stone axe'

Compare the following pairs:

ampwaka	[amp ^w aka]	'later on'
mwapwakwa	[m ^w ɐp ^w ɐkwa]	'Burton's Legless Lizard'

nampwilya	[namp ^w ilya]	'he stayed'
wampwilya	[wamp ^w ilya ~ wɔmp ^w ilya]	'stay!'
viwapawilya	[yuwepa ^u wilya]	'ants'
atniwapwawilya	[atɯwɔp ^w ɔwilya]	'today'
anhingawa	[anɪŋa ^u wa]	'for food'
akwingwawa	[ak ^w uŋ ^w ɔwa]	'for water'
alharrngkwartirtarra	[alɪaŋkwatɪɪtaɾa]	'hot things'
alnarrngkwawarriya	[alɪaŋk ^w ɔwaɾiya]	'bad things'

A transitional high back rounded offglide occurs with a low vowel preceding a dorsal consonant (excluding nasals). The allophones [a] and [ɔ] vary with [a^u] and [ɔ^u], respectively. The offglide is optional but very common preceding /w/.

LOW VOWEL ROUNDING RULE 4: ROUNDED OFFGLIDE

$$V \begin{matrix} [-high] \end{matrix} \Rightarrow V \begin{bmatrix} -obst \\ +per1 \\ +round \end{bmatrix} \Bigg/ \begin{matrix} C \\ \begin{bmatrix} +round \\ +dorsal \\ -nasal \end{bmatrix} \end{matrix}$$

i.e., a high back rounded offglide occurs with a low vowel preceding a dorsal consonant, other than a nasal.

akwa	[a ^u kwa ~ akwa]	'and'
yawa	[ya ^u wa ~ yawa]	'yes'
athalyimwawa	[atɪalyum ^w ɔwa]	'to the river'

In loanwords, the co-occurrence of a contiguous rounded vowel and consonant is maintained. The pronunciation of the vowel in the stressed English syllable is retained and the consonant assimilated into the Anindilyakwa system.

tʃiɬwa	[tʃukwa]	'sugar'
tʃawikwa	[tʃa ^u :kwa]	'chalk'
rapwitja	[rap ^w itja]	'rubbish'
compare:		
tʃipwa	[tʃup ^w a]	'soap'
tʃipa	[tʃi ^p pa]	'sheep'
pwalangwa	[p ^w alangwa] MK balango	'anchor'

2.3.2.3 Backing

The deep structure high vowel is backed primarily by retroflexed or unrounded dorsal consonant. The low vowel in the environment has been recorded occasionally as backed by one of older women but is not considered to be a systematic change.

The High Vowel Backing Rule generates the high back unrounded allophone [ɯ]. As the rule is optional this allophone varies from with the high central unrounded allophone [ɨ].

HIGH VOWEL BACKING RULE: /ɨ/ ==> [ɯ]

$$\begin{array}{c} \text{V} \\ [+high] \end{array} \Rightarrow [+per] \left/ \begin{array}{c} \text{C} \\ [-round] \end{array} \right\{ \begin{array}{c} \text{C} \\ \left\{ \begin{array}{l} [-round] \\ [dorsal] \end{array} \right\} \\ [+retro] \end{array} \right\} \begin{array}{c} \text{V} \\ [-lam] \end{array}$$

i.e., a high vowel is backed when it occurs between an unrounded consonant and a syllable consisting of an unrounded dorsal retroflexed consonant and a non-front vowel.

angirnta	[aŋɯnta ~ aŋɨnta]	'chin'
alhikira	[aɬɯkwɨɾa ~ aɬɨkɨɾa]	'house'
nirringka	[niɾɯŋka ~ niɾɨŋka]	'he saw it'
thingira	[tɬɯŋɨɾa ~ tɬɨŋɨɾa]	'white clay'

The above allophones are in complementary distribution with

high back rounded vowels that are conditioned regressively by a rounded dorsal consonant. In the latter, rounding of the vowel includes backing.

athika	[a _ɣ ɰka]	'Hardyhead'
thikwa	[t _ɣ ukwa]	'maybe'
anganthinga	[aŋaŋt _ɰ ŋa]	'sharp'

2.3.2.4 Lowering

The two vowel lowering rules for the high vowel generate the mid central allophone [ə] and the mid back rounded allophone [o], primarily by a following retroflex or flap /rr/. Both allophones are infrequent and freely vary with [ɪ] and [u], respectively. A third lowering rule occurs only at morpheme boundaries and largely prevents haplology.

The High Vowel Lowering Rule 1 generates the allophone [ɤ]. It is conditioned primarily by a following retroflexed or lamino-palatal /rr/. The rule is optional and infrequently applied. It occurs in both stressed and unstressed syllables.

HIGH VOWEL LOWERING RULE 1: /ɪ/ → [ɤ]

$$\begin{matrix} V \\ [+high] \end{matrix} \Rightarrow \begin{matrix} \left[\begin{matrix} -high \\ -low \end{matrix} \right] \end{matrix} / \begin{matrix} C \\ [+retro] \end{matrix}$$

i.e., a high vowel is lowered to a mid central vowel preceding a retroflexed consonant.

amwirtha	[am ^w əɾt _ɰ a]	'brown'
thilhirrinta	[t _ɰ ɪl _ɰ əɾ ^ɰ ənt _ɰ a]	'Carpet Python'
angirnta	[aŋənt _ɰ a]	'chin'
apwapwirna	[ap ^w ap ^w əna]	'many'
niwirtana	[nuwəɾtəna]	'he climbed it'

A mid central allophone [ə] can also be posited as an allophone of zero when it occurs as a transition between a flap /rr/ or alveolar /l/ and another consonant. This vowel is unstressed and so short that the phonetic quality is hard to determine--it could be a high central unrounded allophone preceding an unrounded consonant or a high back rounded vowel preceding a rounded consonant.

mwarrngmirtha	[mʷaʔṛṁʷaɾta]	'Bush Currant'
athirrpwira	[aṭiʔṛpʷaɾa]	'level'
arrngka	[aʔṛka]	'hip'
mwilhkwa	[mʷulʔkwa]	'stomach'
awarrwalya	[awaʔwalya]	'shadow'
mwarrnga	[mwaʔṁga]	'a sleep'

The High Vowel Lowering Rule 2 must be preceded by High Vowel Rounding Rule 2 in a stressed syllable. This rule operates on the allophone created by the rounding rule. The preceding consonant is almost always a dorsal consonant but there are occasional instances where the preceding consonant is a bilabial stop (not, to date, a bilabial nasal).

HIGH VOWEL LOWERING RULE 2: [u] ==> [o]

$$\begin{array}{c} \text{V} \\ [+high] \\ [+round] \end{array} \Rightarrow \begin{array}{c} [-high] \\ [-low] \end{array} / \begin{array}{c} \text{C} \\ \left\{ \begin{array}{l} [+retro] \\ [+partp] \\ [-sidep] \end{array} \right\} \begin{array}{c} \text{V} \\ [-lamin] \end{array}$$

i.e., a high rounded vowel is lowered when the following syllable consists of a retroflex or rhotic consonant and a low vowel.

yangkwirra	[yaŋkwoʔa]	'house fly'
apwingwirra	[apʷuŋwoʔa]	'silly'
wirrawilya	[woʔawilya]	(clan name)

yimwawira	[yim ^w b ^u woɾa]	'moon'
yikwirna	[yukwoɾa]	'Baler Shell'

The Low Vowel Lowering Rule 3 affects a morpheme-final vowel that occurs between two consonants that share the same phonological feature, viz., peripherals or laminals. Unlike other rules, it is applied to the surface structure following the operation of the Word-medial Neutralisation Rule 1. In the light of the statement of Colarusso (Anderson 1978: 49) about the fundamental nature of a two-vowel system, the high vowel /ɨ/ can be considered to be "the shortest path that permits an interval of sonorant voicing" between two consonants and the low vowel /a/ "the longest path permitting an interval of sonorant voicing...pulling the tongue down". It seems to me that the longer path is chosen to separate two similar consonants at morpheme boundaries to prevent syllable deletion or other coalescence (see Section 2.5). The rule results in variation between the high and low vowel in a morpheme-final position in which only the high vowel occurs elsewhere.

HIGH VOWEL LOWERING RULE 3: [ɨ] ==> [a]

$$\begin{array}{c} \text{V} \\ [+high] \end{array} \Rightarrow \begin{array}{c} [-high] \\ [+low] \end{array} / \left\{ \begin{array}{c} \text{C} \\ [+per_{11}] \\ [+lamin_2] \end{array} \right\} + \left\{ \begin{array}{c} \text{C} \\ [+per_{11}] \\ [+lamin_2] \end{array} \right\}$$

i.e., the morpheme-final high vowel following a peripheral or laminal consonant is lowered when the next morpheme-initial consonant is a peripheral or laminal, respectively.

Compare the following sets of examples in which the first word shows the normal word-medial morpheme-final neutralisation but the others illustrate the application of the above rule.

<u>thimwirntakakina</u> /tʰa + mwirntak{a} + aʔini/ 3:2(11) PL that	'those [frogs]'
<u>mwamwirntakakina</u> /mwa + mwirntak{a} + aʔini/ 3:5 PL that	'those [canoes]'
<u>mwamwirrarra</u> /m(w)a + {w}i + rrarri/ 3:5 INALP forked	'Fringe-eyed Flat-head'
<u>thimwawirtiwi</u> /tʰa + mwi + w rtiwirti/ 3:2(11) INALP REDUP: ?alone	'Wedgetailed Eagle'
<u>amwartiwa</u> /a + mwarti + wi/ 3:4 greer ALL	'to the grass'
<u>a</u> /aniwa + wi/ 3:3(1) ALL	'to him'
<u>akwalyiŋgwa</u> /a + kwɪ + .iyi{pwɪ} + lhangwi/ 3:4 NS eat ABL	'from the fish'
<u>yiniŋwalyaŋgwa</u> /a + {a}ni + mw{ɪ} + alhiwalya + lhangwi/ 3:4 n-hfem INALP REDUP: wide ABL	'from Yinimaliwalya'
<u>yiniŋwalyathangwa</u> ~ <u>yiniŋwalyiŋgwa</u> /yi + {a}ni + mwi + alyi{kwɪ} + thangwi/ 3:3(11) n-hfem INALP lips POSS	'Rainbow Bee-eater'

When the consonants are identical the vowel /a/ always occurs but there is free variation elsewhere between the high and low vowel.

<u>mwawirrakipwina</u> ~ <u>mwirrakipwina</u>	'those [canoes]'
<u>mwapwikwarimwawiya</u> ~ <u>mwipwikwarimwiya</u>	'three big [canoes]'
<u>mwangalhatja</u> ~ <u>mwingalhatja</u>	'it'
<u>mwarrngakwiya</u> ~ <u>mwarrngikwiya</u>	'two nights'
<u>akamwirra</u> ~ <u>akimwirra</u>	'with a stick'

Variation between the high and low vowel is common preceding the Allative case-marking clitic and can follow any consonant. It is not caused by dissimilation or by agreement with the morpheme-final deep structure vowel. Not every speaker uses both variants but, for some words, the variation is heard throughout the community. The most common usage is placed first in the following examples.

akwingwawa	~	akwingwiwa	'to water'
arrakpawa	~	arrakpiwa	'to the outside'
mwathiwa	~	mwathawa	'to the ear'
angalyiwa	~	angalyawa	'to home'
alhikirawa	~	alhikiriwa	'to the house'

2.3.3 Deep structure vowels

The morpheme-final deep structure vowel can be identified in much of the data but there are problems because of the Word-medial and Pause-final Neutralisation Rules 1 and 2, e.g., ngarra- (1st inclusive plural prefix); lhika 'to foot-walk'; arti 'to shout'; ani 'he'. The basis upon which they are making these decisions has not been identified and the nature of the vowel following rounded peripheral and retroflexed consonants still remains uncertain in individual words. Some solutions are discussed in this section.

2.3.3.1 Prefix-final

A deep structure high or low vowel could be posited in the mono-syllabic word-initial Nominal Classifier mwV- because there is no evidence for one or the other in this position. In the surface structure of corresponding word-medial object morphemes, however, the morpheme-final vowel is /a/ (one of the two exceptions where the Word-medial Neutralisation Rule does not operate). The deep structure vowel is therefore considered to be a low vowel in both word

positions. The decision is further supported by the Nungg equivalent *mana*.

nimwarringka /ni + mwa + rringka/ 3:3(1) 3:5 see	[numwa ^ɪ ɪŋka]	'he saw it (can)
mwirirpwa /mwa + rirrpwi/ 3:5 back	[m ^w urɪɪpwa]	'human back'

The deep structure vowel in the word-initial Nominal Classifiers 3:2 *nga-* and 3:3 *ni-* can be established through the similarity with their word-medial counterparts. The object prefix (a)nga ~ and (a)ni-, retain a contrast between the high and low vowels in the surface structure and the latter morpheme has the anticipated fronted allophone in the first vowel.

nangarringka /n{i} + anga + rringka/ 3:3 3:2 see	[naŋa ^ɪ ɪŋka]	'he saw her'
ngalhatja /ngalh{a} + atja/ 3:2 CofR	[ŋa _l atja]	'she'
nanirringka /n{i} + ani + rringka/ 3:3 3:3 see	[nenɪ ^ɪ ɪŋka]	'he saw him'
nipwikwaya /ni + pwikwaya/ 3:3 coming	[nup ^w ukwa ^ɪ ya]	'this approaching [man]'

The deep structure vowel in the word-initial Nominal Classifier 3:2 *tha-* can be identified in the corresponding word-medial Ge prefix *atha-*. The non-fronting of the initial vowel indicated the underlying final vowel is /a/.

thathiyara /th{a} + atha + yara/ 3:2 hfem young	[tathɪyara]	'girl'
---	-------------	--------

thikwitja
/tha + kwitji/
3:2 small

[tukwitja]

'Black-faced Cuckoo-shrike'

The non-human masculine Nominal Classifier yi- does not occur word-medially as an object morpheme in the verb prefix (the distinction between the human masculine ni- and non-human masculine yi- is neutralised). If the deep structure morpheme-final vowel is considered to be a high vowel on the basis of symmetry the phonological rules generate the correct allophones.

nipwina
/ni + p{w}ini/
3:3(11) that unseen

[nipina]

'that unseen'

yipwina
/yi + p{w}ini/
3:3(11) that unseen

[yipina]

'that unseen'

yingwa
/yi + ngwi/
3:3(11) (call)

[yɪŋwa ~ yuŋwa]

'Torresian Crow'

2.3.3.2 Root- or suffix-final

The identity of the deep structure high or low vowel following a root-final or suffix-final rounded peripheral consonant has not been found in evidence in the surface structure. Both vowels can follow a rounded consonant within the morpheme and the phonological rules will generate the correct allophones irrespective of the nature of the vowel. With a lack of any real evidence from the surface structure, the vowel is tentatively being considered to be a high vowel. Cognates with Nunggubuyu and Gupapuyngu also support a deep structure high vowel in this position because the vast majority of words have a corresponding high vowel in the surface structure. The morphological structure of the few cognates that do have a low vowel (first three words in the second set below) indicates that the words are borrowings

from Anindilyakwa. A few Anindilyakwa speakers who have attempted to identify the final vowel have consistently given the high vowel.

thi: wirirrkwa	GP kurturkkku	'Brolga'
alhamwikwa	NG lhamuku	'canoe'
	GP thamukku	
akwingwa	NG kuku	'fresh water'
yimpwalhmwa	NG yurnpalma	'Turban Shell'
wirmwa	NG wirama	'to fly'
mwalhiwa	NG malhiwu	'Razor Shell'
alhawithawarra	NG lhaawu	'story'
yilpwa	NG wulpuru	'Smartweed yam'
thingalhiwa	NG ngalhuwa	'Hawksbill Turtle'
anikathiwa	NG kathuwa	'new'
aningkwirakpwa	NG nungkwurtaapa	'old'
lamwa	NG rlaama GP lama	'blade spear'

The identity of the deep structure vowel following a retroflexed consonant do not appear to be predictable from the surface structure. Anindilyakwa speakers, however, have supplied a contrast for some roots, e.g., warti 'hit; angwira 'firewood'. Further research is needed to cover all data and to try to discover the criterion upon which they are making the decision. Cognates with neighbouring languages also indicate that both Anindilyakwa vowels should be possible in the deep structure.

yimwawira	NG yimawuru	'Red Emperor fish'
yirntirnta	NG yirnti	'Strychnine Tree'
	GP yurntirtirti	
mwakarta	GP makkarti	'sea'
akwirtikwirta	NG kurtukurtu	'sacred'

angwira	NG ngura	'fire'
lharrwira	NG atharrwara	'afternoon'

A deep structure high or low vowel can follow a retroflexed consonant within a morpheme. In some shortened roots, the word-final vowel can thus be identified as a low vowel. Compare the paired examples below.

wingwirntithathiya	'spear its ankle!'
/wɪ + ngwirntɪ{rrka} + thathiya/	
2Sg ankle spear	

angwirnta	'ankle'
/a + ngwirntɪ/	
3:4 ankle	

yimwirntakakina	'those [snakes]'
[yim ^w un ^ɰ ta ^ɰ akakina ~ yum ^w ɪn ^ɰ ta ^ɰ akakina]	
/yɪ + m ^w irntak{a} + akɪnɪ/	
3:3(11) PL that	

yimwirnta	'head lice'
[yim ^w un ^ɰ ta ~ yum ^w ɪn ^ɰ ta]	
/yɪ + m ^w irnta/	
3:3(11) many	

Pending further investigation, the vowel /ɪ/ has been used until deep structure vowels can be accurately identified. The choice is arbitrary except where there is evidence to the contrary.

2.3.4 Homographs

Homographs occur in a few pairs of words in the surface structure (and orthography). Phonetically, the word-medial vowel allophones [a] and [e] contrast because of the application of Vowel Fronting Rules 1 and 2. The vowel in the word-final syllable, however, is neutralised in the surface structure by the operation of the Pause-final Neutralisation Rule 2. The ambiguity arises only in written data and this is resolved by the context for minimal pairs or by other morphemes in multi-morphemic words.

The lack of contrast in the spelling of surface structure forms of words is shown in the following pairs of examples. The list is comprehensive but not exhaustive. (Note: For an explanation of the metathesis in the last example see Section 2.9.3.)

athirra /{a} + athirri/	[e ₁ iʔa]	'hole'
athirra /{a} + athirra/	[a ₁ iʔa]	'some'
karra /karri/	[keʔa]	'oh, you're hurt!'
karra /karra/	[kaʔa]	'do you agree?'
mwarra /mw{i} + a{ya}rrri/	[meʔa]	'blood'
mwarra /mw{i} + arra/	[m ^w aʔa]	'Soap Tree (wattle)'
akiwa /{a} + aki + wa/	[e ¹ kuwa]	'disc for balancing loads on the head'
akwa /akwi/	[akwa]	'and'
arra /{a} + arri/	[eʔa]	'vomit'
arra /a + rra/	[aʔa]	'forehead'
nirrakpwatja /ni + rrak{i} + pwatja/ 3:3(i) elongated hit	[niʔekpwatja]	'he hit the snake'
nirrakpwatja /ni + rrak{a} + pwatja/ 3:3(i) forehead hit	[naʔakpwatja]	'he hit his forehead'
wangkirratja /w{i} + angkirr{i} + atja/	[wæŋkiʔaʔtja]	'listen!'
wangkirratja /w{i} + angkarra => angkirr{a} + atja/	[wæŋk ⁺ aʔtja]	'run!'

Stokes (1981: 151-7, 174-5) bases her analysis of two low vowels on the above contrasts in the surface structure. This, however, necessitates the positing of freely varying phonemes throughout a sizable proportion of the data. In testing the orthography in which both /a/ and /e/ are written, the fluent writers had at least 40% error in spelling the two vowels as against 10% random error for the consonants (Leeding 1984a.) Later testing showed that the literates have no problems in reading or writing only the vowel /a/ and no greater problems in handling the homographs than we do in English (i.e., sometimes they were re-read).

2.4 DISTRIBUTION

2.4.1 Syllable structure

The syllable types can be incorporated into one formula, (C)V(C)(C), in which the vowel nucleus is obligatory and the onset and coda are optional.

V	a.rra	'forehead'
VC	arr.ngka	'hip'
VCC	arrk.pwilha	'Tussock Grass'
CV	na.ra	'no'
CVC	mwang.mwa	'brains'
CVCC	thi.mwa.ngkarrk.pwa	'Wild Plum'

The syllables, V, VC, VCC, are found only word-initially and the vowel is always /a/. The most frequent syllable, CV, is the only one which occurs word finally. The syllables, CVC and CVCC, occur word initially and medially. Syllable boundaries have been established quite arbitrarily in order to provide the simplest way of analysing the patterns.

The distribution of consonants within the syllable is as

follows: (a) all consonants occur in the syllable-onset; (b) only unrounded consonants occur as the single syllable-coda within morphemes; and (c) in TA, only /rk/ and /rn/ occur as the complex syllable-coda but, in MA, /lk/ is added. Words and morphemes begin with any consonant or the vowel /a/.

Table 4 lists the permitted consonant clusters within and across morpheme boundaries but is divided into two sections to highlight the differences between Traditional and Modern Anindilyakwa. In TA, the initial consonant of a di-cluster is a continuant, /lh/, /rr/, /r/ and /ng/, or an obstruent /k/ and /kw/. The di-clusters with the lateral /lh/ are not common. The only heterorganic clusters with peripheral segments have the maximum distance between the points of articulation, i.e., dorsal and labial. In MA, the traditional system has been extended to other laterals and nasals in loanwords.

lhpw	alh + pwilhirra	'slippery [grass]'
lhkw	mwiyalhkwa	'starfish'
lhk	apwalhkaya	'upwards'
lhth	napwalh + thatha	'he carried it on a belt'
lhtj	alh + tjirrirra	'tall [grass]'
rpw	apwiyarpwiwa	'four'
rmw	amwarmwarra	'a sore'
rmpw	awarmpwiwarpwa	'Venus Shell'
rngkw	mwirngkwirra	'Round Yam'
rngk	amwarngka	'a laugh'
rth	mwawirtharra	'Woollybutt Tree'
rtj	artja	'Green Tree-frog'
rrpw	yingarr + pwantja	'Limpet Shell'
rrp	yilharrpa	'Liviston Palm'
rrmw	nilharrmana	'he chased it'

TABLE 4: DISTRIBUTION OF CONSONANT CLUSTERS

2ND SYL ONSET 1ST SYL CODA		PERIPHERAL													NON-PERIPHERAL	
		pw	p	m	mp	mpw	m	kw	k	ngw	ng	ngkw	ngk	u	th	tj
TRADITIONAL																
lh		x						x							x	
r		x		x								x			x	
rr		x		x				x			x				x	
rrk		x														
rrng		x														
ng		x														
k		x														
kw		x														
MODERN																
l		x						x			x					x
lk		x														
n		x														
rn															x	
t		x														

rrm	ayarrmiyarrrma	'thin'
rrmpw	akwilharrm + pwitjina	'adjacent things'
rrkw	yarrkwɪ + mwarnta	'Venus Shell'
rrk	ayarrta	'hand'
rrngw	alyarr + ngwalyilya	'night'
rrng	thimwarrnga	'cricket'
rrngkw	alharrrngkwilharrrngkwalha	'dangerous things'
rrngk	arrngka	'hip'
rrth	nalharrrtjanga	'they crowded together'
rrtj	yimwirr + tjingwa	'drab'
rrkpw	mwangkarrrk + pwa	'Pandanus Palm'
rrngpw	nilhamwarrng + pwitjina	'he slept well'
rrngmw	mwarrng + mwirtha	'Bush Currant'
ngpw	ang + pwilyiwa	'sickness'
ngp	alhangangpa	'which two?'
ngmw	ying + mwing + mwarnta	'Snake-necked Tortoise'
ngm	alyangma	'top'
kpw	akpwa	'buttocks'
kp	alhangakpa	'those two'

The consonant di-cluster /kwpw/ contrasts with /kpw/ at morpheme boundaries when an intervening vowel has been deleted (see Section 2.5.1). The vowel allophones that precede the dorsal consonants indicate that this contrast is maintained.

nirikwpwitjanga	[nɪrɪk ^h wɪtjɪŋa]	'he jumped'
/ni + rikw{i} + pwitjanga/		
3:3(i) body	jump	
alhakpwikwaya	[alɛ ^h k ^h wɪkwaɪya]	'those two coming'
/a + lhak{i} + pwikwaya/		
3:4 DU	coming	

arrakpwalhiwalha	[aʔakpʷaɭuwaɭa]	'wide forehead'
/a + rraka + pwalha + walha/		
3:4	forehead REDUP	wide
arrakpwalhiwalha	[eʔekpʷaɭuwaɭa]	'thick [wire]'
/a + rraki + pwalha + walha/		
3:4	elongated REDUP	wide

The distribution patterns shown above pertain to Traditional Anindilyakwa. Other consonant clusters can be identified as originating in neighbouring or foreign languages because the source languages have systems in which such clusters are common. The clusters conform to the TA system in which a lateral or a nasal continuant is the first consonant. The original pronunciation sometimes varies with the assimilated form. (Note: The Nunggubuyu syllable Cu is the same as the Anindilyakwa syllable Cw.)

lpw	mwapwalpwa	NG mapalku	'string'
	angalpwiya	NG arnngalpiya	'Black Catfish'
lp	yikwilpanta	NG yingkuripanti	'Ba . . . undi'
lmw	awirmwarra ~ awilmwarra	NG wulmuwarri	'boomerang'
	yimpwalmwa	NG yurnpalma	'Turban Shell'
lkw	alkwa	NG warlku	'crab sp.'
	yilkwa	NG yirlku	'Toadfish'
	mwilkwa	NG muriku	'stomach'
lng	mwiwalingara	NG walngari	'Cooktown Salmon'
ltj	thiwaltja	NG arltja	'Water Python'
lkw	ayil(k)pwilkpwa	NG wulpulk	'dry place'
npw	mwanpwakwa ~ mwampwakwa	NG manpa	'string decoration'
	yiwinpwirna	NG yiwunpirna	'Silver Bream'
nk	pwankwitja		'Whale Shark'
rnkw	kwirnkwirna ~ kwinkwirna	NG kirnkirn	'Turrum'
rnk	mwarnkimwarnka	GP marnkimarnki	'sorcery tool'

rnth	amwirtha	NG murn	'shoulder'
	amwirthikwa ~ amwintikwa		'Catfish Eel'
	kwirthirra ~ kwinthirra		'Olive Python'
rntj	yirntjirra	NG wirntjitu	'Bludger Trevally'
	mwarntja	NG marn	'brood cells'

It is also interesting to note that some Nunggubuyu di-clusters consisting of a retroflex and stop correlate with a retroflex plus prenasalised stop in Anindilyakwa. As the Nunggubuyu clusters are not homorganic, the following words are also considered to be loanwords.

rmpw	mwarmpwarpwirra	NG marnparnpurru	'Rock Fig'
	amwarmpwarpwina ~ amwarnparnpina		(place name)
	amwarnpwarpwina		
rngk	mwirngkirra	NG mirnkirra	'sinker'
	narngkiyarra	NG narnkiyung	'father-in-law'

2.4.2 Lexical word structure

A lexical or content word is a unit of vocabulary which carries semantic meaning and is listed in a dictionary. The number of syllables in the lexical word in Anindilyakwa varies from one to thirteen, with at least two more syllables added by inflectional suffixes. The morphemic structure is illustrated by the derivations.

kwa 'come here!'

nga.rri.mwi.rnti.mwi.rnta.ki.lha.lhi.ka.ni.mwi.rra
 /ngarra + mwirnta{ka} + mwirntaka + lha + lhi{a} + ani + mwirra/
 1IncPl REDUP SPL REDUP go TNS PlP
 'We all were keeping on going.'

yi.rri.pwi.kwi.mwi.ngkwi.mwi.ngkwa.tha.yi.ni.mwi.pwa.pwa
 /yirra + pwikwi + mwingkwa + mwingkwath{a} + aya + ni + mwi + pwapwi/
 1ExcPl TRI REDUP dig SNsg TNS PlP CSL
 'because we three (excluding addressee) were keeping on digging...'

The frequency of words with varying lengths differs as to whether the dictionary or texts are used for the frequency count. The number of words in the dictionary corpus is approximately 3,000 and in the texts approximately 2,000. The percentages are as follows:

	Dictionary	Texts
1 to 2 syllables	4.0%	14.2%
3 to 7 syllables	91.1%	78.1%
8 to 14 syllables	4.9%	14.2%

The above percentages are skewed between the dictionary and texts because (a) 10 % of the 14.2% of di-syllabic words in the texts are repetitions of two conjunctions; (b) the addition of verb suffixes and clitics in the texts often adds one or more syllables which then place the word in a higher category than for the dictionary. The only mono-syllabic words are interjections. The traditional di-syllabic Anindilyakwa words amount to only 2.4% of the 4% shown for the dictionary whereas all except a few names in the texts were traditional words.

2.5 COALESCENCE AND REDUCTION

The most striking impact when hearing Anindilyakwa for the first time is the frequency of long words and the consistency of a rhythmic stress pattern based on di-syllabic and tri-syllabic feet. Segments and syllables, however, are deleted or reduced to make the words as short as possible while retaining the essential shape of each morpheme.

Deletion and Coalescence Rules occur across morpheme boundaries and are, therefore, applied after allophonic rules operating within the morpheme. The Word-medial Neutralisation Rule is irrelevant

because the vowel elides. Reduction rules mostly occur within the morpheme after the application of allophonic rules. Only the deep structure forms are shown in the first three subsections for brevity and clarity (the Word-medial Neutralisation Rule will need to be applied to generate some surface forms).

2.5.1 Vowel deletion

The Vowel Deletion Rules follow Vowel Fronting Rule 1 and Word-medial (morpheme-final) Neutralisation Rule 1. This ordering of rules is necessary in order to create a fronted allophone of the initial deep structure vowel /a/, as shown in the derivation below.

VOWEL DELETION RULE 1

[V] ==> Ø / + [V]

i.e. a morpheme-final vowel is deleted when followed by a morpheme with an initial vowel.

angkalya [ɛŋkalya] 'wet'

DEEP STRUCTURE a + ngkɪ + alyɑ

VFR.1 a + ngkɪ + alyɑ

VFR.2 e + ngkɪ + alyɑ

VDR.1 e ngk{ɪ} alyɑ

arimwa 'big'
/{a} + arimwi/
3:4 big

thathimwayarrka 'female gift-giver'
/th{a} + atha + mw{ɪ} + ayarrka/
3:2(ɪ) hfem INALP hand

nawinyampathina 'he got angry'
/n{ɪ} + awinyampɪ + tha + ni/
3:3(ɪ) liver:hard INCH TNS

Vowel Deletion Rule 1 also operates at lexical word boundaries within the phonological word.

kampwa angalyimwantja 'and thus at home'
[kamp^wan^galyum^wañtja]

kilhiakatja arakpwa arriparripawa 'I will go to the
[k^hi^hka^ttja arakpe^ripe^ripa^wwa] bush'

Vowel Deletion Rule 2 generates heterorganic stop clusters consisting of peripheral consonants with the maximum distance between the points of articulation.

VOWEL DELETION RULE 2

$$\begin{bmatrix} \text{V} \\ +\text{high} \end{bmatrix} \rightarrow \emptyset \text{ / } \begin{bmatrix} \text{C} \\ +\text{obstr} \\ +\text{oral} \\ \text{dorsal} \end{bmatrix} + \begin{bmatrix} \text{C} \\ +\text{peri} \\ +\text{oral} \\ \text{labial} \end{bmatrix}$$

i.e., a morpheme-final high vowel is deleted between a dorsal stop and a labial stop.

The second word in each of the following pairs of words illustrates the deletion of a vowel at the boundary between two morphemes. The vowel is only deleted if the resultant sequence of consonants is permissible within the morpheme.

akilyarrpa /a + ki + lyarrpi/ 'not heavy'
3:4 ASR light

akpwitha /a + k{i} + pwitha/ 'strong'
3:4 ASR strong

nirikwitharrpwa /ni + rikwi + tharrpwi/ 'short-bodied'
3:3(i) body short

nirikwpwitjanga /ni + rikw{i} + pwitjanga/ 'he jumped'
3:3(i) body jump

alhakana /a + lhak{a} + ani/ 'these two'
3:4 DU here

2.5.2 Syllable deletion

A reduction in the number of syllables in a word is quite common in Anindilyakwa despite the frequency of long words. This is analysed as four different types of reduction or coalescence. Haplology and Morpheme-final CV deletion delete a whole syllable; Cerebralisation and VCV reduction delete and coalesce a consonant and vowel across syllable boundaries. Syllable deletion is regressive and elides in both stressed and unstressed syllables.

2.5.2.1 Haplology

Haplology is a common feature of the language which has many identical syllables within morphemes and in long (multi-morphemic) words because of reduplication. There is no change in meaning with the reduction in the number of syllables. Where the Haplology Rule is optional the full form is usually given in elicited data but both forms are frequent in daily speech and appear to be accepted by the Aborigines for literature. Haplology occurs within the morpheme and across morpheme boundaries.

Haplology Rule: where the initial consonants of two syllables have identical or similar manner of articulation, the first syllable may elide. The intervening vowel is almost always a high vowel, viz., either the deep structure vowel or the vowel derived by the Word-medial Neutralisation Rule.

(1) variant forms

When the Haplology Rule operates within a lexical root, it is usually optional--thus the full form of the word varies with

its shortened form. All de-stressed syllables below are stressed.

alyarrngwa(lyi)lya	'night'
angwitji(rri)ra	'deep'
alhingatji(rri)rna	'long'
mwamwirri(nyi)nya	'super Berry'
tha(ka)ka	'his [woman]'
wairna)rna	'these [people]'
mwa(ma)ma	'this [canoe]'
ani(ngwi)ngarrkwima	'spikeless [ray]'

The above examples show the application of the Haplology Rule where the consonants are identical. Elision is much rarer when the consonants only share the manner of articulation.

aninthilyakwa	[é(ni)ntjilyakwa]	(language name)
yiningwimwapwalhpwa	[yínunq ^w úim ^w ap ^w álp ^w a]	'bat (gen.)'

The same type of reduction can occur between lexical words within the phonological word. Two syllables have been found to elide, as in the last example.

yakwitjina	nakina
[yakwutjinakina]	
'there he ...'	
nanikilhawirrakwatjiyatha	thakina
[nen ^w kilaw ^w uraka ^t tjiyatakina]	
'He could bring her back.'	
aniwa	niwilyapwa
[énwilyáp ^w a]	
'he, the one [man]'	

(ii) fused forms

When the Haplology Rule operates across morpheme boundaries it is usually obligatory. Many of the reduced forms are fused

compound stems but the morphemes are identifiable within the substitution sets.

warningwangwima	'fatherless'
/warni + {ngwi} + ngwangwi + mi/	
3:1 ALP father PRIV	
wikilharakatja	'set fire to it!'
/wi + {ka}ki + lharaka + tja/	
3:1 tongue-shaped send ISR	
wingkitjikina	'he lifted it'
/wi + ng{ki} + katjikini/	
3:1 ASR hold	
angkwapwikwapwi	'taboo area'
/a + ng{kw}i + kwapwi + kwapwi/	
3:4 NSR REDUP sacred	
ngamwantja	'where...at?'
/nga{mpwi} + mwantja/	
where? LOC	
yinimwingwirra	'its cheek'
/yi + {a}ni + {mw}i + mwingwirra/	
3:3(11) n-hfem INALP cheek	

In the following examples, the full form occurs in the monomorphemic adverb but only reduced forms in multi-morphemic words.

warnantja	'quickly'
alhiwantja	'dance'
/a + lhi{a} + wa{rna}ntja/	
3:4 foot quickly	
arikwantjirra	'good at hunting'
/a + ri{wi} + wa{rna}ntja + rra/	
3:4 body quickly SF	

There is a further situation in which a CVC sequence with two similar consonants appears to coalesce. The first syllable is always very short and unstressed. The last consonant in the first syllable is always a peripheral with a potential for rounding and the initial consonant of the second syllable is always the semi-vowel /w/. The intervening vowel elides and the phonetic rounding of the coalesced

consonant is sequential. The reduced form is not considered to be phonemic because (a) the full form always occurs in precise speech, (b) the Aboriginal speakers insist that, however much reduced, the vowel is always pronounced, and (c) the stress pattern does not alter. The following examples illustrate the reduction of a syllable within lexical and phonological words.

amwiwara [am^wuwaɾa ~ amwaɾa]
 /a + m(wi) + waɾi/
 3:4 INALP ???
 'pronged spear'

thakwiwarriwarra [tak^wuwaɾuwaɾa ~ takwaɾuwaɾa]
 /th{a} + a{ni} + k(wi) + warriwarra/
 3:2(ii) n-hfem NSR REDUP: turn
 'electric fan'

ningiwarritjina [niŋuwaɾitjina ~ niŋwaɾitjina]
 /ning(i) + warra + tja + ni/
 1ExcSg turn TSR TNS
 'I started it [engine].'

nirikwiwarrikwina [niɾɪkwuwaɾukwuna ~ niɾɪkwuwaɾukwuna]
 /ni + ri{k(wi)} + warra + kwa + ni/
 3:3(i) body turn CAUS TNS
 'He turned it around.'

ngarritjarrikwa wirraɾina
 [ŋaɾitjeɾukwuɾakina]
 'We finished it.'

Such coalescence is accepted where fusion has occurred between two roots, thus forming a compound stem.

angkipwarrngwarrngwa 'heavy'
 /a + ngki + pwarrng{wi} + warrngwa/
 3:4 ASR REDUP root

amwartilhangwiwiya [-lanwuwiya ~ -lanwiya] 'over the grass'
 /amwarti + lhang{wi} + wiwi/
 grass ABL TPRG

2.5.2.2 Morpheme-final CV deletion

The application of the Vowel Deletion Rule 2 in some positions would generate unacceptable consonant clusters. At such boundaries,

the syllable elides. The application of the Morpheme-final CV Deletion Rule is most easily observed in reduplicated roots or substitution sets.

MORPHEME-FINAL CV DELETION RULE

$$\begin{array}{c} \text{C} \\ \left[\begin{array}{c} +\text{peri} \\ +\text{oral} \\ \text{dorsal} \end{array} \right] \end{array} \begin{array}{c} \text{V} \\ \left[\begin{array}{c} +\text{high} \end{array} \right] \end{array} \implies \emptyset \quad / \quad + \left\{ \begin{array}{c} \text{C} \\ \left[\begin{array}{c} +\text{obstr} \\ +\text{peri} \\ \text{labial} \end{array} \right] \\ \\ \left[\begin{array}{c} +\text{lamin} \\ -\text{nasal} \\ +\text{obstr} \\ \text{oral} \end{array} \right] \end{array} \right\}$$

i.e., when a CV sequence consisting of a velar stop and high vowel occurs preceding a root-initial rounded labial stop or nasal or a lamino-palatal or lamino-dental stop, the CV sequence is deleted. (The velar nasal in a homorganic nasal-stop sequence is retained in order to identify the morpheme. A prenasalised consonant does not occur in root-initial position.)

Such syllable deletion is obligatory in some instances and optional in others. The obligatorily reduced forms seem to belong mostly to the nominal word class whereas the optional presence or absence of the syllable is largely found in the verbs. The deleted syllable is identical with the Nominaliser *kwi-* and may be optional because its occurrence on a first order noun root is redundant. For convenience, the following examples are divided into two groups:

(i) variant forms

The full and reduced forms of a word usually occur when the first of the two roots is part of a large substitution set.

amwintjirr(ki)mwilhimwilha	'spotted skin'
/a + mwintjirr(ka) + mwilhimwilha/	
3:4 skin rough	

wilhakpwa(ki)tjiriya	'push the leg over!'
/wi + lhakpwa(ka) + tjiriya/	
3:1 leg push	
 mwalh(ka)thaka	 'cook the wing!'
/mw{a} + alhka + thaka/	
3:5 wing cook	
 mwalh(pwi)thirriwina	 'bury the wing!'
/mw{a} + alh{ka} + thirriwina/	
3:5 wing bury	

If the deletion of the syllable results in an uncommon CC sequence the first consonant in the di-cluster can be deleted.

For example:

wimwingkwi(rr)thirriwina	'bury the cheek!'
/wi + mwingkwi(rr){kwi} + thirriwina/	
3:1 cheek bury	
 wimwilyi(rr)tharriya	 'spear the breast!'
/wi + mwilyirr{ka} + tharra + ya/	
3:1 breast spear TNS	

(11) fused forms

Only the reduced form occurs when the second root of a verb or nominal is obligatorily bound by the adjectiviser or nominaliser, or where the meaning is idiomatic. Compare the following sets of words in which the first word shows the non-deleted form of the first root.

wingkilharritja	'drop it!'
/wi + ngki + lharritja/	
3:1 ASR drop	
 wingpwatjina	 'smell it!'
/wi + ng{ki} + pwatjini/	
3:1 ASR smell	
 wingwingwina	 'throw it away!'
/wi + ng{ki} + mwingwini/	
3:1 ASR throw from	
 warningmwa	 'knowledgable'
/warni + ng{ki} + mwi/	
3:1 ASR knowledgable	

nilyangkiyamwina /ni + lyangka + yamwini/ 3:3(i) head speak	'he decided'
nilyangmwanthikwina /ni + lyang{ka} + mwanthikwini/ 3:3(i) head be honest	'he was honest'
yilyangmwirra /yi + lyang{ka} + mwirra/ 3:3(i) head PROP	'Ark Shell'
amwintjirrkiwirrimwalya /a + mwintjirrka + wirrimwalya/ 3:4 skin smooth	'smooth [bark]'
amwintjirrngakpwirna /a + mwintjirr{ka} + ngakpwirna/ 3:4 skin tidy	'smooth [bark]'
thirikw:tharrpwa /tha + rikwi + tharrpwi/ 3:2(ii) body short	'short [dress]'
thiritjamiyama /tha + ri{kwi} + tjamiyami/ 3:2(i) body elongated	'thin [woman]'
wilyingarrrkirithana /wi + lyingarrrka + rithani/ 3:1 liver cut	'cut the liver up!'
wilyingarrrtjalhana /wi + lyingarrr{ka} + tjalhani/ 3:1 liver carry	'carry the liver!'

In most instances, the form of each word is consistent but there are words in which the speakers apply either Vowel Deletion Rule 2 or the Morpheme-final CV Syllable Deletion Rule. Such variation is not possible if it would produce a non-acceptable CC sequence, e.g., kwmw. Examples of the resultant variation within the same word are as follows:

nimwirnta(k)pwilhirra /ni + mwirntak{a} + pwilhirra/ 3:3(i) PL blunt	'careless [man]'
--	------------------

mwalyikarr(k)pwilyirra		'tracks'
/mwa + lyikarrk{a} + pwilyirra/		
3:5	heart smooth	
ngari(kw)pwatjiya		'hit her back!'
/nga + rikw{1} + pwatjiya/		
3:2(1)	back hit	
alharrngkwilharr(ng)mwirntirra		'well-kept things'
/a + lharrngkw1 + lharrng{kwi} + mwirntirra/		
3:4	REDUP things care for	

2.5.2.3 Cerebralisation

Cerebralisation occurs between a rhotic /r/ or /rr/ and alveolar or velar nasal. Some of the resultant forms are fixed but others freely vary.

When the prefix rra- (non-singular) precedes the morpheme ni (masculine) in the pronouns, the flap /rr/ and the alveolar /n/ coalesce to form a retroflexed nasal /n/ with the loss of the intervening vowel. The coalescence takes place after the application of the Word-medial Neutralisation Rule. Compare the following pairs of words in which the first shows the deep structure unit.

ningkwirringa	/ningkw1 + rra + nga/ 2Sg Nsg Fem	'you two [women]'
ningkwirna	/ningkw1 + rra ==> r{ri} + ni/ 2Sg Nsg Masc	'you two [men]'
apwirringa	/apwi + rra + nga/	'they two [women]'
apwirna	/apwi + rra ==> r{ri} + ni/	'they two [men]'

The same type of coalescence also occurs when the morpheme rra (non-singular) precedes the Gender morpheme ani- for 'not human feminine'. Rare occurrences of the full form are used by the older generation in variation with the coalesced form. Compare the following:

naningkwarppa		'adult man'
/n{1} + ani + ngkw{1} + arpw1/		
3:3 n-hfem NSR wound		
yarningkwarppa ~ yirraningkwarppa		'we men'
/yirr{a} + ani + ngkw{1} + arpw1/		
1ExcPl n-hfem NSR wound		
ngarniyarringka ~ ngarraniyarringka		'we older men'
/ngarr{a} + ani + yarringka/		
1IncPl n-hfem ???		
warnikwapwirra		
/wirr{a} + ani + kw1 == kwa + pwirra/		
3:1Pl n-hfem NSR split		
'they, the people of the opposite moiety'		

The coalescence is confirmed in the following examples where the first nasal is retroflexed and the second is alveolar. (See Section 2.8 for Reduplication Rules.)

ngarniniyiwangkwa	'we older men'
/ngarni + {a}n1 + yiwangkwi/	
ngarningkwiningkwarppa	'we men'
/ngarningkwi + ningkwarpw1/	

The di-clusters /rrng/ and /rng/ can be reduced to a retroflexed /rn/ or an alveolar /n/. It would seem that, because of the free variation between /rn/ and /n/, the cerebralisation process has been followed by loss of retroflexion (see Section 2.11).

awarrngkanyarra ~ awarnkanyarra ~ awankanyarra	'rather angry'
yiwarrrngkwitja ~ yiwankwitja	'joey'
arrngka ~ anka	'hip'
nilhamwarrngpwitjina ~ nilhamwanpwitjina	'he slept well'
alharrngkwilharrngkwalha ~ alhankwilhankwalha	'sharp things'
wilhangarngkwithaka ~ wilhangarnkwithaka	'cook the head!'

In the following examples, the sequence /rng/ is reduced to a

retroflexed nasal /rn/ but, following the application of the Morpheme-final CV Syllable Deletion Rule, a vowel is inserted between the two contiguous nasals. Compare the last two examples with the first example which is representative of the usual morpheme shape.

arngkawira	/arngk{a} + awiri/ times single	'forever'
arningkwiwaya	/arngka + ngkwɪ + waya/ ===, arn{gk}ɪ ngkwɪ waya ===, arnɪ ngkwɪ waya times NSR ?follow	'tomorrow'
arningkwiwiya	/arningkwaya + wiya/ ===, arningkwɪ{waya} + wiya tomorrow TPRG	'in a few days'

When a morpheme-final CV sequence consisting of a retroflexed nasal and high vowel is followed by an alveolar nasal, the vowel normally elides and the consonants coalesce to form a retroflexed nasal. Only one example has been observed to date.

nalyipwarina	[nalyup ^w arɪna ~ nalyup ^w ana]	'he ate it'
/n{ɪ} + Ø + alyipwar(ɪ) + nɪ/ 3:3(ɪ) 3:4 eat TNS		

2.5.2.4 VCV reduction

When a VCV sequence is composed of two identical high vowels with an intervening semi-vowel, the sequence optionally reduces to a single vowel. This vowel is lengthened in a stressed syllable.

tjiwirra	[tjuwura ~ tju:ʔa]	'book'
yiwi	[yu:]	'yes'
wirrilhiyiwa	[wuʔiliyuwa ~ wuʔili:wa]	'Common Sandpiper'
mwangiyiwanga	[m ^w aŋiyuwaŋa ~ m ^w aŋiwaŋa]	'shark (gen.)'
kartiyi	[kaʔi:]	'watch out!'

When a VCV sequence consists of a low vowel followed by a semi-vowel and high vowel, the sequence coalesces to a lengthened glide. Stress which normally falls on the penultimate syllable falls on the word-final glide.

wiwayitjina	[uwa ¹ yitjina ~ uwa ¹ :tjina]	'open it!'
mwarriwayitja	[m ^w a ¹ uwa ¹ yitja ~ m ^w a ¹ uwa ¹ :tja]	'grass sp.'
mwayikwarra	[m ^w a ¹ yukwa ¹ ~ m ^w a ¹ :kwa ¹]	'Mauve Convolvulus'
yakayɪ	[yaka ¹ :ɪ ~ yaka ¹ :]	'ouch!'
tjaya ~ tjayɪ	[tja ¹ ɪya ~ tja ¹ :]	'scram!'
awiringkwarrkwa	[awu ¹ ɾɪŋkwa ¹ ~ a ¹ :ɾɪŋkwa ¹]	'Slender Barracuda'
awirintja	[awu ¹ ɾiŋtja ~ a ¹ :ɾiŋtja]	'orange'
kawikwinata	[ka ¹ :kwunata]	'coconut'
yawa ~ yawɪ	[ya ¹ wa ~ ya ¹ :]	'yes'

2.5.3 Consonant de-rounding

The rounding of a peripheral consonant can be deleted within the morpheme and at morpheme boundaries. De-rounding of the consonant usually follows Vowel Fronting Rule 2 (Section 2.3.2.1). The syllable that fronts a vowel can also deround the preceding peripheral consonant which, of course, is part of the same syllable.

CONSONANT DE-ROUNDING RULE

$$\begin{array}{c} C \\ [+round] \end{array} \Rightarrow \begin{array}{c} C \\ [-round] \end{array} \quad \Bigg/ \quad \begin{array}{cc} C & V \\ \begin{bmatrix} -round \\ -retro \end{bmatrix} & \begin{bmatrix} +lamin \end{bmatrix} \end{array}$$

i.e., when a rounded consonant precedes a syllable consisting of a non-rounded, non-retroflexed consonant and front vowel [i] or [ɪ] the rounding is optionally deleted. This syllable is always preceded by a vowel (usually [+laminal]). (Note: The underlying vowel that conditions the de-rounding can be deleted in the surface structure.)

The Consonant De-rounding Rule operates most frequently at the morpheme boundaries but it is not obligatory. Vowel Fronting Rule 2 only rarely fronts the vowel preceding the de-rounded consonant but it is more likely to affect the vowel preceding labial consonants.

mwingka /m(w)a + ngki/	[m(w)ɪŋka]	'another'
mwinyangmwa /m(w)i + nyangmwi/	[m(w)ɪŋɪŋmʷa]	'siphonophore'
niyamwina /ni + yam(w)i + ri/	[niyamʷa ~ niyemina]	'he said'
apwilyarra /a + p(w)i + lyarri/	[ap(w)ɪlyeɾa]	'visible'
wirripwikwaningapwa /wirripwik(w){i} + ani + ngapwi/	[wuɾupʷuk(w)leniŋapʷa]	'three good people'
warnikwikpwathika /warni + k(w)i + t{i} + pwathika/	[waɾuk(w)ɪkpʷatʰika]	'Honeyeater'
thathingwiyalhakwa /th{a} + atha + ng(w)i + yalhakwi/	[tʰatʰuŋ(w)ɪyeɭakwa]	'local [woman]'
angwamwina /a + ng{w)i + am{w}ini/	[aŋemina ~ eŋemina]	'breast milk'
warningwamwiyarra /warni + ngw{i} + am{w}iyarri/	[waɾun(w)ɛmiyeɾa]	'oldtime residents'

Within the morpheme, the de-rounding of the consonant is obligatory but the Consonant De-rounding Rule applies only to the rounded labial consonants, as shown in the following examples. The Vowel Fronting Rule 2 usually operates on the vowel preceding the de-rounded consonant.

amwinta /{a} + am{w}inti/	[ɛminta]	'nose'
amwapa /a + m{w}api/	[emepa]	'song'
apwinga /{a} + p{w}ingi/	[epina]	'anthill'
ngampwirrkiringka /ng{a} + amp{w}irrki + rringka/	[ŋɛmpiɾkiɾiŋka]	'look at Stingray!'

akwiwirmwika	[ak ^w uwi ^r mika]	'a whistle'
/a + kwi + wirr{k _i } + m{w}ik _i /		

The de-rounding of peripheral consonants is irregular when a root or stem with an initial low vowel follows a morpheme-final syllable /kw_i/. The rounded velar in this position is well-established on the basis of a large corpus of data in which the root or stem begins with a consonant. When the morpheme-initial /a/ is followed by a lamino-palatal consonant (including /rr/) the rounding is deleted in almost 90% of the data but this high percentage of de-rounding is not maintained preceding other consonants. The approximate percentages are as follows: 65% of data when preceding lamino-dentals; 45% of data when preceding retroflexed or peripheral consonants. Most individual words show free variation between /k/ and /kw/ in the last two categories. No explanation is available for the irregularity but it indicates that the laminal consonants are a significant factor in consonant de-rounding.

akwarrnga	[aka ^r ŋa]	'teeth'
/a + k{wi} + arrnga/		
mwamwikalyangpwitja	[m ^w am ^w ukalyanp(w)itja]	'Fire Bean'
/mwa + mwi + k{wi} + alyangpwitja/		
thakathithamwa	[takatit ^h am ^w a]	'needle'
/th{a} + a{tha} + k{wi} + athithamwa/		
mwakwathamwirra	[m ^w ak(w)atam ^w u ^r a]	'necklace'
/mwa + k(w){i} + athamwirra/		
akwartjitjarra	[ak(w)artjitja ^r a]	'raked area'
/a + k(w){i} + artjitjarra/		
yinikwapwirra	[yinikap ^w u ^r a]	'Scrub Fowl'
/yini + k{wi} + apwirra/		
yinikwampwarrngarna	[yinuk(w)amp ^w a ^r ŋa ⁿ a]	'fish sp.'
/yini + k(w){i} + ampwarrngarna/		
thakwingaringara	[takwunap ^r u ⁿ ga]	'Bush Stone-curlew'
/th{a} + a{tha} + kwi + ngaringara/		

yinikwarrmwingkwārtha	[yinək(w)ar̥mʷuŋkwat̪a]	'hermit crab'
/yi + {a}ni + k(w){i} + arr{kwi} + mwingkwārtha/		
alhingkwālhiwa	[a_luŋkwa_luwa]	'Star Liniment tree'
/a + lhingkw{i} + alhiwi/		
mwilharrngkwingmwa	[mʷu_lar̥ŋkwingmʷa]	'smelly thing'
/mwa + lharrngkw{i} + ng{k_i} + mʷ]		

The irregularity in the de-rounding of the velar consonant can also be illustrated in the paradigm for second person pronouns.

ningkwilhangwa	[nuŋkwu_lanwa]	'yours'
/ningkw{i} + lhangwi/		
ningkwatja	[nuŋkwatja]	'to you'
/ningkw{i} + atja/		
ningkwanana	[nuŋkenena]	'this you'
/ningkw{i} + anani/		
ningkwakina	[nuŋkakina]	'that you'
/ningkw{i} + akini/		
ningkwangampwa	[nuŋkanampʷa]	'which you?'
/ningkw{i} + angampwi/		

2.6 Phonological rules

Many of the vowel allophony rules are optional and cause an enormous amount of free variation in the data. As this is not always obvious in the preceding section it is set out below. Some phonological rules are strictly ordered but others with unique environments would still operate from several positions. Rule ordering is discussed now in order to prepare the reader for rules discussed in Sections 2.6 to 2.12. Given the morphological complexity of Anindilyakwa words it has been extremely difficult to find data which does not preempt a rule that is given later.

2.6.1 Interaction of allophonic rules

Variation between the vowel allophones is exceedingly common in Anindilyakwa and the words which do not vary stand out as

"exceptions". Stokes (1981:153) regards the variation in the high vowel as a "continuum" but, with the above analysis for allophony, the presence of individual allophones can be accounted for.

2.6.1.1 Single allophones

Variation between vowel allophones does not occur in three situations, viz., (i) where no allophonic rule operates; (ii) when only one rule can be applied; and (iii) when the vowel is positioned between two compatible environments. Such examples are comparatively few in number. (Note: Deletions in the curly brackets are discussed in the following section.)

(i) absence of any rule

The surface structure vowels are identical with the deep structure vowels /a/ and /i/ when the phonological rules cannot be applied.

thangapwa /th{a} + angapwɪ/	[t̪aŋap ^w a]	'that [woman]'
angalya /a + ngalya/	[aŋalya]	'home country'
arrirra /a + rriarra/	[a ^{r̥} r̥a]	'wind'

(ii) single rule

When the high vowel is followed by a rounded peripheral consonant the only allophonic rule that operates is Vowel Rounding Rule 1 (except when the preceding syllable is the Nominal Classifier /yi/). Conditioning is regressive and the preceding consonants do not condition the vowels.

athalyimwa /a + thalya + mwi/	[at̪alyum ^w a]	'river'
----------------------------------	---------------------------	---------

arikwa /a + rikwi/	[a ^h rukwa]	'raw'
thitjiningkwa /tha + tji{kwi} + ningkwa/	[t ^h itjinuŋkwa]	'Short-beaked Echidna'
yilharpiwa /yi + lharrpi + wa/	[yile ^h puwa]	'to the palm'

Vowel Rounding Rule 1 or Rule 2 could be said to operate when both contiguous consonant environments are rounded. But, alternatively, only the following environment could be regarded as necessary to condition the vowel, as in the above examples. Vowel Rounding Rule 3 which operates between two rounded consonants has only one allophone when the preceding consonant is a rounded dorsal consonant.

amwikwa /a + mwikwi/	[am ^h wukwa]	'live coals'
akwingwimwa /a + kwingwi + mwi/	[ak ^h wuŋ ^h wumwa]	'with fresh water'
yangwingwa ~ yangwangwa /y{i} + angwingwi ~ angwangwi/	[yaŋ ^h wuŋwa ~ yaŋ ^h wuŋwa]	'Pike Eel'

When the following consonant is a lamino-palatal consonant Vowel Rounding Rule 2 cannot operate because it requires a non-front high vowel for its operation. This means that only the fronted allophone of the high vowel generated by Vowel Fronting Rules 2 and 3 can occur in this position.

awitja /a + witji/	[awitja]	'fog'
amwakwilya /a + mw{i} + akwilyi/	[am ^h wakwilya]	'its skin'
mwamwinya /mwa + m(w)inyi/	[m ^h wamwinya]	'firefly'
wiya /wiyi/	[wiya]	'here it is'

angwiyangkitharrpwa [aŋwiyanki^hta^hpwa] 'short-armed'
 /a + ngwiyangka + tharrpwɪ/

(iii) two compatible rules

In the following examples, the compatible Vowel Fronting Rules 1 and 2 are both operating. The obligatory co-occurrence of these two rules ensures that the deep structure word-final vowel (whether high or low) can always be identified by the of the penultimate vowel.

lyangmana	[lyæ ^h ɾmena]	'go first!'
/lyangm{ɪ} + anɪ/		
yinitjirra	[yinitʃi ^h ɾa]	'rocky outcrop'
/yɪ + {a}nɪ + tjirri/		
arrɪparrɪpa	[e ^h ɾipe ^h ɾɪpa]	'bush'
/{a} + arrɪp{ɪ} + arrɪpɪ/		
aka	[æ ^h ka]	'tree (gen.)'
/{a} + akɪ/		
athirra	[et ^h i ^h ɾa]	'hole'
/{a} + athirri/		
arrakpa	[e ^h ɾekpa]	'outside'
/arrakpɪ/		
mwiyatja	[m ^w iyæ ^h tja]	'oar'
/mwa + yatjɪ/		

2.6.1.2 Multiple allophones

Variation between allophones is very common in Anindilyakwa. The number in any one environment can vary from one to four allophones (excluding [+tense]). The high frequency of allophonic variants is due to (i) the optionality of some rules and (ii) the co-occurrence of different rules.

(i) optional rules

Free variation between two allophones occurs when the phonological rule is optional. One example for each of the

following rules is given (in order) below: Vowel Fronting Rule 3, Vowel Offglide Fronting Rule 5, Vowel Rounding Rule 2, Vowel Offglide Rounding Rule 3, Backing Rule 1, and Vowel Lowering Rule 1.

tjarrangwa /tjarrangwi/	[tjaʀaŋwa ~ tjaʁaŋwa]	'horse'
ngalhatja /ngalh{a} + atja/	[ŋaʎatja ~ ŋaʎaʔtja]	'she'
yimwithirngwa /yi + mwi + thirngwi/	[yim ^w tuʀŋwa ~ yim ^w utuʀŋwa]	'Blue Catfish'
akwalya /a + kw{ɪ} + alya/	[akwalya ~ a ^u kwalya]	'fish (gen.)'
alhika /a + lhika/	[aʎika ~ aʎuka]	'foot'
arntirnta /{a} + arntirnti/	[aŋtɪŋta ~ aŋtəŋta]	'heart'

In the following examples, the three different vowel allophones in the one position are created by the optional application of Vowel Rounding Rule 2 or Vowel Lowering Rules 1 or 2. The three allophones freely vary.

alhapwira [aʎap ^w uʀa ~ aʎap ^w oʀa ~ aʎap ^w əʀa] /{a} + alhapwiri/	'tree bark'
thimwingkwirra [tʊm ^w uŋkwuʀa ~ tʊm ^w uŋkwoʀa ~ tʊm ^w uŋkwaʀa] /tha + mwingkwɪ + rra/	'Blue-winged Kingfisher'

The following derivation illustrates the interaction of optional fronting and rounding rules which produce multiple allophones. Note that, while Vowel Fronting Rule 2 can be iterative, it does not have to be applied beyond the penultimate syllable in a morpheme. Some Anindilyakwa speakers appear to be consistent in that they have not been recorded as

applying this rule iteratively, as in the following derivation.

wirratjitja				'bird (gen.)'
[w+uʔatjitja ~ wuʔatjitja ~ wuʔatjitja ~ wuʔatjitja]				
DEEP STRUCTURE	warra	+	atjitja	
VFR.1	===	warra	+	atjitja
VFR.2 (twice)	===	warra	+	a/æ tjitja
VFR.5	===	w ^h arra	+	a/a ^h /æ /æ ^h tjitja
NTR.1	===	w ^h arra	+	a/a ^h /æ /æ ^h tjitja
VRD.2	===	w ^h /urra	+	a/a ^h /æ /æ ^h tjitja
VDEL.1	===	w ^h /urra{a}		a/a ^h /æ /æ ^h tjitja
NTR.2	===	w ^h /urra		a/a ^h /æ /æ ^h tjitja
	3:1			winged

Vowel Fronting Rule 2 is usually applied across a morpheme boundary to the Nominal Classifying prefix /a/, resulting in just one allophone. In very precise speech, there is an occasional utterance which retains the basic allophone [a]. The two allophones are shown below.

angampa	[eŋæ mpa ~ aŋæ mpa]	'place named'
/a + ngampi/		
alyangma	[elyæ ŋma ~ alyæ ŋma]	'southeast'
/a + lyangmi/		
amwapa	[emepa ~ am ^w epa]	'song'
/a + m(w)api/		

(11) two different rules

When the Nominal Classifiers /yɪ/ or /nɪ/ precede a morpheme-initial rounded peripheral consonant (excluding /w/) the fronted allophone [i] is retained and varies with the rounded allophone [u]. Note that Vowel Rounding Rule 1 can follow the operation of Vowel Fronting Rule 1 because it operates on any high vowel. The most common allophone preceding a rounded

peripheral velar consonant is [u] in all words but yingwa 'Torresian Crow'; the most common allophone preceding a rounded peripheral labial consonant is [ɨ].

nɨpwɨkwaya [nɨpwɨkwɨya ~ nɨpwɨkwɨya] 'that one coming'
/nɨ + pwɨkwaya/

yɨmwɨrrɨya [yɨmwɨɾɨya ~ yɨmwɨɾɨya] 'Green Tree-ant'
/yɨ + mwɨ + rrɨya/

yɨkwɨrrɨŋɨna [yɨkwɨɾɨŋɨna ~ yɨkwɨɾɨŋɨna] 'Channel-billed Cuckoo'
/yɨ + kwɨ + rrɨŋɨ + nɨ/

yɨŋwɨrrmwa [yɨŋwɨɾmwa ~ yɨŋwɨɾmwa] 'Saratoga Fish'
/yɨ + ŋwɨrrmwa/

There are also a few examples with free variation between [ɨ] and [u] following /y/ or /n/ and preceding the consonant di-cluster /kw/ in which the intervening high front vowel has been deleted. The fronted allophone is conditioned by Vowel Fronting Rule 2 and the rounded allophone by Vowel Rounding Rule 1.

mɨyɨɾɨkwɨ [mɨyɨɾɨkwɨ ~ mɨyɨɾɨkwɨ] 'starfish'
/mwa + yɨɾɨk{ɨ} + wɨ/

ɨnɨŋkwɨ [ɨnɨŋkwɨ ~ ɨnɨŋkwɨ] 'pronged spear'
/a + nɨŋk{ɨ} + wɨ/

The Consonant De-rounding Rule is optional and the presence or absence of the consonantal rounding determines whether Vowel Front Rule 2 can be applied to that syllable. This leads to variation in the allophones of the preceding vowel, as shown in the following derivation.

nɨyɨpwɨtjɨpwɨna 'he separated it'
[nɨyɨpwɨtjɨpwɨna ~ nɨyɨpwɨtjɨpɨna ~ nɨyɨpɨtjɨpɨna]

DEEP STRUCTURE nɨ + yɨpwɨ + tjɨpwɨ + ɨnɨ

VFR.1 ==> nɨ + yɨpwɨ + tjɨpwɨ + ɨnɨ

VFR.2 ==> nɨ + yɨpwɨ + tjɨpwɨ + ɨnɨ

VDEL.1	===	n1	yapwɪ	tjapw{ɪ}	en1
CDR	===	n1	yapwɪ	tjap{w}	en1
VFR.2	===	n1	yapwɪ	tjep	en1
CDR	===	n1	yap{w}ɪ	tjep	en1
VFR.2	===	n1	yepɪ	tjep	en1
NTR.2	===	n1	yepɪ	tjep	ena
3:3(1) REDUP separate TNS					

The vowel Fronting Rule 2 frequently provides the environment in which the Consonant De-rounding Rule operates. Vowel Fronting Rule 2 can then operate iteratively. This iteration often produces harmony in a sequence of fronted allophones within a word, as in the above and the following derivations.

akwilyangpwirrarra [akwilyanp^{wi}ɪr^ɪra ~æ^ɪɪlyanpɪr^ɪra] 'forked'

DEEP STRUCTURE		a	+ kwɪ	+ lyangka	+ pwɪ	+ rrarɪɪ
VFR.1	===	a	+ kwɪ	+ lyangka	+ pwɪ	+ rrarɪɪ
VFR.2 (twice)	===	a	+ kwɪ	+ lyangka	+ pwɪ	rrarɪɪ
CDR	===	a	+ kwɪ	+ lyangka	+ p{w}ɪ	rrarɪɪ
NTR.1	===	a	+ kwɪ	+ lyangkɪ	+ pɪ	rrarɪɪ
SDEL		a	+ kwɪ	+ lyang{kɪ}	pɪ	rrarɪɪ
VFR.2 (twice)		a	+ kwɪ	lyæŋg	pɪ	rrarɪɪ
CDR	===	a	+ k{w}ɪ	lyæŋg	pɪ	rrarɪɪ
VFR.2	===	æ	kɪ	lyæŋg	pɪ	rrarɪɪ
NTR.2	===	æ	kɪ	lyæŋg	pɪ	rrarra
3:4 NSR head EM						forked

Consonant De-rounding almost always seems in some words but not in others. This appears to be unpredictable except to say that de-rounding and the subsequent application of Vowel Fronting Rule 2 is most likely to occur when the conditioning high vowel

is morpheme-initial, i.e., the allophone [æ]. Contrast the following pairs of examples.

angwipwina [aŋ^wup^wina ~ aŋ^wupina] 'sky'
/a + ngwi + p(w)ini/

angwamwina [eŋ^wamina ~ aŋ^wamina] 'breast milk'
/a + ng{w}i + am{w}ini/

apwiyakarpwiya [ap^wiyakarp^wiya] 'three'
/a + pwi + yarkpw + yi/

apwina [epina] 'this'
/a + p{w}ini/

wirringiwartikwiya [wu^ruŋuwa^tukiya] 'two female dogs'
/wirringa + warti + k{w}iyi/

nyirrngmwina [ni^riŋmina ~ nu^riŋm^wuna] 'blow your nose!'
/nyirrngm(w)i + ni/

2.6.2 Ordering of rules

The phonological rules in Anindilyakwa operate within the morpheme and across the morpheme boundaries. Some phonological rules operate in environments which are unique and could be placed in more than one position. Such rules have been ordered with others having the same function, e.g., fronting or lowering. Some vowel fronting rules are iterative and can operate up to three times within a word, depending upon whether the application of another rule results in a compatible environment. Rules are discussed below in their order from first to last.

Reduplication Rules for single morphemes and some multi-morphemic units other than compound stems operate immediately on the deep structure. (Note: Reduplication of other multi-morphemic units is ordered later.)

For the most part, vowel allophony forms the first major group in the ordering of phonological rules. The rules for fronting (Section 2.3.2.1) precedes all other vowel allophony rules. Strict

ordering is required in some instances: Fronting Rule 1 must precede Fronting Rule 2; and Fronting Rules 2 and 4 must precede Fronting Rule 5. Fronting Rules 1-4 must precede the optional Consonant De-rounding Rule (Section 2.5.3) which operates in the context of a fronted vowel segment, not an offglide. Vowel Fronting Rule 1 operates only once, i.e., on the morpheme-final vowel in the deep structure. Vowel Fronting Rule 2 is iterative and operates cyclically with the Consonant De-rounding Rule. The rules operate in the following order:

High Vowel Fronting Rule 1: morpheme-final /ɪ/ ==> [i]
 Vowel Fronting Rule 2: /ɪ/ ==> [i] and /a/ to [æ]
 High Vowel Fronting Rule 3: /ɪ/ ==> [i]
 Low Vowel Fronting Rule 4: /a/ ==> [æ]
 Consonant De-rounding Rule
 Low Vowel Fronting Rule 5: [a ~ æ] ==> [a' ~ æ']

The Word-medial Neutralisation Rule 1 (Section 2.1) has the effect of raising the morpheme-final low vowel /a/ in the word-medial position. This rule must follow the High Vowel Fronting Rule 1 because all morpheme-final vowels except the fronted vowel neutralise to a high central vowel which is not fronted. This rule is somewhat arbitrarily placed after all the above rules because they interact so closely and can be iterative. This placement allows Rounding Rules to operate on the neutralised vowel.

Consideration was given to placing the rounding rules for vowel allophony before those for fronting because it would simplify the consonantal features in Vowel Fronting Rule 1 by deleting [-round] and would block the operation of other fronting rules. Such ordering would, however, cause some occurrences of the unrounded high vowel to be rounded and then de-rounded again. This seems to me to be illogical and unnecessary when the present ordering allows unrounded vowels to maintain this distinctive feature throughout operations.

For the remainder of the vowel allophony rules, strict order is required in that: Fronting Rules 1 to 3 must precede Rounding Rule 2; Rounding Rule 2 must precede Lowering Rule 2; and Rounding Rule 3 must precede Rounding Rule 4. Rule ordering for the remaining vowel allophony is as follows:

High Vowel Rounding Rule 1:	/ɪ/	==>	[ʊ]
High Vowel Rounding Rule 2:	/ɪ/	==>	[ʊ]
Low Vowel Rounding Rule 3:	/a/	==>	[ɒ]
Low Vowel Rounding Rule 4:	[a]	==>	[aʊ]
High Vowel Backing Rule:	/ɪ/	==>	[ɯ]
High Vowel Lowering Rule 1:	/ɪ/	==>	[ɛ]
High Vowel Lowering Rule 2:	[ʊ]	==>	[o]

All the preceding rules except Vowel Fronting Rule 1 can be applied again wherever the following rules provide a compatible environment (e.g., after Progressive Assimilation). None of the following rules are iterative.

There are three rules which are context specific and which could be placed at various points. Placement at this point is based on similarity to allophony rules and to keep permutations to a minimum. There is no advantage in deferring these operations until after deletion or reduction rules because their environments are different. The three rules are: the High Vowel Lowering Rule 3 (Section 2.3.2.4), Prosodic Rounding (Section 2.2.5), and the VCV Reduction Rule (Section 2.5.2.4). The ordering of these rules is flexible because of their unique environments. The Lowering Rule must precede the Haplology Rule because otherwise it blocks the latter's application; VCV Reduction must follow vowel allophony rules because allophones in the surface structure often could not be generated after the reduction. There is no set order for each item listed below.

High Vowel Lowering Rule 3: [ɪ] ==> [a]
 Prosodic Rounding
 VCV Reduction Rule

The Vowel Deletion and Morpheme Final CV Deletion Rules cannot precede those for vowel allophony because the deleted segments condition preceding vowels. These rules operate only on the morpheme-final syllable and their ordering is fixed: Morpheme-final CV Deletion Rule must precede Vowel Deletion Rule 2 because otherwise the vowel would already be deleted. These two rules create the sequence of consonants necessary for the operation of the Assimilation (Section 2.7) and Fortition Rule (Section 2.12).

Morpheme-final CV Deletion Rule
Vowel Deletion Rule 2
Assimilation

The Reduplication Rules for single morphemes operate on the deep structure but, when applied to compound stems, must be applied after the vowel and syllable deletion rules. There is the occasional example in which Vowel Deletion Rule 2 is applied after reduplication and prior to either Fortition or Coalescence of two lamino-palatal consonants.

Fortition must follow Vowel Deletion Rule 2 and Morpheme-final CV Deletion Rule because a consonant does not otherwise occur in morpheme-final position. Metathesis is always ordered before Haplology. Haplology (Section 2.5.2.1) must follow Metathesis of two syllables (Flip Flop Rule 1, Section 2.9) and Assimilation. Metathesis and Haplology can precede or follow Fortition. The other two Flip Flop Rules are placed here for convenience, their only restriction being that they must follow Word-medial Neutralisation.

Fortition
Metathesis (Flip Flop Rules 1-3)
Haplology Rule

There are four remaining rules which are applied after all the above rules. Vowel Deletion Rule 1 (Section 2.5.1) must be ordered

after both Metathesis (Flip Flop Rule 1) and Initial-segment Dropping Rules (Section 2.10); the Cerebralisation Rule must follow Vowel Deletion Rule 1 because the vowels must elide prior to consonant coalescence. Pause-final Neutralisation Rule 2 which neutralises the contrast between the high and low vowels by lowering the word-final high vowel must follow the Haplology and Metathesis Rules.

Initial-segment Dropping Rule
Vowel Deletion Rule
Cerebralisation
Pause-final Neutralisation

2.7 ASSIMILATION

Regressive and progressive assimilation occurs at morpheme boundaries, the former being frequent and systematic but the latter being only found in isolated instances.

2.7.1 Regressive

A nasal assimilates to the point of articulation of the following stop at morpheme boundaries, thus changing a potential heterorganic sequence of nasal plus stop to a homorganic nasal-stop sequence. This Regressive Assimilation occurs after the application of the Syllable Deletion and Vowel Deletion Rules.

angwiyanthirrpwira	[aŋwiyant ^h ɪr ^h p ^h wu ^h ɪa]	'straight arm'
DEEP STRUCTURE	a + ngwiyangka + thirrpwiri	
VFR.3	==> a + ngwiyangka + thirrpwiri	
NTR.1	==> a + ngwiyangk + thirrpwiri	
VRD.1	==> a + ngwiyangk + thirrpwuri	
SDEL	==> a ngwiyang{k} thirrpwuri	
ASSIM	==> a ngwiyanh thirrpwuri	
NTR.2	==> a ngwiyanh thirrpwura	
	3:4 lower arm	straight

Compare the following sets where the first word exemplifies a morpheme with an unassimilated nasal in contrast with morphemes with the assimilated nasal.

angwiyangkīwiyita		'straight arm'
/a + ngwiyangka + wiyiti/		
3:4	lower arm	straight
angwiyantjirriṛra	[aŋwiyantjiriṛa]	'long arm'
/a + ngwiyang{ka} + tjirri + rra/		
3:4	arm	long SF
mwarngkirringka		'look in [his] eye!'
/Ø + mw{a} + arngkwi + rringka/		
2Sg 3:5	eye	see
mwarpwatja	[mʷaṛmpʷa:tja]	'hit [his] eye!'
/Ø + mw{a} + arng{kwi} + pwatja/		
2Sg 3:5	eye	hit
wingkilharritja		'drop it!'
/wi + ngki + lharritja/		
3:4	ASR	drop
wintjalhitja	[wiŋtjalitja]	'poke it out!'
/wi + ng{kɪ} + tjalhitja/		
3:4	ASR	poke out
naniyarringka		'old man'
/n{ɪ} + ani + ya:ringka/		
3:3(i)	n.hfem	old
nantjarrngalyilya	[nʌntjaɹŋalyilya]	'boy'
/n{ɪ} + an{ɪ} + tjarr{mɪ} + ŋalyilyi/		
3:3(i)	n.hfem	small tread on

Regressive assimilation, in the data below, follows the reduction of the consonant di-cluster to a nasal (see Section 2.5.2.3) and the application of the Morpheme-final CV Syllable Deletion Rule (see Section 2.5.2.2). A word derivation is given for the first example, followed by two pairs of words illustrating the full and reduced morphemes.

wilhangantjalhana 'carry its head!'

DEEP STRUCTURE	wɪ + lhangarngka + tjalhanɪ
VFR.1	==> wɪ + lhangarngka + tjalhanɪ
VFR.2 (twice)	==> wɪ + lhangarngka + tjelhenɪ
VRD.2	==> wu + lhangarngka + tjelhenɪ
SDEL	==> wu lhangarn{ka} tjelhenɪ
ASSIM	==> wu lhangany tjelhenɪ
	3:4 head carry

wingarngkirithana 'cut the shoulder!'
/wɪ + ngarngka + rithanɪ/

winganthirriwarna 'bury the shoulder!'
/wɪ + ngarng{ka} + thirriwarnɪ/

alharrngkwawirrariya 'bad things'
/a + lharrngkw{i} + awirrariya/

alhantjirrirra 'long things'
/a + lharrng{kwi} + tjirrirra/

Regressive assimilation of the nasal in the Gender morpheme ani- (non-human.feminine) occurs when it precedes the Inalienable Possession morpheme mwɪ-. This process is systematic but restricted to words with the nominal classifying prefixes a- or mwa-. The assimilation is often followed by the Haplology Rule (see Section 2.5.2.1). A word derivation is given for the first example and this is followed by substitution sets.

mwamwilharrngkwangwiramwa 'Pink Hibiscus'

DEEP STRUCTURE	mwa + ani + mwɪ + lharrngkwɪ + angwɪrɪ + amwɪ
ASSIM	==> mwa amwi mwɪ lharrngkwɪ angwɪrɪ amwɪ
HAPL	==> mwa a{mwi} mwɪ lharrngkwɪ angwɪrɪ amwɪ
VDEL.1	==> mw{a} a mwɪ lharrngkw{i} angwɪr{i} amwɪ
NTR.2	==> mw a mwɪ lharrngkw angwɪr amwa
	3:5 n-hfem INALP things fire PROP

yini mwamwiwa /yɪ + {a}ni + mw{ɪ} + amwiwɪ/	'egg'
a(mwa)mwamwiwa /{a} + ani + mw{ɪ} + amwiwɪ/	'round [berry]'
mwa(mwa)mwamwiwa /mw{a} + ani + mw{ɪ} + amwiwɪ/	'round [yam]'
nanimwakwilya /n{ɪ} + ani + mw{ɪ} + akwilya/	'his skin'
mwamwakwilya/ /mw{a} + a{nɪ} + mw{ɪ} + akwilya/	'its skin'
amwakwilya /{a} + a{nɪ} + mw{ɪ} + akwilya/	'its skin'
anikiyalhilha /{a} + ani + hɪ + yalhilha/	'shy'
mwamwikwiyalhilha /mwa + mwɪ + kwɪ + yalhilha/	'crab sp.'
mwamwipwiyakatja ~ mwanipwiyakatja /mw{a} + ani ==> amwɪ + pwɪ + yakatja/	'friends'

The demonstrative pronoun deep structure root, akani 'this', is irregular. The variant anani is formed by regressively assimilating the second CV syllable.

amwirntakakana ~ amwirntakanana /a + mwirntak{a} + akani ~ anani/ 3:4 PL this	'these'
anana /{a} + anani/ 3:4 this	'this'

Regressive (partial) assimilation also occurs in the language name itself. The prenasalised velar stop is partially assimilated to a prenasalised lamino-dental stop even though a vowel intervenes before the following lamino-palatal lateral.

aninthilyakwa /{a} + ani + ngkwi ==> nthi + lyakwi/ 3:4 n-hfem NSR speak	(language name)
--	-----------------

2.7.2 Progressive

Progressive assimilation is unsystematic and is, therefore, rare. In three of the third person singular demonstrative pronouns, the two variants are both the result of progressive assimilation in the root, *akani* 'this'. The final CV syllable in the root assimilates to the preceding syllable; and the first CV syllable assimilates to the preceding syllable which is the nominal classifying prefix. (Note that the vowels are changed in accordance with Fronting Rule 4.)

yakaka ~ yayaka	[yakaka ~ ya ^ɪ yaka]	'this [sr...]
nakaka ~ nanaka	[nakaka ~ nenaka]	'this [n...]
thakaka ~ thathaka	[^ʔ akaka ~ ^ʔ ataka]	'this [woman]'

The lateral in the suffix *-lhangwa* can optionally assimilate to the final nasal in the preceding root. The Haplology Rule (see Section 2.5.2.1) is then applied and the first syllable elides. Aborigines do not use the assimilated form in literature and, for reason, it is regarded as sub-phonemic. It may well be that, with more diversified literary styles, the two forms will appear (as has happened in English contracted forms, e.g. 'don't, it's').

mwiringwanilhangwa	[m ^w urungwenanwa]	'from the jungle'
	mwurungweni + lhangwa	
ASSIM	==> mwurungweni nangwa	
HAPL	==> mwurungwe{ni} nangwa	
apwapwurnilhangwa	[ap ^w ap ^w urnanwa]	'from many'
	apwapwurni + lhangwa	
ASSIM	==> apwapwurni rnangwa	
HAPL	==> apwapwu{rni} rnangwa	

The first person possessive pronoun is usually coalesced to nganyangwa but at least one Aborigine spells the word as ngayinangwa, showing that the underlying representation is known. The CVC sequence drops the intervening vowel and the consonants coalesce and assimilate to a nasal. The pronoun, /ngantja/ 'to me', adopts the coalesced nasal as its base. (For Fortition, see Section 2.12.)

nganyangwa		'mine'
	ngaya + lhangwa	
VDL	==> ngay{ʔ, + lhangwa	
COALESCENCE	==> nga lyangwa	
ASSIM to NASAL	==> nga nyangwa	

There is an isolated case of progressive assimilation which follow the application of the Morpheme-final CV Syllable Deletion Rule. The root-initial consonant assimilates to the point of articulation of the preceding consonant.

mwantjalhthahana	[mʷaŋtja]talena]	'carry its stomach!'
/mwɪa} + antjalh{ka} + tjalhani	==> thalhani/	
3:5 stomach	carry	

2.8 REDUPLICATION

Reduplication is regressive and occurs in all word classes except particles. The rules are applied mostly to single roots but, to a lesser extent, to prefixes and multi-morphemic parts of words. In verbs and adverbs, the reduplication signifies intensity of the action or state; in nominals, it indicates intensity or plurality. The reduplication is obligatory in some nouns but optional in all other word classes. The reduplicated form for each word is almost always constant.

Anindilyakwa has many lexical roots consisting of sequences of identical syllables which pattern in the same way as reduplicated sequences, e.g., athatha 'holey'; lhalha 'shallow'; arngkirnka 'eye'; yikwithikwitha 'chest'. Wherever two identical syllables occur in such morphemes the Haplology Rule can operate.

Reduplication rules operate on the deep structure forms of the morphemes. Sommerstein (1977: 200) states that "many phonological processes can be expressed with greater generality if the syllable and its boundaries are allowed to be mentioned in their statement". The syllable is used here in preference to sequences of consonants and vowels because the rules are thus simplified and the overall system more apparent. Because all morphemes in Anindilyakwa end in a vowel the final consonant is dropped when a closed syllable would otherwise conclude the reduplicated portion.

In the following examples, the arrow ===== indicates the regressive nature of the reduplication (not "rewrite"). The reduplicated form of a word includes all syllables shown on both sides of the arrow. In the examples, the reduplicated portion is underlined.

2.8.1 Consonant-initial morphemes

The rules for reduplication of consonant-initial morphemes have been posited on the basis of the number of syllables. Roots and reduced compound stems can be reduplicated. Roots in Anindilyakwa have one to three syllables.

2.8.1.1 Mono-syllabic

Mono-syllabic reduplication can occur in a morpheme which consists of a single consonant-initial syllable, as shown in Rule 1A.

REDUPLICATION RULE 1A: CONSONANT-INITIAL MONC-SYLLABIC MORPHEMES

SYL 1

i.e., in morphemes of one syllable, that syllable reduplicates.

angkalya / angkingkalya 'wet / very wet'

DEEP STRUCTURE a + ngk + + alya

REDUP. 1A = = = a + ngk + + ngk + + aly a

VFR.1 =::, a + ngk1 + ngk1 + alya

VFR.2 ==: e ngk1 ngk1 alya

```
VDEL.1      ::= e      ngk1      ngk{1}      alya
```

3:4 REDUP ASR wet

nipipakinimwa

$$/n_1 + p_1 + p\{1\} + aka + n_1 + mw_1/$$

3:3(i) REDUP drink CAUS TNS PIP

'He was keeping on drinking.'

nikkamwarra

/n1 + k1 + k{1} + amwarra/

3:3(1)	REDUP	ASR	front
--------	-------	-----	-------

'very ignorant [man]'

2.8.1.2 Di-syllabic

The common pattern for reduplication of di-syllabic roots which begin with a consonant is shown below.

REDUPLICATION RULE 18: CONSONANT-INITIAL DI-SYLLABIC MORPHEMES

SYL SYL ===== SYL SYL
1 2 1 2

i.e., in roots consisting of two syllables, both syllables reduplicate. (The final vowel of the reduplicated portion is neutralised to a high vowel by NTR.1.)

thimwarrngimwarrnga

/tha + mwarrnga + mwarrnga/

3:2(ii) REDUP black

'cricket (gen.)'

ni|harrngkwilharrngkwithakina
 /ni + lharrngkwɪ + lharrngkwɪ + thakə + ni/
 3:3(1) REDUP things cook TNS
 'He cooked many things.'

thathikwiyangpiyangpa
 /th{a} + atha + kwɪ + yangpɪ + yangpɪ/
 3:2(1) hfem NSR REDUP speak
 'loquacious [woman].'

There are a few examples in which an alternative pattern for the reduplication of the morpheme occurs (7.4% of 202 words with reduplication of a consonant-initial di-syllabic root). Only the first syllable is reduplicated when the root begins with a simple stop, viz., /pw/, /kw/, /th/ or /tj/. In accordance with the Anindilyakwa system for each morpheme to end in a vowel, the syllable-final consonant of the reduplicated part is dropped. In some instances, the reduplication of only the first syllable reduces a sequence of syllables with complex consonant clusters.

apwipwirrngkwiwilyarra
 /a + pwɪ + pwirrngkwɪ + wilyarra/
 3:4 REDUP river middle
 'very middle of the river'

nikwikwirtanamwa
 /ni + Ø + kwɪ + kwirt{ɪ} + an{ɪ} + amwɪ/
 3:3(1) 3:4 REDUP hook TNS NPIP
 'He is keeping on catching fish.'

nitjitjiranimwa
 /ni + Ø + tjɪ + tjir{ɪ} + anɪ + mwɪ/
 3:3(1) 3:4 REDUP push TNS PIP
 'He was keeping on pushing it.'

warnikwitjitjingwa
 /warnɪ + k(w)ɪ + tjɪ + tjingwɪ/
 3:1 NSR REDUP die
 'Barn owl'

atjitjirrkiwilyarra
 /a + tjɪ + tjirrki + wilyarra/
 3:4 REDUP bone middle
 'very middle of the river'

The above examples illustrate a consistent feature in the

reduplication of stop-initial roots but there are a few other random examples in which only the first syllable is reduplicated.

nimwimwirngkinimwa

/ni + mwɪ + mwɪrŋka + ni + mwɪ/
3:3(1) REDUP understand TNS PIP
'He was keeping on understanding.'

nimwimwinganimwa

/ni + Ø + mwɪ + mwiŋ{a} + ani + mwɪ/
3:3(1) 3:4 REDUP smell TNS PIP
'He was keeping on smelling it.'

yikwirrirrithangwa

/yɪ + kwɪ + rri + rriθa + anga/
3:3(1) NSR REDUP scratch TNS
'Green Sawfish'

ngarrilhalhikanɪ::wa ~ ngarrilhalhikanɪ::wa

/ngarra + lhi ~ lha + lhi{k}{a} + ani + wɪ/
1IncPl REDUP go TNS cont.act
'We were keeping on going.'

2.8.1.3 Tri-syllabic

The most common pattern for the reduplication of tri-syllabic roots which begin with a consonant is as follows:

REDUPLICATION RULE 1C: CONSONANT-INITIAL TRI-SYLLABIC ROOTS

SYL	SYL	<=====	SYL	SYL	SYL
1	2		1	2	3

i.e., in roots of three syllables, only the first two syllables reduplicate. (The final vowel of the reduplicated portion is neutralised to a high vowel by NTR.1.)

nimwalyangkanimwa / nimwalyimwalyangkanimwa

'he was playing' / 'he was keeping on playing'

DEEP STRUCTURE		nɪ +		+ mwalyangka	+ ani	+ mwɪ
REDUP.1C	==>	ni + mwalya	+ mwalyangka	+ ani	+ mwɪ	
VFR.1	==>	ni + mwalya	+ mwalyangka	+ ani	+ mwɪ	
VFR.2	==>	nɪ + mwalya	+ mwalyangka	+ eni	+ mwɪ	
NTR.1	==>	ni + mwalyɪ	+ mwalyangkɪ	+ eni	+ mwɪ	

VRD.1	===	nu	mwalyu	mwalyangk	enu	mw1
VRD.2	===	nu	mwalyu	mwalyangk	enu	mwu
VDEL.1	===	nu	mwalyu	mwalyangk{+}	enu	mwu
NTR.2	===	nu	mwalyu	mwalyangk	enu	mwa
		he	REDUP	play	INS	PIP

The following examples illustrate this reduplication in various word classes. The dropping of the morpheme-final consonant/s is shown in the last two examples.

n1lhaw1lhaw1rath1n1mwa
 /n1 + lhaw1 + lhaw1r1 + tha + n1 + mw1/
 3:3(1) REDUP bring INCH INS PIP
 'He was keeping on returning.'

mw1ngw1n1ngw1nak1w1lyarra
 /mwa + ng(w)1n1 + ng(w)1naka + w1lyarra/
 3:5 REDUP knee middle
 'the centre of a sand dune'

n1mwarnt1mwarntarrkan1mwa
 /n1 + mwarnta + mwarnt{arrka} + arrk{a} + an1 + mw1/
 3:3(1) REDUP hand pull INS PIP
 'He was keeping on pointing.'

mw1lh1k1lh1karrrk1w1lyarra
 /mwa + lhika{rr} + lhikarrka + w1lyarra/
 2:5 REDUP ?heart middle
 'the centre line on a road'

n1y1k1y1karrng1namwa
 /n1 + yika{rr} + yikarrnga + n{1} + amw1/
 3:3(1) REDUP gasp TNS NPIP
 'He is keeping on gasping.'

As in the consonant-initial di-syllabic roots, there are some rare examples (1.4% of the tri-syllabic corpus) for which an alternative pattern for the reduplication of the morpheme occurs. In noun roots, this type of reduplication only occurs in loanwords. Only the first syllable is reduplicated when the root begins with a simple stop, viz., /pw/, /kw/, /th/ or /tj/. There is also one example in which only the first syllable is reduplicated in a root which begins

with a lamino-palatal nasal.

wirripwipwingkawa
 /wirra + pwɪ + pwingkawɪ/
 3:1 REDUP Mk captain.
 'bosses'

nithithirrintinimwa
 /nɪ + thɪ + thirrintɪ + nɪ + mwɪ/
 3:3(1) REDUP descend TNS PIP
 'He was keeping on descending.'

yingitjtjirapwina
 /yinga + Ø + tjɪ + tjirap(w)ɪ + nɪ/
 3:2(1) 3:4 REDUP pour TNS
 'She was pouring it out.'

ninyinyirrngmwiniwma
 /nɪ + nyɪ{rrng} + nyirrngmwɪ + nɪ + mwɪ/
 3:3(1) REDUP sneeze TNS PIP
 'He was keeping on sneezing.'

2.8.2 Vowel-initial morphemes

When the first syllable of a morpheme is a vowel two patterns emerge with considerable frequency. The reduplication rules still operate according to the number of syllables but the root is divided in two different ways. One pattern operates from the first consonant (simply ignoring the initial V syllable) and its reduplicated portion could be regarded alternatively as an infix.

2.8.1.2 Di-syllabic

The most frequent type of reduplication for vowel-initial di-syllabic roots operates with Reduplication Rule 1B. Whether the morpheme begins with a consonant or vowel is irrelevant in most data.

nangkankirnamwa						'he is keeping on fetching it'
DEEP STRUCTURE		nɪ		+ angka	+ rnɪ	+ amwɪ
REDUP.1B	==>	nɪ	+ angka	+ angka	+ rnɪ	+ amwɪ
VFR.1	==>	nɪ	+ angka	+ angka	+ rnɪ	+ amwɪ
NTR.1	==>	nɪ	+ angkaɪ	+ angkaɪ	+ rnɪ	+ amwɪ

VRD.2 ==> n1 + angk1 + angk1 + rn1 + amwu
VDEL.1 ==> n{1} angk{1} angk1 rn{1} amwu
NTR.2 ==> n angk angk1 rn amwa
 3:3(1) REDUP fetch TNS 1 IP

nanganginamwa

/n{1} + Ø + ang{a} + anga + n{1} + amw1/
3:3(1) 3:4 REDUP bite TNS NPIP
'He is keeping on biting it.'

ngarrarrkarrkinimwa

/ngarr{a} + Ø + arrk{a} + arrka + n1 + mw1/
1ExcP1 3:4 REDUP pull TNS PIP
'We were keeping on pulling it.'

There is, however, reduplication of only one syllable in some di-syllabic morphemes which begin with a V syllable. This alternate pattern is quite rare and can be found in variation with the one above. Reduplication Rule 1A only needs to be modified to account for the non-reduplicating morpheme-initial syllable, as stated in Rule 2A.

REDUPLICATION RULE 2A: VOWEL-INITIAL DI-SYLLABIC MORPHEMES

SYL SYL ..===== SYL
 1 2

i.e., the first V syllable is ignored and the second consonant-initial syllable reduplicates. (The final vowel of the reduplicated portion is neutralised to a high vowel by NTR.1.)

wirrathitharimwiwiya

'big women'

DEEP STRUCTURE wirra + atha + arimwi + wiya
REDUP.2B ==> wirra + a tha + tha + arimwi + wiya
VFR.1 ==> wirra + a tha + tha + arimwi + wiya
VFR.2 ==> wirra + a tha + tha + arimwi + wiya
NTR.1 ==> wirr1 + a th1 + th1 + arimwi + wiya
VRD.1 & 2 ==> wurra + a th1 + th1 + arumwu + wiya
VDEL.1 ==> wur{1} a th1 th{1} arumwu wiya

NTR.2 ==> wurr a th+ th arumwu wıya
 3:1 REDUP hfem big PL

nangkingmwathina 'he kept on stealing'
 /n{ı} + a ngkı ng{kı} + mwatha + mwı/
 3:3(ı) REDUP: unspec steal PIP

napwıpwırangkinıwa 'he kept on searching'
 /n{ı} + a pwı pwı + rangkı + nı + mwı/
 3.3.(ı) REDUP ??? search TNS PIP

Variation between the two patterns in this sub-section has been accepted in the following example by some of the language speakers. It is anticipated that such variation will be found in other words with further checking.

narrkarrkinıwa ~ narrkırckinıwa
 /n{ı} + Ø + a rrka (a)rrka + nı + mwı/
 3:3(ı) 3:4 REDUP:pull TNS PIP
 'He was keeping on pulling it.'

2.8.2.2 Tri-syllabic

Reduplication Rule 1C also operates on tri-syllabic roots with an initial vowel, i.e., there is no distinction between the consonant- and vowel-initial morphemes. This is one of two patterns but by far the most frequent, covering 60.6% of the 94 vowel-initial corpus.

niwalhkalhkayanamwa 'they are keeping on standing'

DEEP STRUCTURE		nıwa		+ alhkaya		+ anı		+ amwı
REDUP.1C	==>	nıwa		+ alhka		+ alhkaya		+ anı
VFR.1	==>	nıwa		+ alhka		+ alhkaya		+ ani
VFR.2	==>	nıwa		+ alhka		+ alhkaya		+ enı
VRD.2	==>	nuwa		+ alhka		+ alhkaya		+ enı
VDEL.1	==>	nıw{a}		alh{k}{a}		alhkay{a}		en{ı}
NTR.2	==>	nıw		alh{k}		alhkay		en
		3:1		REDUP		stand		TNS
								NPIP

ampwampwilyimwa 'two at a time'
 /[a] + ampw{i} + ampwilyi + mwi/
 3:4 REDUP two PROP

nalyalyipwarnimwa 'he was keeping on eating'
 /n{i} + aly{i} + alyipw{i} + arni + mwi/
 3:3(ii) REDUP eat TNS PIP

narrngarrngalhanamwa 'it keeps on itching'
 /n{a} + arrng{a} + arrngalh{a} + an{i} + amwi/
 3:4 REDUP itch TNS NPIP

amwikernarnarra 'Turkey Bush'
 /a + mwi + k{wi} + arn{a} + arnarra
 3:4 INALP NSR REDUP necklace

The following examples illustrate the deletion of the syllable-final consonant at the end of the reduplicated portion of the root. Note that the preceding vowel is subsequently deleted by the Vowel Deletion Rule.

akwarrarrikpa 'turtle pole'
 /a + kw{i} + arri{k} + arrikp:/
 3:4 NSR REDUP throw

yingarrarrangpwinamwa
 /ying{a} + arr{a} + arrangpw + n{i} + amwi/
 3:2(ii) REDUP propagate TNS NPIP
 'She [the turtle] is keeping on laying eggs.'

In the second alternative, reduplication begins to operate on the first consonant-initial syllable (similar to Reduplication 2A), i.e., it ignores the initial V syllable. Rule 2B has the same system as Rule 1B in that both the consonant-initial syllables are reduplicated. The rule applies to 28% of a corpus of 94 vowel-initial morphemes.

REDUPLICATION RULE 2B: VOWEL-INITIAL TRI-SYLLABIC MORPHEMES

SYL	SYL	SYL	<<=====	SYL	SYL
1	2	3		2	3

i.e., the first syllable consisting only of a vowel is ignored. In the remaining di-syllabic portion, both syllables reduplicate. (The

final vowel of the reduplicated portion is neutralised to a high vowel by NTR.1.)

wirraramwa / wirrarimwirimwa 'big [dog] / big [people]'

DEEP STRUCTURE warra + aramwa

REDUP.2B ==> warra + a ramwa + ramwa

NTR.1 ==> warri + a ramwa + ramwa

VRD.1 & 2 ==> wurra + a rumwu + rumwu

VDEL.1 ==> wurra{+} a rumwu rumwu

NTR.2 ==> wurra a rumwu rumwa

3:1 REDUP big

arakpwirakpwawiya 'a very long time ago'
/a rakpwi rakpw{i} + awiya/
REDUP already TPRG

The same type of exceptions preceding stops (including prenasalised stops) occur as in the reduplication of the consonant-initial di-syllabic morphemes, i.e., only the first consonant-initial syllable is reduplicated. When the first syllable of the di-syllabic part is closed, the consonant is deleted in the reduplicated portion.

napwipwingkartjinimwa
/n{i} + a p{w}i p{w}ingk{i} + artja + ni + mwi/
3:3(i) REDUP: hump-backed stand TNS PIP
'He was keeping on stooping down.'

nathithirranimwa
/n{i} + Ø + a thi thirr{a} + ani + mwi/
3:3(i) 3:4 REDUP: spear TNS PIP
'He was keeping on stabbing it.'

natjitjarrinimwa
/n{i} + Ø + a tja tjarra + ni + mwi/
3:3(i) 3:4 REDUP wash TNS PIP
'He was keeping on washing it.'

nimwarntjirntirrkpwatjanimwa
/ni + mw{a} + a rnti{rr} rntirrk{a} + pwatj{a} + ani + mwi/
3:3(i) 3:5 REDUP scrotum hit TNS PIP
'He was keeping on hitting the plum tree.'

nampimpirraranimwa
 /n{i} + a mpi mpi{rrkw1} + rrari + n1 + mwi/
 3:3(i) REDUP ?eye-shaped slow TNS PIP
 'He was keeping on waiting.'

A tri-syllabic vowel-initial morpheme can be reduplicated in its entirety. Only two examples have been found but similar multi-morphemic constructions are described in the next sub-section.

narrakparrakpitjinimwa
 /n{i} + arrakp{i} + arrakpi + tja + n1 + mwi/
 3:3(i) REDUP spit TSR TNS PIP
 'He was keeping on spitting.'

arriparripa 'bush, scrub'
 /{a} + arrip{i} + arripi/
 3:4 REDUP ?throw

atjiwatjiwa 'Rock Fern'
 /atjiw{i} + {a} atjiwi/
 REDUP 3:4:fern

apwiyapwiya 'tree sp.'
 /apwiy{i} + {a} apwiyi/
 REDUP 3:4:visible

2.8.3 Multi-morphemic

The reduplication of united morphemes operates under one of the Reduplication Rules above. Two syllables reduplicate in all but three cases in which all three syllables reduplicate. There are two morphological structures to which stem reduplication is commonly applied: reduced compound stems, the combination of a root/stem and a preceding grammatical morpheme, viz., Nominaliser, Adjectiviser, Gender or Possession prefix, or a root plus inflection.

A consonant-initial multi-morphemic unit is reduplicated by Reduplication Rules 1A, 1B, or 1C. Reduplication Rule 1C operates on units of three or more syllables. When a compound stem or a root plus inflection is reduplicated the reduplication occurs after the morphemes are united. The first derivation illustrates the

reduplication of a compound stem consisting of two roots.

aritjiritjirra 'native bee sp.'

DEEP STRUCTURE	a	+ rakwa	+ tjirra
VFR.1	==> a	+ rakwa	tjirra
VFR.2	==> a	+ rakwa	tjirra
SDEL	==> a	+ r{akwa}	tjirra
VFR.2	==> a	+ ri	tjirra
REDUP.1C	==> a	+ ritji	+ ri
NTR.2	==> a	ritji	ri
	3:4	REDUP	body long

awantjiwantjirra 'bristles'

/a + wantji + wang{ka} tjirra/
3:4 REDUP ?head: long

alyingpwilyingpwirra 'grass sp.'

/a + lyingpwi + lying{kwi} p{w}irra/
3:4 REDUP hair: wide

nilhantharrkina / nilhanthilhantharrkinimwa
/ni + lhanthi + lhan{gka} tharrka + ni + mwi/
3:3 REDUP head ?send TNS PIP
'He thought.' / 'He was keeping on thinking.'

ngarrirrakpwatjanimwa / ngarrirrakpwirrakpwatjanimwa
/ngarra + rrakpwi + rrak{a} pwatj{a} + ani + mwi/
1IncPI REDUP forehead:hit TNS PIP
'We were knocking.' / 'We were keeping on knocking.'

thimwamwintjarrmwintjarmmwa 'grasshopper'
/tha + mwa + mwintjarr{mwi} + mwin{tjirra} tjarmwi/
3:2(11) INALP REDUP skin: thin

The reduplication of the stem-initial heterorganic consonant di-cluster presents a problem because Anindilyakwa syllables do not begin with this consonant sequence elsewhere. It does, however, only occur in this one very restricted environment where a vowel intervenes in the deep structure and the first morpheme is always a mono-syllabic CV syllable. As reduplication occurs prior to all other rules (except for the reduplication of a compound stem) Reduplication Rules

1B and 1C apply, with reduction of both parts of the reduplication being reduced later. The fronted vowel must be present in the reduplicated portion in order to generate the correct morpheme-final fronted vowel, as shown in the following derivation. (Note: This apparent reduplication of a stem-initial heterorganic consonant di-cluster appears to provide a strong basis upon which to divide the prenasalised stop into two distinct phonological segments (see Section 2.2.2.2). Such a consonant sequence is, however, in the surface structure not the deep structure where the consonants are separated by a vowel.)

akpwiringka / akpikpwiringka 'dry' / 'very dry'

DEEP STRUCTURE	a	+ kɪ	+ pwɪ	+ rɪŋka
REDUP.1B	==> a + kɪ pwɪ	+ kɪ	pwɪ	+ rɪŋka
VFR.1	==> a + kɪ pwɪ	+ kɪ	pwɪ	+ rɪŋka
VFR.2	==> e kɪ pwɪ	kɪ	pwɪ	rɪŋka
VFR.5	==> e ^ɪ kɪ pwɪ	kɪ	pwɪ	rɪŋka
CDR	==> e ^ɪ kɪ p{w}ɪ	kɪ	pwɪ	rɪŋka
VRD.2	==> e ^ɪ kɪ pɪ	kɪ	pwu	rɪŋka
SDEL	==> e ^ɪ k{ɪ} pɪ	k{ɪ}	pwu	rɪŋka
NTR.2	==> e ^ɪ k pɪ	k	pwu	rɪŋka
	3:4 REDUP	ASR	EM	dry

akwingpwingpwatja 'perfume'

/a + kwi + ngpwi + ng{kwi} pwatja/
3:4 NSR REDUP unspec smell

ningpwitjinimwa / ningpwingpwitjinimwa

/ni + ngpwi + ng{kɪ} pwitji + ni + mwi/
3:3 REDUP ASR: lick TNS PIP

'He was licking it.' / 'He was keeping on licking it.'

nirntarrkinimwa / nirntirntarrkinimwa

/ni + Ø + rnta + ng{kwi} rtarrka + ni + mwi/
3:3 3:4 REDUP NSR: grab TNS PIP

'He was grabbing it.' / 'He was keeping on grabbing it.'

y1(ng)mwingmwarnta
 /y1 + ngmwa + ng{w1} mwarnta/
 3:3(11) REDUP ALP: flipper
 'Snake-necked Tortoise'

Reduplication of vowel-initial multi-morphemic units is quite rare but operates on the same types of morphological structure as the consonant-initial units. The application of the Reduplication Rules 2A or 2B follows the uniting of the morphemes, i.e., the initial vowel is ignored in the reduplicated portion.

warrantjantjinyirra 'Azure Kingfisher'
 /wirr{a} + antj{1} + antja{lhka} nyirra/
 3:1 REDUP stomach: soft

aningkwiningkwirakpwa 'very old [fish]'
 /[a] + a ningkw1 + n1 ngkw1 rakpw1/
 3:4 REDUP n-hfem NSR: long ago

nakpwatjanimwa ==> nakpwikpwatjanimwa
 /n{1} + a kpw1 + k{1} pwatj{a} + an1 + mw1/
 3:3 REDUP ASR: hit TNS PIP
 'He was stripping the bark off.' / 'He was keeping on stripping the bark off.'

nangmwathina ==> nangmwingmwathina
 /n{1} + a ngmwa + ng{kw1} mwatha + n1/
 3:3 REDUP NSR: steal INS
 'He stole.' / 'He kept stealing.'

Reduplication of all three syllables can occur occasionally when the morphological structure consists of a grammatical morpheme plus a root or a root plus inflection.

amwirapa / amwiremwirapa 'Stringybark / many Stringybarks'

DEEP STRUCTURE	a		+ mw1	+ rap1
REDUP.1C	==>	a	+ mw1 rap1	+ mw1 rap1
VFR.1	==>	a	+ mw1 rap1	+ mw1 rap1
VFR.2	==>	a	+ mw1 rep1	+ mw1 rep1
VRD.2	==>	a	+ mwu rep1	+ mwu rep1
SDEL	==>	a	mwu re{1}	mwu rep1

NTR.2	==>	a	mwu	re	mwu	repa
		3:4	PEDUP		INALP	???
niyamwintjamwina 'he kept saying'						
DEEP STRUCTURE		nɪ		+ yamwɪ	+ nɪ	
VFR.1	==>	nɪ		+ yamwɪ	+ nɪ	
VFR.2	==>	nɪ		+ yamwɪ	nɪ	
CDR	==>	nɪ		+ yam{w}ɪ	nɪ	
VFR.2	==>	nɪ		+ yemɪ	nɪ	
REDUP	==>	nɪ + yemɪnɪ		+ yemɪ	nɪ	
COALESCENCE	==>	nɪ + yemɪn{i}		+ yemɪ	nɪ	
HARDENING	==>	nɪ	yemɪn	tjemɪ	nɪ	
NTR.2	==>	nɪ	yemɪn	tjemɪ	na	
		3:3	REDUP	say	INS	
wirrimwinimwiningka 'strangers'						
/wirra + m{w}ɪnɪ + m{w}ɪ nɪŋkɪ/						
3:1	REDUP	INALP:n-h.fem other				

Reduplication of all three syllables in a tri-syllabic free form word has also been recorded. This could be considered as simply the juxtaposition of two nouns except that (a) the suffixation in the first example applies to the whole, and (b) the unit in the second example has not yet been found in isolation. The reduplicated units in each of the following words consist of more than one morpheme.

yarringkwi yarringkwi wiya	'a few weeks ago'
/yarringkwi + yarringkwi + wiya/	
REDUP yesterday TPRG	
yalhiniyalhina 'upright sides'	
/yalhini + y{i} alhini/	
REDUP 3:3(ii): ???	
mwalharrimwalharra 'too much gravel'	
/mwalharra + mw{a} alharra/	
REDUP 3:5: few and small	

akwingwakwingwa	'lots of water'
/akwingw{1} + a kwingw1/	
REDUP 3:4:water	
anhinganhinga	'fruit-bearing tree'
/anhing{a} + {a} anhinga/	
REDUP 3:4:food	
arningkwarningkwaya	'a few days ahead'
/arningkw{1} + {a} arningkwiwaya/	
REDUP 3:4:tomorrow	

2.8.4 Choice of reduplication rules

The reduplication in any given lexical word is usually constant but, in the following sets of examples, there is a choice of free form adjective, verb stem or the application of different Reduplication Rules. The reason appears to be avoidance of homophones.

ningpwatja	'he smelt it'
/n1 + Ø + ng{k1} + pwatja/	
3:3 3:4 ASR to smell	
angpwatja	'smelly'
/a + ng{k1} + pwatja/	
3:4 ASR to smell	
angwingpwatja	'Bickerton Violet'
/a + ngpwa + ng{k1} pwatja/	
3:4 REDUP ASR to smell	
angpwatjangpwatja	'Boronia'
/angpwatj{a} + a ng{k1} pwatja/	
REDUP 3:4:ASR: to smell	
akwingpwingpwatja	'perfume'
/a + kw1 + ngpw1 + ng{k1} pwatja/	
3:4 NSR REDUP ASR: to smell	
thangpwatjangpwatja ~ thangpwatjimwirra	'Beach Stone-curlew'
/th{a} + angpwatj{a} + a ng{k1} pwatja + mwirra/	
3:2 REDUP 3:4 ASR to smell PIP	

The overall pattern of the language is for only one rule to be applied in each word but some variation has been recorded in the choice of morphological units.

yingkingpwiringka	'very dry'
/yi + ngki + ng{k1} + pwiringka/	
3:3(ii) REDUP ASR dry	

angpwingpwiringka 'very dry'
 /a + ngpw + ng{k1} pwiringka/
 3:4 REDUP ASR: dry

wirringayingaya 'widows or widowers'
 /wirra + ngaya + ngaya/
 3:1 REDUP want

wirrathithingaya 'widows'
 /wirra + a thi tha + ngaya/
 3:1 REDUP hfem want

yampwakampwatjirrirra 'football'
 /y{1} + ampwak{1} + ampwa{k1} + tjirri + rra/
 3:3(11) REDUP round long SF

yampwimpwitjirr(rrr)rra 'football'
 /y{1} + a mpwa mpwa{k1} + tjirr(rrr) + rra/
 3:3(11) REDUP round long SF

The reduplication of two morphemes in the same word has only been found in the following example. (Note: The verb root, lhika 'to go', is probably irregular because of its counterpart noun root, alhika 'foot'.)

yirrimwirntimwirntakalhalhikaniwa ~ yirrimwirntimwirntakilhilhikaniwa
 /yirra + mwirnta{ka} + mwirntak{a} + (a)lhi + (a)lhik{a} + ani + wa/
 1ExcPl REDUP PL REDUP go TNS ALL
 'we, a very large group, kept on going towards [it]'

2.9 METATHESIS

Metathesis of syllables, consonants, and vowels can occur in Anindilyakwa. The metathesis of syllables in reduplicated roots is always accompanied by the Haplology Rule.

2.9.1 Syllables

Syllable metathesis can occur in the second order di-syllabic reduplicated adjective roots. It always co-occurs with the Haplology Rule and thus reduces the number of syllables to three. The initial consonant of the deep structure root is always a continuant.

FLIP FLOP RULE 1: SYLLABLES

SYL SYL SYL SYL ===== SYL {SYL} SYL SYL
 1 2 1 2 1 2 2 1

i.e., in reduplicated roots, the two syllables in the second root
metathesise and the second syllable of the first root is deleted.

The syllabic shape of the single morpheme is identifiable from data with only the single root, as shown in the first example in each pair of words below. Flip Flop Rule 1 is preceded by Word-medial Neutralisation Rule 1 and followed by the Haplology Rule (Section 2.5.2.1) follows it, thus creating a tri-syllabic morpheme. Two word derivations are included within the pairs of words.

alyarrngantha 'sharp/hot things'
 /a + lyarr{ngkwɪ} + ngantha/
 3:4 things sharp

anganthinga		'sharp'	
DEEP STRUCTURE	a		+ ngantha
REDUP.1B	===\ a	+ ngantha	+ ngantha
NTR.1	===\ a	+ nganth+	+ nganth+
FF.1	===\ a	+ nganth+	+ nthinga
HAPL	===\ a	+ nga{nth+}	+ nthinga
	3:4	REDUP	sharp

```
amwirrkwpwalya                                'soft-fleshed'
/a      + mwirrkw{i} + pwalya/
3:4    breast      soft
```

awalyiwa 'ripe, cooked'
 /a + walyi + walyi ==> {lyi}wa/
 3:4 REDUP soft

mwalhamwika 'canoe'
/mw{a} + alha{kpwa} + mwikwi/
3:5 leg salty (=sea)

mwikwimwika 'deep sea'
 /mwa + mwikwɪ ==> kwɪ{mwɪ} + mwikwɪ/
 3:5 REDUP salty (=sea)

nanikwiyalhiya 'shy [man]'
 /n{i} + ani + kwɪ + ya{lhɪ} + yalhi ==> lhiya/
 3:3(1) n-hfem NSR REDUP be shy

In the following word, Flip Flop Rule 1 can be applied with other rules to produce a tri-syllabic morpheme, i.e., with a deep structure form nyingwi 'soft'. The single root, however, is ngwinyɪ. There are two alternatives in coping with this word: (i) regard the word as an exception to the Flip Flop Rule; or (ii) accept the possibility of the metathesised root as an irregular single root. The latter is shown in the glosses below.

amwingwinya 'soft'
 /a + mwɪ + ngwinyɪ/
 3:4 INALP soft

anyingwinya 'nasal septum'
 /a + nyɪ{ngwɪ} + nyingwɪ ==> ngwinyɪ/
 3:4 REDUP soft

mwanyingwinya 'Sand Fig'
 /mwa + ani + nyɪ{ngwɪ} + nyingwɪ ==> ngwinyɪ/
 3:5 n.hfem REDUP soft

wirranyingwinyamwa 'Eastern Curlew'
 /wirra{nɪ} + nyɪ{ngwɪ} + nyingwɪ ==> ngwinyɪ/
 3:1 REDUP soft

There is one remaining stem in which the surface structure form can only be generated if the Word-medial Neutralisation Rule is not applied. It stands out from all other data as the only one with the vowel /a/ in the middle syllable. Given that Anindilyakwa does not favor homonyms (walya), the only option is to regard this morpheme as being irregular. (Note: If this analysis is correct it provides evidence that a deep structure vowel /a/ can follow /w/ in morpheme-final position.)

thitjangpwilyiwa		'Butterfish'
/tha + tjang{ka} + pw1 + lyiwa/		
3:2(11) ?head	EM flat	
apwirangpwilyiwalya		'roof'
/ {a} + apwirang{ka} + pw1 + lyi{wa} + lyiwa == walyi/		
3:4 buttocks	EM REDUP flat	
angakpwilyiwalya		'flat-topped mound'
/a + ngak{a} + pw1 + lyi{wa} + lyiwa == walyi/		
3:4 thigh	EM REDUP flat	

2.9.2 Consonants

Metathesis occurs between the consonants in two contiguous CV syllables but is found only in isolated examples. The intervening vowel is high and, in most cases, a lateral or rhotic consonant is involved. The two consonants exchange places and the vowel allophones adjust to the new environment. (The order of syllables in the deep structure can be ascertained from the occurrence of the morphemes in other words.)

FLIP FLOP RULE 2: CONSONANTS

[C V C]	====>	[C V C]
1 2		2 1

i.e. the two consonants on either side of the vowel exchange places.

(Note: In almost all cases the vowel is high.)

napwiriwaka	~	napwiwiraka	'he undressed'
[nap ^w ur ^w uwaka]	~	nap ^w uwur ^w uraka]	
yiniyarriwarna	~	yiniyawirarna	'Northern Quoll'
[yiniye ^r uwa ⁿ a]	~	yiniyawu ^r ana]	
mwipwilyirra	~	mwipwirrilya	'Small-leaved Paper-
[m ^w up ^w ilyi ^r a]	~	m ^w up ^w ur ^r ilya]	bark'
yimpwalhirra	~	yimpwarriha	(name)
[yimp ^w ali ^r a]	~	yimp ^w ari ^r ila]	
nirikwilyiwakana	~	nirikwiwilyakana	'he went in circles'
[n ^r uk ^w ilyuwakana]	~	n ^r uk ^w uwilyakana]	
thimwarrangpwathilyiwa	~	thimwarrangpwathiwalya	'Mangrove Monitor'
[t ^h um ^w a ^r an ^p wa ^t ilyuwa]	~	[t ^h um ^w a ^r an ^p wa ^t uwalya]	

The metathesis usually occurs within the same morpheme, as in the above examples. There are, however, a few other words in which the metathesis is more remote, i.e., in different morphemes.

awilyikarra ~ awirrikalya 'distant place'
[awilyikeŋa ~ awurrikalya]

amwiningka [emininka] 'strange'
/animwiningka ==> am{w}iningka/

There are two words in which the last syllable of the Gender morpheme ani- metathesises with the Inalienable Possession marker mwi-.

amwiningka	[emininka]	'strange, different'			
DEEP STRUCTURE	a + ani + mwi + ngki	a	+ ani	+ mwi	+ ngki
VFR.1	==> a + ani + mwi + ngki	a	+ ani	+ mwi	+ ngki
VFR.2 (twice)	==> a + eni + mwi + ngki	a	+ eni	+ mwi	+ ngki
CDR	==> a + eni + m{w}i + ngki	a	+ eni	+ m{w}i	+ ngki
FF.1	==> a + emi + ni + ngki	a	+ emi	+ ni	+ ngki
VDEL.1	==> {a} emi ni ngki	{a}	emi	ni	ngki
NTR.2	==> emi ni ngka		emi	ni	ngka
	3:4 INALP n-hfem other				

amwanitharra [amwenitaŋa ~ emenitaŋa] 'fish fin'
/{a} + ani mwi ==> am(w)ani + tharra/
3:4 n-hfem INALP ???

2.9.3 Vowels

Metathesis of vowels has been observed in only about twenty words. It is not restricted to any one word class but occurs most frequently in the verbs. Flip Flop Rule 3 often results in dissimilation in a sequence of three vowels. The symbol V_1 represents a low vowel and V_2 a high vowel.

FLIP FLOP RULE 3: VOWELS

$$\begin{matrix} [V & C & V] & \Rightarrow & [V & C & V] \\ 1 & 2 & & & 2 & 1 \end{matrix}$$

i.e., the vowels on either side of the consonant exchange places.

Methathesis can occur in a verb root in which the last consonant is usually a rhotic but, in isolated cases, is a lamino-palatal. The two vowels metathesise after the application of the Word-medial Neutralisation Rule (see Section 2.1). In the following examples, the first variant is the unsuffixed form and the second variant is the irregular metathesised form.

-kwara ~ -kwirana 'to hook'

DEEP STRUCTURE		kwara + an
VFR.1	==>	kwara + an
VFR.2	==>	kwar + en
FF.2	==>	kwara + en
VRD.2	==>	kwura en
VDEL.1	==>	kwur{a} en
NTR.2	==>	kwur ena

-angkarra ~ -angkarrina ~ -angkarratja 'to run'

DEEP STRUCTURE		angkarra + atja
NTR.1	==>	angkarr + atja
FF.2	==>	angkarr + atja
VDL.2	==>	angkarr{a} atja

-anthaya ~ -anthiyamwa 'to look at'

DEEP STRUCTURE		anthaya + amwa
NTR.1	==>	anthay + amwa
VRD.2	==>	anthay + amwu

VDEL.1	===>	anthɨy{a}	amwu
VFR.3	===>	anthɨy	amwu
NTR.2	===>	anthɨy	amwa

A similar type of metathesis occurs in one very common noun but is not discernible without the division into morphemes.

thɨtharrngka 'adult woman'

DEEP STRUCTURE		tha	+ atha	+ arrngka
NTR.1	===>	thɨ	+ athɨ	+ arrngka
METATHESIS	===>	thɨ	+ ɨtha	+ arrngka
VDEL.1	===>	th{ɨ}	ɨth{a}	arrngka

2.10 INITIAL-SEGMENT DROPPING

Syllable-initial semi-vowels are dropped word-initially and word-medially. In some cases, this is phonologically conditioned but in others the variation is not predictable.

2.10.1 Semi-vowel /y/

The dropping of the word-initial semi-vowel /y/ is phonologically conditioned. It can be deleted when the following consonant is a laminal. A sub-phonemic glottal stop has been heard in the absence of the laminal. Anindilyakwa speakers have confirmed that there is an optional dropping of the semi-vowel.

INITIAL-CONSONANT DROPPING RULE

$$\begin{array}{c} C \\ [+lamin] \\ [-obstr] \\ [-peri] \end{array} \Rightarrow \emptyset \quad / \quad \begin{array}{cc} V & C \\ [+high] & [+lamin] \end{array} \#$$

i.e., the word-initial /y/ is optionally dropped when the next consonant is a laminal and the intervening vowel is high. When the

next consonant is /y/ the dropping of the initial /y/ is almost categorical.

yitjarra	[(y)itjaʃa]	'Silver gull'
yilyarra	[(y)ilyaʃa]	'pipe'
yiyikwitjiya	[(y)iyukwutjiya]	'small [snake]'
yiya	[(y)iya]	'and'
yilharrpa	[(y)ilɛʃpa]	'Liviston Palm'
yinhanha	[(y)inana]	'fingernail'

The morpheme-initial /y/ is also dropped optionally in six adverbs, four of which have a following laminal consonant. Such initial-dropping is apparently restricted to adverbs because a similar deletion in nominals would change the Nominal Classifier to that of another class.

(y)antjarrikina	'that way'
(y)alhakwa	'here'
(y)akwitjina	'there'

The semi-vowels /y/ and /w/ are dropped in the first morpheme in a few reduplicated roots. To date, this has only been observed in five words.

ayiwaya	'weak'
/a + {w}aya + waya/ 3:4 REDUP weak	
thaya	'Green Tree Snake'
/tha + {w}aya/ 3:2(ii) weak	
yarriwarra	'Leatherskin'
/y{i} + {w}arra + warra/ 3:3(ii) REDUP wriggle	
arngkarriyarra	'sour'
/[a] + arngk{a} + {y}arri + yarri/ 3:4 eye REDUP sour	

The dropping of a morpheme-initial /y/ has been observed in the following pair of words and adverb. Reduplication is irregular.

naniyarringka	'older man'
/ni + ani + yarringka/	
thitharringka	'adult woman'
/tha + atha + {y}arringka/	
yangmwangmwintjihangwa	'purposelessly'
/yangmw{1} + {y}angmwintji + lhangwi/	
REDUP be quiet POSS	

2.10.2 Vowel /a/

Vowels have a low functional load. The root-initial vowel /a/ is dropped in some occurrences of a morpheme. In most cases only one form occurs for each particular word but there is some variation with older speakers of the language.

mwirirrpwa	/	warnimwarirrpwa
/mwa + {a}rirrpwi/		/warni + mw{1} + arirrpwi/
3:5 back		3:1 INALP back
'human back'	/	'their human backs'
narimwa	/	nakakirimwa
/n{1} + arimwi/		/n{1} + akak{a} + arimwi/
3:3(i) big		3:3(i) ??? big
'big [man]'	/	'clever [man]'
mwiramparrpwirra ~ mwaramparrpwirra		
/mwa + (a)ramparr{ki} + p{w}irri/		
3:5 flat		wide
'flat and broad'		

The above free variation should not be confused with the use of two roots which contrast in only the initial vowel /a/. The overall semantic concept can be common to both roots. This /a/ contrast indicates their placement in a different word class. For example, the interrogative adverb, ngampwi- 'where?', contrasts with the interrogative demonstrative pronoun, angampwa 'which?, what?'

ngampwilhangwa nakina /ngampwi + lhangwɪ/ where? ABL	'Where is that [man] from?'
ngampwiwa kilhikatjamwa /ngampwi + wɪ/ where? ALI	'Where are you going to?'
angampwa akina /{a} + angampwi/ 3:4 what?	'Which [place] is that?'
ninganɪmwalhɪla /ning{a} + ani + mw{ɪ} + alhika/ 1ExcSg n-hfem INALP foot	'my tracks'
nilhikana /ni + lhika + ani/ 3:3 foot-walk TNS	'he went'
nilhalhikaniwa ~ nilhilhikaniwa /ni + lhi + (allhik{a}) + ani + wɪ/ 3:3 REDUP foot-walk TNS ALL	'he kept on going'

When the Nominal Classifier yɪ- is followed by the Gender morpheme ani- for non-human.feminine the vowel /a/ is deleted. This is systematic but the regular form has occasionally been recorded in adjectives and verbs from older speakers.

yinikiyalhilha ~ yanikiyalhilha /yi + (a)ni + ki + yalhilha/ 3:3(ii) n-hfem ASR shy	'shy [snake]'
naningkwarpwa /n{i} + ani + ngkw{i} + arpwi/	'man'
yiningkwarpwa /yi + {a}ni + ngkw{i} + arpwi/	'male [animal]'
anikwarrnga /{a} + ani + k{wi} + arrnga/	(place name)
yinikwarrnga /yi + {a}ni + k{wi} + arrnga/	'Baburra ceremonial ground'

2.11 LOSS OF RETROFLEXION

There are phonemic units which vary only with respect to retroflexion. The variation involves the loss of the retroflexed

phoneme /r/ preceding another consonant in a lexical root, or a change from the retroflexed phoneme /rn/ to the alveolar /n/ in a grammatical root or affix. This variation is regarded as language change for the following reasons:

- (i) the older generation uses the retroflexed forms much more frequently than the younger generation.
- (ii) there was no series of alveolars in TA and, except for nasals in MA, it is still a series with a very low functional load.
- (iii) it is possible that, in the TA system, the retroflexed nasal occurred intervocally with an alveolar allophone in word-initial position. Such a system correlates with that of some other Aboriginal languages (Dixon 1968: 167) and is consistent with the present pattern of variation.

2.11.1 Retroflexed rhotic

The loss of the retroflexed consonant results in simplified consonant clusters. The full form is no longer frequently in use by either generation or in precise speech.

amwa(r)mwarra	'a sore'
a(r)ngkawira	'once'
a(r)ngkayiwaya	'Tamarind fruit'
wa(r)tharra	'spear it!'
wa(r)tjiyinga	'stand up!'
wa(r)tjirrana	'wash it!'

The consonant closure of the initial syllable is sometimes deleted preceding the reduplicated part. This seems to me to be a reduction because of the co-occurrence of complex consonant clusters.

a(ngkɪ)rngkawira ~ a(rngkɪ)rngkawira
/[a] + a(r)ngkɪrngk{a} + awiri/
3:4 eye alone
'once in a while'

a(rngki)rngkiwilyarra ~ a(rngki)rngkiwilyarra
/[a] + a(rngki)rngka + wilyarra/
3:4 eye middle
'middle of a house'

2.11.2 Retroflexed nasal

The loss of retroflexion in the nasal is wide-spread throughout several word classes. The retroflexed and alveolar nasals are often in free variation but, in some cases, one or more words in a paradigm now have a complete loss of the retroflexion.

The following examples illustrate the loss of retroflexion in the masculine gender prefixation and the tense suffixation.

The masculine dual is marked in the nominals and pronominals by the prefix *ni-* but the nasal is retroflexed by the Cerebralisation Rule following the non-singular morpheme *rra-*. The loss of retroflexion was noted in some pronouns in 1974 but there has been a further loss since that time in similarly structured personal pronouns.

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ningkwirniwa	~	ningkwiniwa	'you'
/ningkwɪ ni	=>	ningkwɪ(r)ni + wi/	
2Sg		MascDu	SF
apwirniwa	~	ap(w)iniwa	'they'
/apwirra ni	=>	apwi(r)ni + wi/	
3:1		MascDu	SF

The loss of retroflexion in the above word apɪni- [epɪni] (3rd masculine dual) neutralises the contrast between this personal pronoun and the demonstrative pronoun which means 'that not visible (Noun Class A)'. Only the context resolves the ambiguity.

tense suffix

The retroflexed nasal in the tense suffix occurs with only seventeen verb roots out of a corpus of about six hundred. In eleven verb in which a rounded peripheral is the last consonant in the root, only the retroflexed nasal has been recorded; in the remaining six examples, the alveolar and retroflexed nasals vary freely, the former being the most frequent.

nilhikana	~	nilhɪkarna	'he went'
niyarriwana	~	niyarriwarna	'he went past'
niyakina	~	niyakirna	'he removed it'
nipwirtirtikwina	~	nipwirtirtikwirna	'he carried it on a belt'

The same variation occurs in nominals which are derived from verbs.

yiniyarriwana	~	yiniyarriwarna	'Northern Quoll'
athirrngwana	~	athirrngwarna	'big'

(ii) in the roots

In the demonstrative pronoun root, the alveolar nasal is much more frequently used than its retroflexed counterpart.

demonstrative root a(na)ni ~ a(rna)rni

ningarna ~ ningana 'this (1st sg.)'
/ning{a} + a(r)ni/
1Sg this

warnarna ~ warnana 'these [dogs]'
/warn{ɪ} + a(r)ni/
3:1Pl this

anana ~ ana 'this [fish]'
/a + anani/
3:4 this

A retroflexed or alveolar nasal rarely occurs in a root.

Variation has been found only in the following root.

wingarningkirringka 'look at the spear!'

aningkwa 'spear'

thimwarninhangwa ~ thimwaninhangwa 'Spotted Eagle-ray'
/tha + mw{ɪ} + arning{kwi} + thangwi/
3:2(11) INALP spear POSS

Similar variation has been observed in loanwords. The retroflexed nasal is the one most frequently used by all age groups.

pwapwilikarna ~ pwapwilikana NG papirlikan 'sheet iron'

pwarnimpirra ~ pwanimpwirra NG parnumpil 'Morning Star'

pwarnampwila ~ pwanampwila GP panang? 'wool'

2.12 FORTITION

Heath (1984:58-65) posits a "productive pattern" for the fortition and lenition of consonants in Nunggubuyu. A similar pattern involving peripheral or laminal consonants operates in Anindilyakwa but it is not as systematic. The change almost always takes place in the manner of articulation of the morpheme-initial consonant of a root. Fortition is phonologically-conditioned.

2.12.1 Progressive fortition

Progressive (rightward) hardening of a peripheral nasal or a lamino-palatal consonant can occur following a velar nasal or stop. The nasals, /mw/ and /ngw/, are hardened to their stop counterparts, /pw/ and /kw/, respectively; the lamino-palatal /y/ is hardened to its stop counterpart /tj/. The velar does not always occur in the surface structure. (Note that the hardening occurs after the deletion of the deep structure vowel in some instances.)

amwalya /a + mwalya/ 3:4 soft	'body fat'
amwirrkwpwalya /a + mwirrkw{1} + pwalya/ 3:4 breast soft	'soft'
amwirtha /{a} + amwirtha/ 3:4 cook on coals	'brown/black'
angpwirtha /a + ng{kwi} + pwirtha/ 3:4 NSR cook on coals	'Yellow Snowflake Water-lily'
thimwirra /tha + m{w}irri/ 3:2(i1) wide	'Torres Strait Pigeon'
alhingakpwirra /a + lhingaka + p{w}irri/ 3:4 torso wide	'wide-bodied'
yamwina /Ø + yam{wi} + ni/ 3:4 do TNS	'do it!'
yamwintjamwina /Ø + yamwin{1} + tjamwini/ 3:4 REDUP do	'keep doing it like this!'
niyawitha /ni + yawi + tha/ 3:3(i) carry INCH	'he was carried'

nilyantjawitha /ni + lyang{ka} + tjawitha/ 3:3(i) head be carried	'he was carried on the head'
yimwirntangirringirra /yi + mwirnta{ka} + ngirringirra/ 3:3(ii) PL REDUP:dangerous	'Blady Grass'
thimwarngkirra /tha + mwarng{ka} + kirra/ 3:2(i) spirit dangerous	'mean, stingy [woman]'
<p>In some words, there is no nasal conditioner in the surface structure. The Nominaliser which precedes a verb root may have been deleted from the adjectives derives from such roots. It seems as if once the two allomorphs for each root are established they can be chosen at random for use in other words. The choice does avoid ambiguity, as in reduplicated forms (Section 2.8.4).</p>	
amwirtha /a + mwirtha/ 3:4 cook on coals	'brown/black'
apwirtha /a + pwirtha/ 3:4 cook on coals	'sea mammals, etc.'
yilyarrpwantha /yi + lyarr{ka} + p{w}antha/ 3:3(ii) ?body fat wound by spearing	'Western Brown Snake'
nipwantha /ni + Ø + p{w}antha/ 3:3(i) 3:4 wound by spearing	'he wounded it'
thiyakirrarra /tha + yaka + rrarri/ 3:2(i) chest happy	'happy [woman]'
thitjakawara /tha + tjak{a} + awara/ 3:2(i) chest sad	'sad [woman]'
niyatha /ni + yatha/ 3:3(i) emerge	'[man] freed from taboo' (returning from the ceremony)

nitjathana 'he emerged'
 /ni + tjath{a} + ani/
 3:3(1) emerge TNS

Progressive fortition also occurs in the morpheme-initial laminal consonant /y/ in the second root of two reduplicated roots. It could be considered to be regressive lenition in agreement with the regressive nature of reduplication (Section 2.8). Either root can be used singly in other words, as shown below.

ayapwitjapwa 'separate'
 /a + yap(w)i tjap(w)i/
 3:4 REDUP separate

niyapwitjapwakina 'he divided it'
 /ni + Ø + yap(w)i tjap(w)i + ka + ni/
 3:3(1) 3:4 REDUP separate CAUS TNS

ayapwa 'intervening shelf'
 /a + yap(w)i/
 3:4 separate

The adjective root, yikwi 'small', also illustrates progressive fortition in reduplicated roots and the choice of various morphemic forms in words other than the one with the conditioned phoneme, viz., yikwi, the hardened tjikwi and the metathesised kwitja. The following derivation demonstrates the phonological rule ordering.

ayikwitjiya	[a ¹ yukwutjiya]	'small (sg.)'
DEEP STRUCTURE	a + yikwi + yikwi + ya	
VFR.1	==> a + yikwi + yikwi + yi	
VFR.5	==> a ¹ yikwi + yikwi + yi	
VRD.1 & 2	==> a ¹ yukwu + yukwu + yi	
FORTITION	==> a ¹ yukwu + tjukwu + yi	
FF.1	==> a ¹ yukwu kwutju + yi	
HAPL	==> a ¹ yu{kwu} kwutju + yi	
VFR.3	==> a ¹ yu kwutji yi	
NTR.2	==> a ¹ yu kwutji ya	
	3:4 REDUP	small ?SF

yiwarngkwitja /yɪ + warng{ka} + k{w}ɪtʃɪ/ 3:3(11) DIMIN small	'joey'
ayakwitjamwa /a + ya{ka} + kwitʃɪ + amwɪ/ 3:4 chest small PROP	'jealous'
amwingk .Ja /a + mwing{kwiɾrkwi} + kwitʃɪ/ 3:4 cheek small	'too tight'
arngkitʃikwirra /{a} + arngka + tʃikwi + rra/ 3:4 eye small SF	'Green Plum'
amwirntakitʃika /a + mwirntaka + tʃik{w}ɪ/ 3:4 Pl small	'small things'
ayikwayɪwa /a + yikw{ɪ} + aya + wɪ/ 3:4 small SNsg SF	'small (pl.)'

Hardening of the lamino-dental consonant /lh/ to its counterpart /th/ does occur in a few random examples. As for other examples in this sub-section, the phonological conditioning for the Progressive Fortition can only be observed in some words.

alhalhipwina ~ athathipwina /alhalha ~ athatha + p{w}ɪni/ this side that unseen	'on that side'
yirikwitʃilhangwa /yɪ + ri{kwi} + kwitʃɪ + lhangwɪ/ 3:3(11) body small POSS	'Brindled Bandicoot'
thimarningthangwa /tha + mw{i} + arning{kɪ} + thangwɪ/ 3:2(11) INALP pointed (=spear) POSS	'Spotted Eagle-ray'
alhakpwa /{a} + alhakpwa/ 3:4 leg	'leg'
amwalhakpwa /a + mw{i} + alhakpwa/ 3:4 INALP leg	'fish's tail'
mwamwithakpwa /mwa + mwi + thakpwa/ 3:5 INALP leg	'boat stern'

alhika
/a + lhika/
3:4 foot

'foot'

athikalyipwa
/a + thik{a} + alyipwa/
3:4 foot eat

'Crinum Lily'

Similar hardened and lenited consonants have been found between the Anindilyakwa root and its Nunggubuyu cognate. The first two examples illustrate the variants /tn/ and /lh/; the third example /w/ and /pw/; and the last example /ngw/ and /kw/ (with the second syllable in Anindilyakwa being lenited).

amwathangkwa	NG lhangku	'meat, flesh'
lharrwira	NG atharrwara	'afternoon'
awirikwi-	NG mwapuruku	'swamp'
akwingwi-	NG kuuku	'fresh water'

In Anindilyakwa pronouns and demonstratives, a word-initial rounded peripheral consonant /w/ has a hardened counterpart in word-medial position. In the second singular pronoun, the change can be considered to be hardening because the word-medial (morpheme-medial) /kw/ follows a velar nasal but /w/ occurs word-initially. Alternatively, it could be lenition of the word-initial /w/ after the first syllable is dropped. In the third person plural prefixation, there is no criterion upon which to establish whether the variation between /w/ and /pw/ is hardening or lenition. (Note: The same change is also reflected in the Nominal Classifiers.)

ningkwiwa
/ningkwi + wi/
2Sg SF

'you (sg.)'

wingatja
/{ningk}wi + ngatja/
2Sg hit

'(you sg.) hit it!'

ningkwirriwa		'you (non-sg.)'
/ningkwirra + wɪ/		
2Pl	SF	
wirringatja		'(you non-sg) hit it!'
/[ningk]wirra + Ø + ngatja/		
2Pl	3:4 hit	
wirrakina		'those'
/[a]{p}wɪ + rr{a} + akɪnɪ/		
3Pl	Nsg that	
apwirriwa		'they'
/apwɪ + rra + wɪ/		
3Pl	Nsg SF	

2.12.2 Regressive fortition

Hardening of the morpheme-initial consonant can occur in one of two reduplicated roots. Rightward hardening of the morpheme-initial /y/ has been discussed in the previous section but leftward hardening has also been observed. Leftward hardening could be said to be in accord with the regressive nature of reduplication. In current data, the only examples involve the rounded peripheral /w/ being hardened to the obstruent /pw/, and the lamino-palatal semi-vowel /y/ to /tj/.

angkɪpwarrngwarrngwa	'heavy'
/a + ngkɪ + pwarrng{wɪ} + warrngwɪ/	
3:4 ASR REDUP heavy	

apwayɪwaya ~ apwayawa	'blunt'
/a + pwaya + waya/	
3:4 REDUP weak	

Compare:

ayarrmiyarrma	'thin'
/a + yarrmi + yarrmi/	
3:4 REDUP thin	

thimwamwintjarrmwintjarrma	'grasshopper'
/tha + mwi + mwintjarr{mi} + mwin{tjɪrrka} tjarrmi/	
3:2(ii) INALP REDUP skin thin	

aritjamiyama	'short and thin'
/a + ri{kwi} + tja{rr}mi + ya{rr}mi/	
3:4 short body REDUP thin	

alhingatjamiyama 'long and thin'
 /a + lhinga{ka} + tja{rr}mɪ + ya{rr}mɪ/
 3:4 large torso REDUP thin

2.13 SUPRASEGMENTALS

Anindilyakwa is a stressed-timed language. The di-syllabic and tri-syllabic foot within the phonological word takes approximately the same amount of time in pronunciation. The rhythm is maintained by lengthening vowels in shorter words and coalescence in longer words.

2.13.1 Timing/length

The timing of words in relation to the number of syllables varies according to the number of syllables. Citation forms of lexical words by the same speaker also vary according to the context within the recorded list.

2	syllables	400 - 450	msecs
3	"	450 - 950	msecs
4	"	650 - 1100	msecs
5 - 8	"	750 - 1300	msecs

The length of a syllable in a two-syllable word can be twice that in an eight-syllable word. Citation forms of two-syllable words, therefore, have a lengthened vowel in the first syllable which is reduced when the same word co-occurs with others within the phonological word. No minimal pairs which contrast by length have been found.

A suprasegmental feature consisting of length and very high pitch is used as a stylistic device to indicate continuity of action. It falls on the penultimate syllable of a verb or the conjunction /pwiya/ 'and then' and frequently co-occurs with reduplication of the verb root (see Section 2.8).

pwí::ya narrathithirranga (pause) narrathithirranginwi::wa
 'And then they caught [and] they were keeping on catching them.'

yirriwirrakalhihikaní::wa
 'They kept on walking'

The same feature is used when speaking to another person from a distance. The very high pitch enables the voice to carry. The final vowel is lengthened or a high vowel added to carry the feature.

naratjawi	[náratjá ^u :::]	'Naratja!'
napipayi	[népípa ⁱ :::]	'uncle!'
yíwi	[yu:::]	'yes!'
yangkwirrangwayi ~ yangkwirrangwawi	[yáŋkwuŋáŋwá ⁱ ::: ~ yáŋkwuŋáŋwá ^u :::]	'[come] here!'

A reduction in the number of syllables or segments occurs in narratives. In addition to reduction by the application of Coalescence Rules and the Haplology Rule (Section 2.5), any word-final vowel can elide to maintain the stress/rhythm pattern if the resultant consonant cluster is an acceptable sequence. The first consonant of the resultant cluster has a delayed release.

nimwiningkarrnga mwirirrpwa
 [núm^winínkáŋg:m^wurírpwa]
 'He broke his back.'

katjingwa kampwirra nanikihawirrakwatjiyatha thakina
 [ká:tjŋ:kempíra nén^wiki^láwuŋáka^ttjiyá^ŋakína]
 '...so that he could bring her back.'

2.13.2 Stress

Stress is a feature of the phonological word and changes on the minimum lexical unit according to its suffixation and position in the phonological word. A stressed syllable differs from an unstressed by a slight increase in intensity and length and a very slight rise in pitch. (Stress might better be defined as syllable prominence.)

Primary stress falls on the penultimate syllable in multi-syllabic words. More than one stressed syllable can occur in each word. Variant patterns for stress occur because maintaining the rhythm and timing is of greater importance than stress itself.

alhikira	[áɬkíra]	'house'
alhikirawa	[áɬkíraʷa]	'to the house'
nilhikana	[níɬikéna]	'he went'
nilhikanimwa	[níɬikenúma]	'he was going'
anhinga	[áŋŋa]	'vegetable food'
yinimwanhinga	[yínúmaŋna]	'Red Wild Apple'

Stress falls on the first and penultimate syllables in most of the data. In words with an even number of syllables, the stress falls on alternate syllables, i.e., on the first syllable of each disyllabic foot.

artja	[á:rtja]	'digging stick'
thilyapwirnta	[tɬívaŋwúnta]	'frog'
wirrarimwirimwiwa	[wúŋarúmwíwa]	'big'
yimwirntakanana	[yímwúntakenéna]	'these'

In words of three syllables, the common pattern is for stress to fall on the penultimate syllable. Stress can alternatively fall on the initial syllable if that syllable contains the low vowel /a/ and is followed by an open syllable with a high vowel.

anana	[enéna]	'this [fish]'
yinipa	[yinípa]	'red ochre'
ningkalya	[niŋkálya]	'wet [man]'
yampirrkwa	[yámpírkwa ~ yámpírkwa]	'Venus Tusk-fish'

angpwirtha	[ánpwúrta ~ anp ^w úrta]	'yellow Waterlily'
alhika	[áika ~ alika]	'foot'
angpwitha	[énpwíta ~ enp ^w íta]	'strong'

In longer words with an uneven number of syllables, two patterns emerge. The most frequent pattern retains the initial and penultimate stress. The first foot is tri-syllabic and following feet are di-syllabic.

mwalhilihiyanga	[m ^w áililiyána]	'gum blossom'
yipwilyipwilya	[yípwilyup ^w ílya]	'Bynoe's Gecko'
yalkirangkwirra	[yáika:raŋkwúra]	'Mangrove Jack'
mwingarniyantha	[m ^w úŋaŋiyánta]	'False Trumpet Shell'
ningkwirripwikwirriwa	[núŋkwurup ^w úk ^w urúwa]	'you three'
wirrilyangpwilyangpwirna	[wúrilyanp ^w ilyanp ^w úna]	'ant sp.'
warnikwiringiringanthika	[wáŋukwuríŋiríŋantíka]	'Honeyeater'

The second pattern occurs in words with a high vowel in the initial syllable and the low vowel in the second syllable. The low vowel attracts the stress. Free variation occurs between the two patterns.

[yím ^w anp ^w unúŋwa ~ yim ^w ánp ^w unúŋwa]	'hornet'
[túm ^w ap ^w urák ^w urátja ~ tum ^w áp ^w urák ^w urátja]	'rock-monitor sp.'
[túm ^w am ^w un ^w kwún ^w am ^w úra ~ tum ^w ám ^w un ^w kwunám ^w ura]	'Spotted Python'

Exceptions to the above patterns occur irrespective of the number of syllables when the anti-penultimate syllable contains the low vowel /a/ and the penultimate syllable is open and has a high vowel. Stress falls on the first or second syllable, according to the above rules, but subsequently falls on the first syllable of each following di-syllabic foot. This maintains the rhythm within the word

but shifts the stress to the ante-penultimate syllable. Except for a few common words with the clitic, -amwi(rra), there is free variation with the more frequent counterpart above.

akwirrangina	[ákwuŕaŋína ~ ákwuŕaŋína]	'shark sp.'
atjuwatjuwa	[átjuwatjúwa ~ átjuwátjuwa]	'Rock Fern'
mwingarikwa	[mʷúŋaŕukwa ~ mʷuŋáŕukwa]	'fishing line'
ningilhiŋkatjamwirra	[níŋilíkaʔtjámuŕa]	'I am going'
yimwaltjanamwirra	[yúmʷaltjénamuŕa ~ yumʷáltjenámʷuŕa]	'Rainbowfish'
akwithithiŋkatjingwa	[ákwutíʔtíkatjúŋwa ~ ákwutíʔtíkatjúŋwa]	'gate'

Some consonant-initial suffixes with three syllables have a preferred stress on the penultimate syllable. This can result in a tri-syllabic foot preceding the penultimate word stress.

mwamwirikwi + lhangwiya	[mʷámʷuŕukwuŋaŋwíya]	'along the road'
ngarrikpwiŋhi + tjingwina	[ŋáŕíkpʷíŋtjuŋwína]	'we strained'

The intensifying and terminalising suffixes, -aki and -tha, are stressed on the final syllable and the first syllable of the preceding di-syllabic feet.

yawaka	[yáwʌ́ká]	'yes'
athirngwarnaka	[átíŕŋwaŋʌ́ká]	'very big'
angalyitha	[aŋáŋyíʔá]	'home'
athiwapwawiyitha	[átuwpʷwíyíʔá]	'just for a day'